

Sabisch, Andrew

From: Stamm, Eric
Sent: Friday, March 11, 2011 7:42 AM
To: Sabisch, Andrew
Subject: google

http://www.marketwatch.com/story/japan-invokes-special-law-for-nuclear-emergencies-2011-03-11?reflink=MW_news_stmp

HONG KONG (MarketWatch) - Japanese authorities declared a state of nuclear emergency late Friday, following a record earthquake earlier in the day that triggered emergency shutdowns at a number of nuclear plants near the quake's epicenter. The government said no radioactive leaks had been reported and residents living near nuclear power plants were not under any immediate threat. The four nuclear power plants nearest to the quake's epicenter had been safely shut down, while 11 others that were affected by the shaking also had their shut-down systems triggered, according to a Kyodo report Friday. Chief Cabinet Secretary Yukio Edano told reporters that there the declaration was made so that authorities could establish an emergency task force to deal with the situation. Tokyo Electric Power said reactors at its Fukushima Daiichi plant had been shutdown, as they were designed to do during emergencies. It also said electrical systems that provide power to the cooling systems were disabled by the quake, and diesel-powered generators that provide back up power were also out, leaving the utility short of coolant to keep the core at a safe temperature, according to reports. Tohoku Electric Power Co.'s reported smoke coming from a building housing a reactor at its Onagawa plant in Miyagi, according to reports. The company said there have been no radioactive leaks and that it is checking the safety of the reactor.

Eric Stamm

Project Engineer - Reactor Projects Branch I
Division of Reactor Projects
U.S. Nuclear Regulatory Commission
404-997-4575
Eric.Stamm@nrc.gov

Crowe, Eddy

From: Crowe, Eddy
Sent: Friday, March 11, 2011 8:20 AM
To: Shaeffer, Scott; Rose, Steven
Subject: Japan power plants

Do we have any info yet on what broke or how much radiation that may be released? I'm hearing that people are being evacuated.

This email is being sent from an NRC mobile device.

Mendez-Gonzalez, Sandra

From: Ninh, Son
Sent: Friday, March 11, 2011 8:39 AM
To: Hoeg, Tim; Stewart, Scott; Morrissey, Thomas
Cc: Rich, Daniel; Mendez-Gonzalez, Sandra
Subject: FW: Japan Nuclear Plant status

SRIs,

FYI. Son Ninh

From: Croteau, Rick
Sent: Friday, March 11, 2011 8:34 AM
To: Ninh, Son
Subject: FW: Japan Nuclear Plant status

From: Stamm, Eric
Sent: Friday, March 11, 2011 8:19 AM
To: Croteau, Rick; Brady, Joseph; Hutto, Andy
Cc: Bartley, Jonathan
Subject: Japan Nuclear Plant status

http://www.world-nuclear-news.org/RS_Massive_earthquake_hits_Japan_1103111.html

Eric Stamm

Project Engineer - Reactor Projects Branch I
Division of Reactor Projects
U.S. Nuclear Regulatory Commission
404-997-4575
Eric.Stamm@nrc.gov

Seymour, Deborah

From: Seymour, Deborah
Sent: Friday, March 11, 2011 10:08 AM
To: Harmon, David
Subject: RE: INFO: Japan Earthquake

FYI. I was in the break room and read the streaming news at the bottom of the screen that they were evacuating thousands from around one NPP in Japan. I have no further confirmation of accuracy.

From: Harmon, David
Sent: Friday, March 11, 2011 7:57 AM
To: R2CCI1
Subject: FW: INFO: Japan Earthquake

From: Tabatabai, Omid
Sent: Friday, March 11, 2011 7:36 AM
To: Thorp, John; Tappert, John; Wegner, Mary; Brown, Frederick; Dudes, Laura; Frye, Timothy; Bergman, Thomas; Hawkins, Kimberly; Munson, Clifford; Sigmon, Rebecca; Karas, Rebecca; Copeland, Douglas; Craffey, Ryan; Harmon, David; Issa, Alfred; Patel, Jay
Subject: INFO: Japan Earthquake

Par
B1

Some info from our Japanese friends amid the massive earthquake...

Dear all,

Prime minister declared the state of emergency.
11 NPPs automatically shut down.
3 NPPs (Fukushima) have problems of DG and can't receive electric powers now.
(Very serious situation...)

- Many people died
- All the trains service disruption in Tokyo
- Tsunami destroyed many cars, houses...
- Fires occurred at Oil station
- Wide areas - blackout

Gloersen, William

From: Masters, Anthony
Sent: Friday, March 11, 2011 10:56 AM
To: Harmon, David; R2CCI1
Subject: RE: INFO: Japan Earthquake

<http://www.foxnews.com/world/2011/03/11/japan-issues-emergency-nuke-plant-leak/>

Anthony D. Masters, PE
Senior Construction Inspector
U.S. Nuclear Regulatory Commission
Region II - Atlanta
(404) 997 - 4465 (office phone)
(404) 997 - 4917 (fax)
Anthony.Masters@nrc.gov

From: Harmon, David
Sent: Friday, March 11, 2011 7:57 AM
To: R2CCI1
Subject: FW: INFO: Japan Earthquake

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Sent: Friday, March 11, 2011 7:36 AM
To: Thorp, John; Tappert, John; Wegner, Mary; Brown, Frederick; Dudes, Laura; Frye, Timothy; Bergman, Thomas; Hawkins, Kimberly; Munson, Clifford; Sigmon, Rebecca; Karas, Rebecca; Copeland, Douglas; Craffey, Ryan; Harmon, David; Issa, Alfred; Patel, Jay
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- All the trains service disruption in Tokyo
- Tsunami destroyed many cars, houses...
- Fires occurred at Oil station
- Wide areas - blackout

Moorman, James

From: McCree, Victor
Sent: Saturday, March 12, 2011 11:09 AM
To: Bartley, Jonathan; Wert, Leonard; Croteau, Rick; Jones, William; Munday, Joel; Christensen, Harold; Casto, Chuck; Moorman, James; Gody, Tony; Cobey, Eugene; Yerokun, Jimi; Ogle, Chuck
Cc: Coleman, Judy; Trent, Glenn
Subject: Re: Japanese BWR Info

Ok, got it, thanks. As you can readily surmise, this is an extraordinary event with significant consequences.

FYI, there are a series of NRC internal and NRC/industry status and alignment phone calls occurring today, beginning at noon. I'll summarize the results in an email to you later today.

Vic

This email is being sent from an NRC Blackberry device.

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

From: Bartley, Jonathan
To: Wert, Leonard; McCree, Victor; Croteau, Rick; Jones, William; Munday, Joel; Christensen, Harold; Casto, Chuck; Moorman, James; Gody, Tony
Sent: Sat Mar 12 11:00:26 2011
Subject: Fw: Japanese BWR Info

FYI. Some info from Duke.

This email is being sent from an NRC mobile device.

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

From: Sabisch, Andrew
To: Bartley, Jonathan
Sent: Sat Mar 12 08:43:34 2011
Subject: FW: Japanese BWR Info

Jonathan,

This sounds pretty grim if in fact true it would sound that one of the Japanese reactors has suffered a major failure and resulting release from core activity. DO you have any more information on the status of the plants over there?

Andy

=====

Andrew T. Sabisch
U.S. Nuclear Regulatory Commission
Senior Resident Inspector
Oconee Nuclear Station

7812B Rochester Highway, Seneca, SC 29672

(O) 864-873-3001 / (C) [REDACTED] (b)(6) / (H) [REDACTED] (b)(6)

From: Gillespie, T P Jr [T.Gillespie@duke-energy.com]

Sent: Saturday, March 12, 2011 8:34 AM

To: Batson, Scott L; Ray, Tom; Bohlmann, Joel E; Waldrep, Benjamin C; Pitesa, Bill; Repko, Regis T; Morris, Jim; Jamil, Dhiaa M; Sabisch, Andrew

Subject: Japanese BWR Info

I have been reaching out to some of my BWR contacts to gain a greater understanding of the events in Japan. You may already have this info, but if not, the following bullets may help:

- BWR 'reactor buildings' are the equivalent to our auxiliary building
- The auxiliary building surrounds the containment structure, which houses the reactor.
- One plant is an Isocondenser plant and the other is an RCIC plant. I am not exactly sure what the differences between the two are.
- They now believe that the Reactor Building was destroyed by Hydrogen explosion.
- Vessel is still intact.
- Operators performing the venting operations are receiving 10 rem per venting evolution.
- They are now putting sea water into the building to submerge the vessel.
- NRC is communicating with GE directly.
- Approximately 1 hour after the loss of offsite power, the emergency diesel generators stopped.
- The apparent cause was that their bulk storage tanks are above ground and were swept away in the tsunami and the EDGs ran out of fuel.
- The two plants sat without AC power for at least 12 hours and may still not have any now.
- Some key differences between the Japanese and the US plants:
 - We have symptom based EOPs. The Japanese still uses the pre-TMI event based EOPs.
 - We have Severe Accident Management Guidelines. The Japanese they do not.
 - We have the SBOs. The Japanese do not.
 - We have the B.5.b contingency pumps.

Moorman, James

From: Moorman, James
Sent: Friday, March 11, 2011 12:24 PM
To: Casto, Chuck
Subject: FW: Earthquake Update as of 11 am
Attachments: NPP_Japan_map2011.pdf

In case you haven't seen...

- a. Fukushima Daichi – A first level emergency was declared at 3:42 pm local on 3/11 due to a loss of offsite power and subsequent failure of EDGs which resulted in a station blackout. The loss of EDGs may have been due to a seawater cooling issue. A backup EDG was being brought in on a truck to provide power. An evacuation has been ordered out to 3 km, and residents have been told to shelter in place out to 10 km.

From: Brown, Frederick
Sent: Friday, March 11, 2011 12:20 PM
To: Cheok, Michael; Christensen, Harold; Croteau, Rick; Roberts, Darrell; Clifford, James; Jones, William; Kennedy, Kriss Miller, Chris; Moorman, James; Munday, Joel; OBrien, Kenneth; Reynolds, Steven; Shear, Gary; Pruett, Troy; Vegel, Anton; West, Steven; Wilson, Peter
Subject: FW: Earthquake Update as of 11 am

FYI – item 4c of most interest

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

Fred,

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

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

2. A magnitude 8.9 earthquake occurred approximately 80 km east of Onagawa NPP and 150 km NE of Fukushima Daichi. USGS believes the quake may have actually been a 7.9. 5 aftershocks measuring between 6.2 and 7.1 on the Richter Scale have been reported.
3. Based on stack monitoring, no radiation releases have occurred from any nuclear facilities.
4. All units that were operating at the time at the Onagawa, Fukushima Daichi, Fukushima Daini, and Tokai Daini sites (11 units in all) automatically shutdown when the earthquake hit at 2:45 pm local time on 3/11.

5. The following complications occurred:

- a. Onagawa – A small fire occurred in the turbine building and was extinguished.
- b. Fukushima Daichi – A small fire occurred in a service building and was subsequently extinguished.
- c. Fukushima Daichi – A first level emergency was declared at 3:42 pm local on 3/11 due to a loss of offsite power and subsequent failure of EDGs which resulted in a station blackout. The loss of EDGs may have been due to a seawater cooling issue. A backup EDG was being brought in on a truck to provide power. An evacuation has been ordered out to 3 km, and residents have been told to shelter in place out to 10 km.
- d. Fukushima Daini – RCIC is providing cooling to all 4 units that shutdown. In Unit 1, ECCS actuated due to a possible RCS leak into containment. The first level emergency declaration also applies to Fukushima Daini Unit 1.

Eric Thomas

U.S. Nuclear Regulatory Commission

NRR/DIRS/IOEB

OWFN-7E24

eric.thomas@nrc.gov

301-415-6772 (office)

(b)(6)

(mobile)

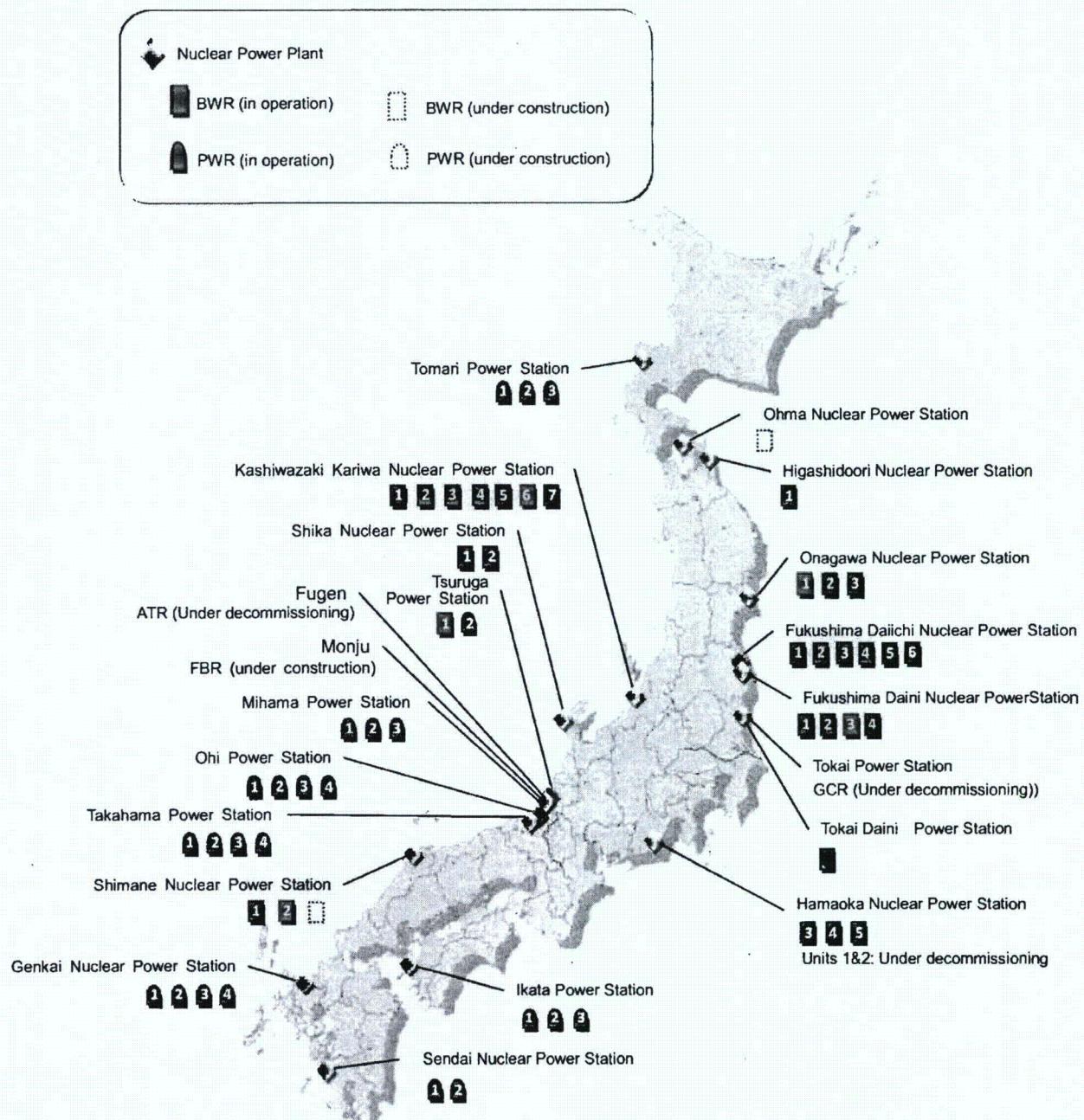


Fig. A-2 Locations of Nuclear Installations

Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Friday, March 11, 2011 9:20 PM
To: 'Hunt (?); 'Al Belisle'; 'Al Gibson'; 'Al Herdt'; 'Al Ignatonis'; 'Bill Kleinsorge'; 'Bill Miller'; 'Bill Tobin'; [REDACTED] (b)(6); 'Bob Wright'; 'Bob/Angie Martin'; 'Ed Girard'; 'Hellan Kreeger'; 'Hugh Dance'; [REDACTED] (b)(6); 'Jim Coley'; 'Jim Hufham'; 'Ken Clark'; 'Kerry Landis'; 'Milt Hunt (?); 'Nick Economos'; 'Phil Stohr'; 'Stu Ebneter'; 'Taylor'; 'Uryc'; 'Woodruff, Gena'
Cc:
Subject: Bob Newlin
Japanese nuke plants damaged

Even though most you no doubt have heard broadcast reports about the Japanese nuke plants being damaged by the earthquake, I thought it might be helpful to read a written summary. This is the only story I have seen that mentions the IAEA involvement and which has some other details. A BBC story said the units in question are BWRs. From reading that BBC account, I wondered why the emergency diesels failed to come on, but this story apparently answers that question by saying they were deluged by the tsunami waves, which raises questions about the plant's management not realizing they were vulnerable to such a contingency. I also wonder about a BWR's engineered pressure suppression system if it is necessary to open pressure relief valve and vent to the atmosphere. One detail in both this story and the one on the BBC web page really puzzles me—the statement quoting Hillary Clinton as saying U.S. Air Force planes are taking coolant to the Fukushima plant.

If I find a more definitive report, I'll send it along.

joe

Joe T. Gilliland

(b)(6)

Report: 2 Japanese plants struggling to cool radioactive material

By the CNN Wire Staff

March 11, 2011 8:35 p.m. EST

Tokyo (CNN) -- Reactors at two Japanese power plants can no longer cool radioactive substances inside, a prominent electric company said Saturday, according to a news agency report that added that atomic material may have leaked out of one of the plants. Citing the Tokyo Electric Power Co., Japan's Kyodo News Agency said that radioactive substances may have seeped out of the Fukushima Daiichi nuclear reactors, about 160 miles (260 kilometers) north of Tokyo.

Potentially dangerous problems in cooling radioactive material appear to have cropped up there, as well as at another of the Tokyo Electric Power Company's nuclear plants. Both plants are named Fukushima Daiichi and both have nuclear reactors, but they are separate facilities. Kyodo reported Saturday that the power company alerted authorities that the cooling system at three of the four units of one Fukushima Daini plant in northeastern Japan's Fukushima prefecture had failed.

Temperatures of that plant's coolant water was hotter than 100 degrees Celsius (212 degrees Fahrenheit), the news agency said, an indication that the cooling system wasn't working. Authorities subsequently ordered residents within 3 kilometers of that facility to evacuate, reported Kyodo. That plant was also added to the Japanese nuclear agency's emergency list, along with the other Fukushima Daiichi plant.

The news agency also reported Saturday that Japan's nuclear safety agency ordered the power company to release valves in that plant, as well as the other Fukushima Daiichi plant's "No. 1" reactor. The goal was to release some of the growing pressure inside the reactors tied to both atomic plants.

This comes amid Kyodo's reports, citing the same Japanese agency, that radiation levels were 1,000 times above normal in the control room of the "No. 1" reactor at one of the facilities. These and other issues caused by the 8.9-magnitude quake prompted authorities to order an evacuation of people within 2 to 3 kilometers (1.2 to 1.8 miles) of the plant, a move Edano called "precautionary." Early Saturday morning, Prime Minister Naoto Kan said that the evacuation order had been extended to affect those within 10 kilometers of the reactor.

Kan spoke to reporters shortly before setting off around 6 a.m. Saturday for the quake-ravaged region, including a visit to personally inspect the Fukushima Daiichi facility.

The evacuations notwithstanding, the nuclear safety agency asserted Saturday that the radiation at the plants did not pose an immediate threat to nearby residents' health, the Kyodo report said. These developments come a day after the quake ravaged the Asian nation, shutting down power to more than 1.2 million people and stoking fears of a crisis at the nation's atomic plants.

Most of the concern initially had centered around the first Fukushima Daiichi plant, which Chief Cabinet Secretary Yukio Edano told reporters on Friday "remains at a high temperature" because it "cannot cool down."

That plant and three others were shut down after the quake hit around 2:46 p.m. Friday local time, prompting authorities in Tokyo to declare a state of atomic power emergency.

Three of the Fukushima Daiichi reactor's six units shut down because of the earthquake, while operations at the other three were out due to "regular inspection," the Tokyo Electric Power Co. said in a news release Saturday.

Cham Dallas, a professor of disaster management at the University of Georgia, said that it wouldn't be surprising if reactors get "both thermally hot and radioactively hot" after the reactors were shut down.

"When they shut down reactors, it takes a long time for them to go down," Dallas said. "It does not necessarily mean radioactive material got out of the reactor."

Fire broke out at a second facility, the Onagawa plan. But crews put it out, according to the International Atomic Energy Agency.

Many hours later, shortly before 4 a.m. Saturday, a 6.6-magnitude aftershock struck near Nagano Prefecture on the west coast of the Japanese island of Honshu. Afterward, Kyodo reported that the nearby Kashiwazaki-Kariwa nuclear reactor continued to operate as normal. That quake was one of at least seven measuring magnitude 5.2 or stronger after the main quake, the U.S. Geological Survey said.

The trouble at one of the Fukushima Daiichi plants happened after its once operating reactors had been successfully shut down, Edano said.

The International Atomic Energy Agency said Friday on its website that the quake and tsunami knocked out the reactor's off-site power source, which is used to cool down the radioactive material inside. Then, the tsunami waves disabled the backup source -- diesel generators -- and authorities were working to get these operating.

Janie Eudy told CNN that her 52-year-old husband, Joe, was working at the plant and was injured by falling and shattering glass when the quake struck. As he and others were planning to evacuate, at their managers' orders, the tsunami waves struck and washed buildings from the nearby town past the plant.

"To me, it sounded like hell on earth," she said, adding her husband -- a native of Pineville, Louisiana -- ultimately escaped.

Eighty employees of General Electric Hitachi Nuclear Energy, including Eudy, who were at the plant are all safe, company spokesman Michael Tetuan said. He added that the firm is devising plans to evacuate those workers, who were subcontractors at the plant.

The IAEA, the international nuclear organization, said Friday that its officials are "in full response mode," as they worked with Japanese authorities and monitor the situation.

Using Air Force planes, the U.S. government has sent over coolant for the Fukushima plant, Secretary of State Hillary Clinton said Friday.

"We're really deeply involved in trying to do as much as we can on behalf of the Japanese and on behalf of U.S. citizens," she said.

The problems at the Fukushima Daiichi reactor are just one of many affecting power stations around the country, especially in northeast Japan.

The Tokyo Electric Power Co. said that its Fukushima Daini reactor was also shut down because of the quake, and seven thermal power stations and 24 hydro power stations that it operates also have been shut down. The Goi Thermal Power Station has since been restarted, as have hydro power stations in Niigata prefecture, the company said.

All these shutdowns had left more than 1.2 million people without power as of Saturday morning, according to the electric company.

James Acton, a physicist who examined the Kashiwazaki-Kariwa plant after a 2007 earthquake, told CNN that Japanese authorities are in a race to cool down the Fukushima reactor.

"If they can't restore power to the plant (and cool the reactor), then there's the possibility of some sort of core meltdown," he said.

Travick, Vanette

From: McCree, Victor
Sent: Friday, March 11, 2011 9:37 PM
To: Virgilio, Martin
Cc: Weber, Michael
Subject: NRC Communications on Japanese Earthquake

(b)(5)

Vic

This email is being sent from an NRC Blackberry device.

Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Friday, March 11, 2011 9:46 PM
To: 'Hunt (?); 'Al Belisle'; 'Al Gibson'; 'Al Herdt'; 'Al Ignatonis'; 'Bill Kleinsorge'; 'Bill Miller'; 'Bill Tobin'; 'Bob Wright'; 'Bob/Angie Martin'; 'Ed Girard'; 'Hellan Kreeger'; 'Hugh Dance'; [REDACTED] (b)(6); 'Jim Coley'; 'Jim Hufham'; [REDACTED] (b)(6); 'Ken Clark'; 'Kerry Landis'; 'Milt Hunt (?)'; 'Nick Economos'; 'Phil Stohr'; 'Stu Ebner'; 'Taylor'; 'Uryc'; 'Woodruff, Gena';
Cc: Bob Newlin
Subject: NY Times report on Japanese nukes

Here's a much better, nuanced story on the Japanese nukes by Matt Wald, an excellent reporter who has covered the NRC and the nuclear industry for many years. You will notice that he was able to get some quotes from a GE specialist and from David Lochbaum, the former NRC employee who did work (and may still) for the Union of Concerned Scientists, but who is knowledgeable about plant systems and who was respected by the people in NRC headquarters when I worked there, even if they disagreed with him about various things.

joe

Joe T. Gilliland

(b)(6)

The New York Times

Japan Orders Evacuation Near 2nd Nuclear Plant

By MATTHEW L. WALD

WASHINGTON — Japanese officials issued broad evacuation orders on Saturday for people living near two nuclear power plants whose cooling systems broke down as a result of the earthquake. The officials warned that small amounts of radioactive material were likely to leak from the plants.

The power plants, known as Daiichi and Daini and operated by Tokyo Electric Power, experienced critical failures of the backup generators needed to power cooling systems after the plants were shut down, as they were during the quake.

About 45,000 people were affected by the evacuation order at the Daiichi plant, where those living within a six-mile radius were told to leave. The evacuation of the second plant was for a one-mile radius because "there is no sign that radiation has been emitted outside," an official said.

Failure of the cooling systems allowed pressure to build up beyond the design capacity of the reactors. Small amounts of radioactive vapor were expected to be released into the atmosphere to prevent damage to the containment systems, safety officials said. They said that the levels of radiation were not large enough to threaten the health of people outside the plants, and that the evacuations had been ordered as a precaution.

Nuclear safety officials focused initially on the Daiichi plant. But by Saturday morning Japan had declared states of emergency for five reactors at the two plants, an escalation that added to worries about the safety of nuclear facilities in the quake-prone Japanese islands.

The Daiichi and Daini plants are 10 miles apart in Fukushima Prefecture, about 150 miles north of Tokyo and close to the quake's epicenter off the coast.

The plants' problems were described as serious but were far short of a catastrophic emergency like the partial core meltdown that occurred at the Three Mile Island plant near Harrisburg, Pa., in 1979.

A Japanese nuclear safety panel said the radiation levels were 1,000 times above normal in a reactor control room at the Daiichi plant. Some radioactive material had also seeped outside, with radiation levels near the main gate measured at eight times normal, NHK, Japan's public broadcaster, quoted nuclear safety officials as saying.

The safety officials said there was "no immediate health hazard" to residents from the leaks, which they described as "minute," and people were urged to stay calm.

The emergency at the Daiichi plant began shortly after the earthquake struck on Friday afternoon. Twenty hours later, the plant was operating in a battery-controlled cooling mode because the quake had knocked out the two main sources of the electrical power needed for safe shutdown.

Tokyo Electric said that by Saturday morning it had installed a mobile generator at Daiichi to ensure that the cooling system would continue operating even after reserve battery power was depleted. Even so, the company said it was considering a "controlled containment venting" in order to avoid an "uncontrolled rupture and damage" to the containment unit.

"With evacuation in place and the oceanbound wind, we can ensure the safety," a nuclear safety official, Yukio Edano, said at a news conference early Saturday.

It was not clear, however, how long the cooling systems could continue to function in emergency mode or when normal power supplies could be restored.

Two workers were reported missing at the Daiichi plant, but the company did not explain what might have happened to them.

A pump run by steam, designed to function in the absence of electricity, was adding water to the reactor vessel, and as that water boiled off, it was being released. Such water is usually only slightly radioactive, according to nuclear experts. As long as the fuel stays covered by water, it will remain intact, and the bulk of the radioactive material will stay inside. If the fuel is exposed, it can result in a meltdown.

The reactors at the two plants shut down when the earthquake began at 2:46 p.m. Friday. As designed, emergency diesel generators were started up to provide power for continued operations of the cooling functions.

But at the Daiichi plant, they ran for a little less than an hour and then stopped, possibly because the tsunami took out the diesel-powered generators. Its Reactor Unit 1 suffered a rise in pressure, leading operators to vent it.

During much of the early morning on Saturday, safety officials focused on getting emergency power supplies to the Daiichi plant to restore the normal cooling function.

Secretary of State Hillary Rodham Clinton, speaking in Washington, said that American military planes had already delivered "coolant." But American military officials indicated that while they were prepared to help Japan grapple with any problems related to its nuclear facilities, they had not been asked to do so.

Japan relies heavily on nuclear power, which generates just over one-third of the country's electricity. Its plants are designed to withstand earthquakes, which are common, but experts have long expressed concerns about safety standards, particularly if major quake hit close to a reactor.

One major concern is that while plant operators can quickly shut down a nuclear reactor, they cannot allow the cooling systems to stop working. Even after the plant's chain reaction is stopped, its fuel rods produce about six percent as much heat as they do when the plant is running. The production of heat drops off sharply in the following hours, but continued cooling is needed or the water will boil away and the fuel will melt, releasing the uranium fragments inside.

Heat from the nuclear fuel rods must be removed by water in a cooling system, but that requires power to run the pumps, align the valves in the pipes and run the instruments. The plant requires a continuous supply of electricity even after the reactor stops generating power.

With the steam-driven pump in operation, pressure valves on the reactor vessel would open automatically as pressure rose too high, or could be opened by operators. "It's not like they have a breach; there's no broken pipe venting steam," said Margaret E. Harding, a nuclear safety consultant who managed a team at General Electric, the reactors' designer, that analyzed pressure buildup in reactor containments. "You're getting pops of release valves for minutes, not hours, that take pressure back down."

Civilian power reactors are designed with emergency diesel generators to assure the ability to continue cooling even during a blackout. Many reactors have two, assuring redundancy; some have three, so that if one must be taken out of service for maintenance, the plant can still keep running.

It was not immediately clear how many diesel generators there are at Daiichi, but the operators reported earlier in the day that they were not working, prompting the evacuation.

Daiichi, which is formally known as Fukushima Daiichi Power Station, was designed by General Electric and entered commercial service in 1971. It was probably equipped to function for some hours without emergency diesel generators, said David Lochbaum, who worked at three American reactor complexes that use G.E. technology.

Mr. Lochbaum, who also worked as an instructor for the Nuclear Regulatory Commission on G.E. reactors, said that such reactors were equipped to ride out interruptions in electrical power by using pumps that could be powered by steam, which would still be available in case of electric power failure. Valves can be opened by motors that run off batteries, he said. Plants as old as Fukushima Daiichi 1 generally have batteries that are large enough to operate for four hours, he said.

After that, he said, the heat production in the core is still substantial but has been reduced. The heat would boil away the cooling water, raising pressure in the reactor vessel, until automatic relief valves opened to let out some of the steam. Then the valves would close and the pressure would start building again.

If the cooling system remains inoperative for many hours, the water will eventually boil away, he said, and the fuel will begin to melt. That is what happened at Three Mile Island. In that case, the causes were mechanical failure, operator error and poor design, according to government investigators.

Travick, Vanette

From: McCree, Victor
Sent: Friday, March 11, 2011 9:52 PM
To: Collins, Elmo; Satorius, Mark; Dean, Bill
Subject: Japan Earthquake Media Comms

(b)(5)

Vic

This email is being sent from an NRC Blackberry device.

Sabisch, Andrew

From: Morris, Jim [Jim.Morris@duke-energy.com]
Sent: Saturday, March 12, 2011 8:58 AM
To: Gillespie, T P Jr; Batson, Scott L; Ray, Tom; Bohlmann, Joel E; Waldrep, Benjamin C; Pitesa, Bill; Repko, Regis T; Jamil, Dhiaa M; Sabisch, Andrew
Subject: Re: Japanese BWR Info

Isolation condenser is on the oldest BWRs (e.g., Nine Mile unit 1). It sits above the reactor and is an emergency cooling heat exchanger that relies on natural circulation to cool the reactor. RCIC (reactor coolant isolation cooling ?) provides forced emergency cooling using a heat exchanger and a pump like a PWR steam driven S/G aux feed pump.

From: Gillespie, T P Jr
Sent: Saturday, March 12, 2011 08:49 AM
To: Batson, Scott L; Ray, Tom; Bohlmann, Joel E; Waldrep, Benjamin C; Pitesa, Bill; Repko, Regis T; Morris, Jim; Jamil, Dhiaa M; Sabisch, Andrew <Andrew.Sabisch@nrc.gov>
Subject: Japanese BWR Info

Quick Update:

- The secondary containment is breached, it appears the primary containment is challenged
- They were manually venting the primary containment manually (no power) when the hydrogen explosion occurred and breached the secondary containment.
- The operators operating the vent were apparently getting 10 rem per jump, so there must have failed a good bit of fuel.

From: Gillespie, T P Jr
Sent: Saturday, March 12, 2011 8:34 AM
To: Batson, Scott L; Ray, Tom; Bohlmann, Joel E; Waldrep, Benjamin C; Pitesa, Bill; Repko, Regis T; Morris, Jim; Jamil, Dhiaa M; Sabisch, Andrew
Subject: Japanese BWR Info

I have been reaching out to some of my BWR contacts to gain a greater understanding of the events in Japan. You may already have this info, but if not, the following bullets may help:

- BWR 'reactor buildings' are the equivalent to our auxiliary building
- The auxiliary building surrounds the containment structure, which houses the reactor.
- One plant is an Isocondenser plant and the other is an RCIC plant. I am not exactly sure what the differences between the two are.
- They now believe that the Reactor Building was destroyed by Hydrogen explosion.
- Vessel is still intact.
- Operators performing the venting operations are receiving 10 rem per venting evolution.
- They are now putting sea water into the building to submerge the vessel.
- NRC is communicating with GE directly.
- Approximately 1 hour after the loss of offsite power, the emergency diesel generators stopped.
- The apparent cause was that their bulk storage tanks are above ground and were swept away in the tsunami and the EDGs ran out of fuel.
- The two plants sat without AC power for at least 12 hours and may still not have any now.
- Some key differences between the Japanese and the US plants:
 - o We have symptom based EOPs. The Japanese still uses the pre-TMI event based EOPs.

- We have Severe Accident Management Guidelines. The Japanese they do not.
- We have the SBOs. The Japanese do not.
- We have the B.5.b contingency pumps.

Munday, Joel

From: Munday, Joel
Sent: Saturday, March 12, 2011 11:06 AM
To: Bartley, Jonathan
Subject: Re: Japanese BWR Info

No this is more info than I had. According to CNN it sounds like they are flooding containment, which is good but last ditch effort. 10 rem per vent is confusing. I assume it is all local manual action though. Hopefully the containment holds but even that will need some means to vent decay heat. If I hear something will pass along.

This email is being sent from an NRC Blackberry device.

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

From: Bartley, Jonathan
To: Wert, Leonard; McCree, Victor; Croteau, Rick; Jones, William; Munday, Joel; Christensen, Harold; Casto, Chuck; Moorman, James; Gody, Tony
Sent: Sat Mar 12 11:00:26 2011
Subject: Fw: Japanese BWR Info

FYI. Some info from Duke.

This email is being sent from an NRC mobile device.

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

From: Sabisch, Andrew
To: Bartley, Jonathan
Sent: Sat Mar 12 08:43:34 2011
Subject: FW: Japanese BWR Info

Jonathan,

This sounds pretty grim if in fact true it would sound that one of the Japanese reactors has suffered a major failure and resulting release from core activity. DO you have any more information on the status of the plants over there?

Andy

=====

Andrew T. Sabisch
U.S. Nuclear Regulatory Commission
Senior Resident Inspector
Oconee Nuclear Station
7812B Rochester Highway, Seneca, SC 29672

(O) 864-873-3001 / (C) [REDACTED] (b)(6) / (H) [REDACTED] (b)(6)

From: Gillespie, T P Jr [T.Gillespie@duke-energy.com]

Sent: Saturday, March 12, 2011 8:34 AM

To: Batson, Scott L; Ray, Tom; Bohlmann, Joel E; Waldrep, Benjamin C; Pitesa, Bill; Repko, Regis T; Morris, Jim; Jamil, Dhiaa M; Sabisch, Andrew
Subject: Japanese BWR Info

I have been reaching out to some of my BWR contacts to gain a greater understanding of the events in Japan. You may already have this info, but if not, the following bullets may help:

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 - o We have the SBOs. The Japanese do not.
 - o We have the B.5.b contingency pumps.

Travick, Vanette

From: McCree, Victor
Sent: Saturday, March 12, 2011 11:15 AM
To: Dean, Bill; Collins, Elmo; Satorius, Mark
Subject: Re: Succession planning

Ok, sounds good.

By the way, I just received the following information which was communicated to Duke Power folks from GE regarding the ongoing event at Fukishima Daichi:

- They now believe that the Reactor Building was destroyed by a Hydrogen explosion.
- Vessel is still intact.
- Operators performing the venting operations are receiving 10 rem per venting evolution.
- They are now putting sea water into the building to submerge the vessel.
- NRC is communicating with GE directly.
- Approximately 1 hour after the loss of offsite power, the emergency diesel generators stopped.
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 - o We have the B.5.b contingency pumps.

Vic

This email is being sent from an NRC Blackberry device.

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

From: Dean, Bill
To: McCree, Victor; Collins, Elmo; Satorius, Mark
Sent: Sat Mar 12 11:06:56 2011
Subject: Re: Succession planning

Since mark is out of country starting Monday, it will just be the three amigos. Maybe a conf call next week? Tu or wed would work for me.

Bill Dean

Regional Administrator
Region I, USNRC
Sent from NRC BlackBerry

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

From: McCree, Victor
To: Collins, Elmo; Dean, Bill; Satorius, Mark
Sent: Sat Mar 12 11:01:46 2011
Subject: Re: Succession planning

I'd love to do that..., but, unfortunatel), I'll be arriving late Tuesday night, following a public meeting at Crystal River.

Vic

This email is being sent from an NRC Blackberry device.

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

From: Collins, Elmo
To: Dean, Bill; McCree, Victor; Satorius, Mark
Sent: Sat Mar 12 10:59:05 2011
Subject: Re: Succession planning

I recall that we planned to put our heads together on the afternoon of 3/22 - if we still want to do this - I'll reserve a room Elmo

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

From: Dean, Bill
To: McCree, Victor; Collins, Elmo; Satorius, Mark
Sent: Fri Mar 11 22:36:42 2011
Subject: Re: Succession planning

Ok. We need some input re: what sort of changes we would want to make. I will ask johanna for stats over the last few years.

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

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

From: McCree, Victor
To: Dean, Bill; Collins, Elmo; Satorius, Mark
Sent: Fri Mar 11 22:21:17 2011
Subject: Re: Succession planning

Yes - I'm still energized on the subject - and believe that we should discuss it at the meeting.

Vic

This email is being sent from an NRC Blackberry device.

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

From: Dean, Bill
To: Collins, Elmo; Satorius, Mark; McCree, Victor
Sent: Fri Mar 11 15:45:07 2011

Subject: Succession planning

A couple months ago we had indicated to Marty that we wanted a slot on the succession planning agenda to discuss [REDACTED] (b)(5). Is there still energy around this? If so, I will ask for some time on the agenda and try to develop a strawman for us to chew on.

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

Travick, Vanette

From: McCree, Victor
Sent: Saturday, March 12, 2011 1:24 PM
To: Virgilio, Martin
Subject: Re: 1 p.m. call today for Japanese nuclear update

Ok, got it, thanks. Hang in there!

Vic

This email is being sent from an NRC Blackberry device.

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

From: Virgilio, Martin
To: McCree, Victor
Sent: Sat Mar 12 13:22:43 2011
Subject: Re: 1 p.m. call today for Japanese nuclear update

Vic

Tony P and I spoke he did not extend the invite. We shared info and agreed to talk periodically.

Marty

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

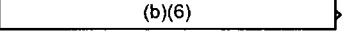
From: McCree, Victor
To: HOO Hoc
Cc: Virgilio, Martin; Borchardt, Bill
Sent: Sat Mar 12 10:53:45 2011
Subject: Fw: 1 p.m. call today for Japanese nuclear update

Bill Huffman, HOO - as we discussed, please give this to Marty Virgilio.

Thanks, Vic

This email is being sent from an NRC Blackberry device.

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

From: Scarola, Jim < (b)(6)>
To: McCree, Victor
Sent: Sat Mar 12 10:28:12 2011
Subject: FW: 1 p.m. call today for Japanese nuclear update

FYI -as discussed.

Jim Scarola

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

From: STEWARD, Lisa [mailto:lisa@nei.org]
Sent: Saturday, March 12, 2011 09:27 AM Eastern Standard Time
To: Anthony Alexander; mark_ayers@bctd.org; brew.barron@cengllc.com; wbaxter@ameren.com; donald.brandt@pinnaclewest.com; Dr. Aris Candris; aicathca@bechtel.com; david.christian@dom.com; christopher.crane@exeloncorp.com; Anthony Earley; Audeen Fentiman;

FERTEL, Marvin; jack.fuller@ge.com; jfutcher@bechtel.com; Gary Gates; Gerald Grandey; ehalpin@stpegs.com; lew.hay@NextEraEnergy.com; ghempfling@curtisswright.com; ed_hill@ibew.org; William P. Hite; Johnson, Bill; rjuzaitis@tamu.edu; Jack Keenan; Richard.Kelly@xcelenergy.com; Thomas D. Kilgore; Bill Levis; ron.litzinger@sce.com; ganpat.mani@converdyn.com; John C. McClure; Mike McMahon; jhmiller@southernco.com; James H. Miller; Michael Morris; cmmowry@babcock.com; George Nash; clarence.ray@shawgrp.com; Caroline.Reda@ge.com; mereddemann@energy-northwest.com; Mike Rencheck; Keith Roe; James Rogers; Kirk Schnoebelen; k.singh@holtec.com; Richard Smith; masunse@wcnoc.com; William Timmerman; George Turner; chris.tye@fluor.com; John Welch; Alan Wendorf; kiyoshi_yamauchi@mhi.co.jp; John Young; jarchie@scana.com; dbannister@oppd.com; brew.barron@cengllc.com; jeffrey.benjamin@ch2m.com; sbyrne@scana.com; kcole@nacintl.com; jtch@pge.com; rcoward@mpr.com; davisjm3@dteenergy.com; pete.dietrich@sce.com; randall.edington@aps.com; ferlanej@westinghouse.com; rafael.flores@luminant.com; thomas.franch@areva.com; jtgasser@southernco.com; ehalpin@stpegs.com; david.heacock@dom.com; aheflin@ameren.com; jherron@entergy.com; dhiaa.jamil@duke-energy.com; thomas.joyce@pseg.com; dennis.koehl@xenuclear.com; maria.korsnick@cengllc.com; kevin.lagasse@ge.com; jhlash@firstenergycorp.com; michel.maschi@edf.com; Mike McMahon; Jeff Merrifield; gary.mignogna@areva.com; tom.mitchell@opg.com; dmodeen@epri.com; john.mulligan@urs.com; mano.nazar@fpl.com; bjograd@nppd.com; Pierre Oneid; michael.pacilio@exeloncorp.com; charles.pardee@exeloncorp.com; hphillips@nmlneil.com; cwrau@bechtel.com; tsrausch@pplweb.com; breilly@bechtel.com; Mike Rencheck; brian.l.renwick@sargentlundy.com; rsanacore@amnucins.com; bjsawatzke@energy-northwest.com; Scarola, Jim; masunse@wcnoc.com; pdswafford@tva.gov; chris.tye@fluor.com; ljweber@aep.com; websterwe@inpo.org; nwilmshurst@epri.com
Subject: 1 p.m. call today for Japanese nuclear update

There will be a conference call today at 1 p.m. (Eastern) for NEI's Board of Directors and the Nuclear Strategic Issues Advisory Committee to provide an update on the situation of the nuclear plants in Japan. The INPO Board of Directors will also participate on this call.

Scott Peterson, NEI's EP Director, will lead the call.

The call-in number is 719.955.1361. The pass code is (b)(6). Due to the large number of callers expected on this call, please MUTE YOUR PHONE DURING THE CALL.

Thank you.

Lisa Steward

Senior Director and Assistant Corporate Secretary

Nuclear Energy Institute
1776 I Street, NW, Suite 400
Washington, DC 20006
[www.nei.org <http://www.nei.org/>](http://www.nei.org/)

P: 202.739.8006
F: 202.223.4258
E: lis@nei.org <mailto:lis@nei.org>

[<http://www.nei.org>](http://www.nei.org)

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An official energy sponsor of the Washington Capitals [<http://www.nei.org/caps>](http://www.nei.org/caps)

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Sent through mail.messaging.microsoft.com

Woodruff, Gena

From: Maier, Bill
Sent: Saturday, March 12, 2011 2:24 PM
To: LIA04 Hoc
Cc: Virgilio, Rosetta; Turtur, Richard; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena; Barker, Allan; Logaras, Harral; Browder, Rachel; Erickson, Randy; Janda, Donna; Orendi, Monica; Lynch, James
Subject: Need to get a Govt Liaison Counterpart Link established with the following individuals on:
Importance: High

ALL RSLOs
ALL RSAOs
FSME ILB
Liaison Team at HQs

There is a need to get a uniform message out to all states. This needs to happen NOW!

Bill Maier
Region IV RSLO

Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Saturday, March 12, 2011 12:34 PM
To: 'Hunt (?); 'Al Belisle'; 'Al Gibson'; 'Al Herdt'; 'Al Ignatonis'; 'Bill Kleinsorge'; 'Bill Miller'; 'Bill Tobin'; [REDACTED] (b)(6); 'Bob Wright'; 'Bob/Angie Martin'; 'Ed Girard'; 'Hellan Kreeger'; 'Hugh Dance'; [REDACTED] (b)(6); 'Jim Coley'; 'Jim Hufham'; [REDACTED] (b)(6); 'Ken Clark'; 'Kerry Landis'; 'Milt Hunt (?); 'Nick Economos'; 'Phil Stohr'; 'Taylor'; 'Uryc'; Woodruff, Gena
Cc: Bob Newlin
Subject: New CNN story

Here's a new CNN story with some updates on the damaged Japanese nuclear units—flooding one damaged core with sea water, distributing iodine tablets to the populace, etc.

joe

Joe T. Gilliland

[REDACTED]
(b)(6)

World watches nervously as Japan struggles with nuclear reactors

(CNN) -- People across Japan and the world watched nervously Saturday as crews at a nuclear plant struck by an earthquake, a tsunami and then an explosion in the span of 36 hours resorted to drowning a feverish nuclear reactor in sea water in hopes of preventing a meltdown with potentially catastrophic implications.

An explosion that sent white smoke rising above the Fukushima Daiichi plant Saturday afternoon buckled the walls of a concrete building that surrounded one of the plant's nuclear reactors, but did not damage the reactor itself, Chief Cabinet Secretary Yukio Edano told reporters.

The explosion was caused, he said, by a failure in a pumping system as workers tried to prevent the reactor's temperature from racing out of control.

While Edano said radiation levels appeared to be falling after the explosion, the government nevertheless ordered an expanded evacuation of the area around the Daiichi plant, as well as a second facility where the cooling system had failed -- the Fukushima Daini plant.

Although government officials painted a hopeful picture, saying crews had begun implementing a backup plan to flood the reactor containment structure with sea water, a nuclear expert said the situation is dire even if it is already under control.

"If this accident stops right now it will already be one of the three worst accidents we have ever had at a nuclear power plant in the history of nuclear power," said Joseph Cirincione, an expert on nuclear materials and president of the U.S.-based Ploughshares Fund, a firm involved in security and peace funding.

If the effort to cool the nuclear fuel inside the reactor fails completely -- a scenario experts who have spoken to CNN say is unlikely -- the resulting release of radiation could cause enormous damage to the plant or release radiation into the atmosphere or water. That could lead to widespread cancer and other health problems, experts say.

Tens of thousands of people live within the evacuation zone around the Daiichi plant, which authorities expanded to 20 kilometers (12.6 miles) from the earlier 10 kilometer radius following the explosion. More than 51,000 of those live within 10 kilometers, according to Japan's Nuclear and Industrial Safety Agency.

A total of more than 83,000 live within 10 kilometers of the two plants under evacuation orders, the agency said.

Precise figures for the 20-kilometer zone were not immediately available.

Japanese authorities appeared to be preparing for the possibility of a nuclear release. Japan public broadcaster NHK reported the country's defense ministry had sent a unit that specializes in dealing with radioactive contamination to a command post near the stricken plant.

The government was also preparing to distribute iodine tablets to residents, the IAEA said. Iodine is commonly prescribed to help prevent the thyroid gland from taking in too much radioactivity, according to the U.S. Environmental Protection Agency website.

In all, the earthquake prompted the automatic shutdown of 10 reactors at three nuclear plants near the quake site, Japan's nuclear agency said. Problems have been reported at all three plants, although the fire reported Friday at the Onagawa nuclear plant was quickly extinguished and it has not been a focus of concern since.

At the Fukushima Daini plant, problems had been detected with the pressure and cooling systems at three of the four reactors that shut down, but plant owner Tokyo Electric Power Company reported all of the reactors were stable on Saturday.

Japan's nuclear agency said there is a strong possibility that the radioactive cesium the monitors detected was from the melting of a fuel rod at the plant, adding that engineers were continuing to cool the fuel rods by pumping water around them. Cesium is a byproduct of the nuclear fission process that occurs in nuclear plants.

A spokesman for the agency said atomic material had seeped out of one of the five

nuclear reactors at the Daiichi plant, located about 160 miles (260 kilometers) north of Tokyo.

The problems at the Fukushima Daiichi plant began with the 8.9-magnitude quake that struck Friday off the eastern shore of Miyagi Prefecture. The quake forced the automatic shutdown of the plant's nuclear reactors and knocked out the main cooling system, according to the country's nuclear agency.

A tsunami wave resulting from the quake then washed over the site, knocking out backup generators that pumped water into the reactor containment unit to keep the nuclear fuel cool, according to the agency.

As pressure and temperatures rose inside the reactors at the Daiichi and Daini plants, authorities ordered the release of valves at the plants -- a move that experts said was likely done to release growing pressure inside as high temperatures caused water to boil and produce excess steam.

As crews were working to pump additional water into the reactor containment unit to bring the temperature down, the pumping system failed, Edano said, causing an explosion that injured four workers and brought down the walls of the building containing the reactor.

The team then reverted to a plan to flood the reactor with sea water, which Edano said would bring the temperature down to acceptable levels. That work began Saturday night and was expected to take two days, Edano said.

Before Edano's announcement, Malcolm Grimston, associate fellow for energy, environment and development at London's Chatham House, said the explosion indicated that "it's clearly a serious situation, but that in itself does not necessarily mean major (nuclear) contamination."

"This is a situation that has the potential for a nuclear catastrophe. It's basically a race against time, because what has happened is that plant operators have not been able to cool down the core of at least two reactors," said Robert Alvarez, a senior scholar at the Institute for Policy Studies in Washington.

The situation ranks as the third most serious nuclear accident on record, Cirincione said. He said only the 1971 partial meltdown of a reactor core at the Three Mile Island nuclear plant in Pennsylvania and the 1986 Chernobyl disaster in the Soviet Union were worse.

If damage from the explosions or continued aftershocks hitting Japan have compromised the structural integrity of the reactor complex, it could make efforts to cool the reactors more difficult, Cirincione said.

"The big unanswered question here is whether there's structural damage to this facility now," he said.

Janie Eudy told CNN that her 52-year-old husband, Joe, was working at the Fukushima Daini plant and was injured by falling and shattering glass when the quake struck. As he and others were planning to evacuate, at their managers' orders, the tsunami waves struck and washed buildings from the nearby town past the plant.

"To me, it sounded like hell on earth," she said, adding her husband -- a native of Pineville, Louisiana -- ultimately escaped.

Utility officials reported Saturday that more than 3 million households were without power, NHK reported, and that power shortages may occur due to damage at the company's facilities.

"We kindly ask our customers to cooperate with us in reducing usage of power," Tokyo Electric Power Company said.



Travick, Vanette

From: Casto, Chuck
Sent: Saturday, March 12, 2011 12:41 PM
To: Bernhard, Rudolph
Subject: Fw: Japanese BWR Info

This email is being sent from an NRC mobile device.

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

From: McCree, Victor
To: Bartley, Jonathan; Wert, Leonard; Croteau, Rick; Jones, William; Munday, Joel; Christensen, Harold; Casto, Chuck; Moorman, James; Gody, Tony; Cobey, Eugene; Yerokun, Jimi; Ogle, Chuck
Cc: Coleman, Judy; Trent, Glenn
Sent: Sat Mar 12 11:08:53 2011
Subject: Re: Japanese BWR Info

Ok, got it, thanks. As you can readily surmise, this is an extraordinary event with significant consequences.

FYI, there are a series of NRC internal and NRC/industry status and alignment phone calls occurring today, beginning at noon. I'll summarize the results in an email to you later today.

Vic

This email is being sent from an NRC Blackberry device.

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

From: Bartley, Jonathan
To: Wert, Leonard; McCree, Victor; Croteau, Rick; Jones, William; Munday, Joel; Christensen, Harold; Casto, Chuck; Moorman, James; Gody, Tony
Sent: Sat Mar 12 11:00:26 2011
Subject: Fw: Japanese BWR Info

FYI. Some info from Duke.

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From: Sabisch, Andrew
To: Bartley, Jonathan
Sent: Sat Mar 12 08:43:34 2011
Subject: FW: Japanese BWR Info

Jonathan,

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Andy

=====

Andrew T. Sabisch
U.S. Nuclear Regulatory Commission
Senior Resident Inspector
Oconee Nuclear Station
7812B Rochester Highway, Seneca, SC 29672
(O) 864-873-3001 / (C) [REDACTED] / (H) [REDACTED]

From: Gillespie, T P Jr [T.Gillespie@duke-energy.com]
Sent: Saturday, March 12, 2011 8:34 AM
To: Batson, Scott L; Ray, Tom; Bohlmann, Joel E; Waldrep, Benjamin C; Pitesa, Bill; Repko, Regis T; Morris, Jim; Jamil, Dhiaa M; Sabisch, Andrew
Subject: Japanese BWR Info

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 - o We have the SBOs. The Japanese do not.
 - o We have the B.5.b contingency pumps.

Woodruff, Gena

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



NRC NEWS

U.S. NUCLEAR REGULATORY COMMISSION

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

No. 11-045

March 12, 2011

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

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

###

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

Woodruff, Gena

From: LIA07 Hoc
Sent: Saturday, March 12, 2011 2:32 PM
To: Miller, Chris; Anderson, Joseph; Kahler, Robert; Williams, Kevin; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena; Logaras, Harral; Barker, Allan
Subject: 1300 EST (March 12, 2011) USNRC Earthquake/Tsunami SitRep
Attachments: USNRC Japan SitRep.031211.1330EST.docx

Attached, please find a 1330 EST situation report from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami on March 12, 2011. **Please note that this information is only being shared within the federal family.**

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

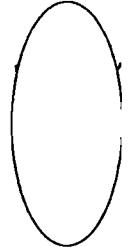
-Sara

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)

~~OFFICIAL USE ONLY~~

Department of Homeland Security
Incident Management
DHS Initial Situation Report

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|---|---|---|--|-----------|---|-----------|-------------------------|-----------|---|-----------|---|-----------|--|-----------|---|-----------|---|-----------|--|-----------|---------------------|-----------|--|
| From: | US Nuclear Regulatory Commission | | | | | | | | | | | | | | | | | | | | | | | | |
| To: | DHS National Operations Center Watch Officer | | | | | | | | | | | | | | | | | | | | | | | | |
| SITREP No: | 3 | | | | | | | | | | | | | | | | | | | | | | | | |
| Date/Time (ET): | 03/12/2011, 1330EST | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Incident Type | Earthquake and Tsunami | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Location of Incident | Japan | | | | | | | | | | | | | | | | | | | | | | | | |
| 3. Date/Time of Incident (ET) | Press reports date 3/11/11 0146 (EST) loss of power at Fukushima Daiichi Unit 1,2, and 3 emergency. Unit 4, 5, and 6 shutdown. Unit 1, 2, and 3 emergency diesel generators (EDG) failed after tsunami, resulting in complete loss of Alternating Current for all three units. On 3/12/11, 0340 (EST), explosion on site is confirmed. On 3/12/11, 0620 (EST) Fukushima Daiichi Unit 1 started injection of sea water, followed by boric acid. | | | | | | | | | | | | | | | | | | | | | | | | |
| 4. Incident Site Weather Conditions | Wind direction from 233 degree speed less than 3.9 m/sec stability class E, no precipitation. | | | | | | | | | | | | | | | | | | | | | | | | |
| 5. Threat/Causal Factors | Earthquakes and tsunami leading to possible loss of emergency cooling. | | | | | | | | | | | | | | | | | | | | | | | | |
| 6. Initial On-Scene Status/Capabilities Assessment | <table border="1"><tr><td>A.</td><td>Casualties (e.g., dead, hospitalized) None available.</td></tr><tr><td>B.</td><td>Property Damage - Nuclear reactor. Loss of emergency power/loss of emergency cooling. Apparent core damage based on reported radiation levels. Media reports of explosion may indicate possible loss of secondary containment, outer building breached (unverified).</td></tr><tr><td>C.</td><td>Infrastructure Affected – Emergency diesel fuel tanks and piping.</td></tr><tr><td>D.</td><td>Terrorism Nexus – None.</td></tr><tr><td>E.</td><td>General Population Status – Evacuated <10km, no power, at Fukushima Daini. Evacuation <20km at Fukushima Daiichi. Japanese government issuing KI.</td></tr><tr><td>F.</td><td>Weather Effects – Wind direction is out to sea.</td></tr><tr><td>G.</td><td>Extent of Contamination – Release in progress. Magnitude and extent unknown.</td></tr><tr><td>H.</td><td>On-Scene/En Route Capabilities – 2 NRC representatives enroute with USAID team.</td></tr><tr><td>I.</td><td>Requests for Additional Support – None known.</td></tr><tr><td>J.</td><td>Possible Cascading Effects – Release of radiation. Population evacuation at Fukushima Daiichi within 20km radius. Population evacuation at Fukushima Daini within 10km radius. If containment failure, impacts on other unit recovery personnel.</td></tr><tr><td>K.</td><td>WMD Effects – none.</td></tr><tr><td>L.</td><td>Indications of Follow-on Incidents – Earthquakes near Niigata Prefect.</td></tr></table> | A. | Casualties (e.g., dead, hospitalized) None available. | B. | Property Damage - Nuclear reactor. Loss of emergency power/loss of emergency cooling. Apparent core damage based on reported radiation levels. Media reports of explosion may indicate possible loss of secondary containment, outer building breached (unverified). | C. | Infrastructure Affected – Emergency diesel fuel tanks and piping. | D. | Terrorism Nexus – None. | E. | General Population Status – Evacuated <10km, no power, at Fukushima Daini. Evacuation <20km at Fukushima Daiichi. Japanese government issuing KI. | F. | Weather Effects – Wind direction is out to sea. | G. | Extent of Contamination – Release in progress. Magnitude and extent unknown. | H. | On-Scene/En Route Capabilities – 2 NRC representatives enroute with USAID team. | I. | Requests for Additional Support – None known. | J. | Possible Cascading Effects – Release of radiation. Population evacuation at Fukushima Daiichi within 20km radius. Population evacuation at Fukushima Daini within 10km radius. If containment failure, impacts on other unit recovery personnel. | K. | WMD Effects – none. | L. | Indications of Follow-on Incidents – Earthquakes near Niigata Prefect. |
| A. | Casualties (e.g., dead, hospitalized) None available. | | | | | | | | | | | | | | | | | | | | | | | | |
| B. | Property Damage - Nuclear reactor. Loss of emergency power/loss of emergency cooling. Apparent core damage based on reported radiation levels. Media reports of explosion may indicate possible loss of secondary containment, outer building breached (unverified). | | | | | | | | | | | | | | | | | | | | | | | | |
| C. | Infrastructure Affected – Emergency diesel fuel tanks and piping. | | | | | | | | | | | | | | | | | | | | | | | | |
| D. | Terrorism Nexus – None. | | | | | | | | | | | | | | | | | | | | | | | | |
| E. | General Population Status – Evacuated <10km, no power, at Fukushima Daini. Evacuation <20km at Fukushima Daiichi. Japanese government issuing KI. | | | | | | | | | | | | | | | | | | | | | | | | |
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| K. | WMD Effects – none. | | | | | | | | | | | | | | | | | | | | | | | | |
| L. | Indications of Follow-on Incidents – Earthquakes near Niigata Prefect. | | | | | | | | | | | | | | | | | | | | | | | | |
| 6. Initial Response (e.g., on-scene assets, EOCs activated, local/regional response, etc.) | <table border="1"><tr><td>A. Local – Japan issued state of emergency.</td></tr><tr><td>B. State – None.</td></tr><tr><td>C. Federal – NRC Headquarters EOCs activated.</td></tr></table> | A. Local – Japan issued state of emergency. | B. State – None. | C. Federal – NRC Headquarters EOCs activated. | | | | | | | | | | | | | | | | | | | | | |
| A. Local – Japan issued state of emergency. | | | | | | | | | | | | | | | | | | | | | | | | | |
| B. State – None. | | | | | | | | | | | | | | | | | | | | | | | | | |
| C. Federal – NRC Headquarters EOCs activated. | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7. Federal/State/Local/International/Private Sector Notifications | – DHS, IAEA, DOE, FEMA, DOD (NAVSEA08, CNIC HQ, DTRA). | | | | | | | | | | | | | | | | | | | | | | | | |
| 8. COOP/COG Actions Anticipated | – None. | | | | | | | | | | | | | | | | | | | | | | | | |
| 9. National Capitol Region Impact | – None. | | | | | | | | | | | | | | | | | | | | | | | | |
| 10. International Impact | – Japan. | | | | | | | | | | | | | | | | | | | | | | | | |
| 11. DHS Initial Actions/Intentions | Press releases, White House notifications. | | | | | | | | | | | | | | | | | | | | | | | | |
| 12. Additional Remarks | – None. | | | | | | | | | | | | | | | | | | | | | | | | |
| 13. Prepared By: | Sara Mroz Contact Information: LIA07.Hoc@nrc.gov; 301-816-5186 | | | | | | | | | | | | | | | | | | | | | | | | |
| 14. Approved By: | Executive Team | | | | | | | | | | | | | | | | | | | | | | | | |



Woodruff, Gena

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

Travick, Vanette

From: McCree, Victor
Sent: Saturday, March 12, 2011 6:45 PM
To: R2SR_MANAGER
Subject: Fw: 1830 EST (March 12, 2011) USNRC Earthquake/Tsunami SitRep
Attachments: USNRC Earthquake-Tsunami Update.031211.1830EST.docx

Attached, FYI, is the most up to date information on the earthquake/tsunami impact on nuclear facilities in Japan and the U.S.

Vic

This email is being sent from an NRC Blackberry device.

From: LIA07 Hoc

To: (b)(6)

(b)(6)

Cc: HOO Hoc

Sent: Sat Mar 12 18:40:32 2011

Subject: 1830 EST (March 12, 2011) USNRC Earthquake/Tsunami SitRep

Attached, please find a 1830 EST situation report from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami on March 12, 2011.

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

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)

Woodruff, Gena

From: LIA04 Hoc
Sent: Saturday, March 12, 2011 8:03 PM
To: McNamara, Nancy
Cc: Turtl, Richard; Barker, Allan; Trojanowski, Robert; Tifft, Doug; Maier, Bill; Browder, Rachel; Logaras, Harral; Woodruff, Gena
Subject: RE: Questions from PA

Thanks for the Q from PA, Nancy but we do not have and will not get into that level of info.

Recognize that we have offered Japan assistance, but we have not heard from them. Most of the info we are receiving is from news releases and the Federal family

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

From: McNamara, Nancy
Sent: Saturday, March 12, 2011 7:23 PM
To: LIA04 Hoc; Virgilio, Rosetta
Subject: Questions from PA

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

From: Allard, David [<mailto:djallard@state.pa.us>]
Sent: Saturday, March 12, 2011 6:28 PM
To: McNamara, Nancy
Cc: Tifft, Doug; Janati, Rich
Subject: RE: Getting Information for our States

Nancy.

Really appreciate the interface here.

I'm sure Rich will want any known info on plant conditions... I do too. But, I'm more interested in radioactivity releases, estimated Ci (Bq), FP mix, time of release, and if significant [which we doubt], what concentrations NARAC would predict across the States - and when?

Thnx,

- Dave

David J. Allard, CHP, Director
PA Dept. of Environmental Protection
Bureau of Radiation Protection
P.O. Box 8469
Harrisburg, PA 17105-8469

Tel: 717-787-2480
Fax: 717-783-8965
E-mail: djallard@state.pa.us
<http://www.dep.state.pa.us/brp/>

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Woodruff, Gena

From: LIA04 Hoc
Sent: Saturday, March 12, 2011 8:18 PM
To: McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena; Barker, Allan; Logaras, Harral; Maier, Bill; Browder, Rachel; Turtl, Richard; Thaggard, Mark
Subject: FYI

JUST FYI ...

From: Harrington, Holly
Sent: Saturday, March 12, 2011 6:56 PM
To: LIA04 Hoc
Subject: FW: WH points

Link: <http://www.nei.org/newsandevents/information-on-the-japanese-earthquake-and-reactors-in-that-region>



Woodruff, Gena

From: Tifft, Doug
Sent: Saturday, March 12, 2011 9:28 PM
To: LIA04 Hoc; McNamara, Nancy
Cc: Barker, Allan; Logaras, Harral; Trojanowski, Robert; Woodruff, Gena; Maier, Bill; Browder, Rachel; Thaggard, Mark
Subject: RE: Question from New York

(b)(5)

-Doug

From: LIA04 Hoc
Sent: Saturday, March 12, 2011 8:09 PM
To: McNamara, Nancy
Cc: Tifft, Doug; Barker, Allan; Logaras, Harral; Trojanowski, Robert; Woodruff, Gena; Maier, Bill; Browder, Rachel; Thaggard, Mark
Subject: RE: Question from New York

News reports have indicated it's a BWR plant of the 1960s vintage,

(b)(5)

(b)(5)

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

From: McNamara, Nancy
Sent: Saturday, March 12, 2011 7:22 PM
To: LIA04 Hoc; Virgilio, Rosetta; Tifft, Doug
Subject: Question from New York

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

From: paul_eddy@dps.state.ny.us [mailto:paul_eddy@dps.state.ny.us]
Sent: Saturday, March 12, 2011 6:45 PM
To: McNamara, Nancy
Subject: Re: Getting Information for our States

What plants in the US are of the same design and vintage? (Hint - 9Mile1)

Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Saturday, March 12, 2011 9:44 PM
To: 'Hunt (?); 'Al Belisle'; 'Al Gibson'; 'Al Herdt'; 'Al Ignatonis'; 'Bill Kleinsorge'; 'Bill Miller'; 'Bill Tobin'; [REDACTED] (b)(6); 'Bob Wright'; 'Bob/Angie Martin'; 'Ed Girard'; 'Hellan Kreeger'; 'Hugh Dance'; [REDACTED] (b)(6); 'Jim Coley'; 'Jim Hufham'; 'Ken Clark'; 'Kerry Landis'; 'Milt Hunt (?); 'Nick Economos'; 'Phil Stohr'; 'Taylor'; 'Uryc'; Woodruff, Gena
Cc:
Subject: Bob Newlin
Explosion at Japanese nuke

The Washington Post has a good interactive graphic showing how an explosion happened this afternoon (U.S. time) at one of the Japanese reactors damaged by the terrific earthquake. Click on <http://www.washingtonpost.com/wp-srv/special/world/japan-nuclear-reactors-and-seismic-activity/?hpid=topnews>.

joe

Joe T. Gilliland

[REDACTED]
(b)(6)

Woodruff, Gena

From: Joe Gilliland (b)(6)
Sent: Saturday, March 12, 2011 10:01 PM
To: 'Hunt (?); 'Al Belisle'; 'Al Gibson'; 'Al Herdt'; 'Al Ignatonis'; 'Bill Kleinsorge'; 'Bill Miller'; 'Bill Tobin'; (b)(6); 'Bob Wright'; 'Bob/Angie Martin'; 'Ed Girard'; 'Hellan Kreeger'; 'Hugh Dance'; (b)(6); 'Jim Coley'; 'Jim Hufham'; 'Ken Clark'; 'Kerry Landis'; 'Milt Hunt (?); 'Nick Economos'; 'Phil Stohr'; 'Taylor'; 'Uryc'; Woodruff, Gena
Cc: Bob Newlin
Subject: Nuclear industry reaction

This Washington Post story—posted less than two hours ago—contains some comment by representatives of the U.S. nuclear industry as well as from other sources. To see a video with smoke pouring from the plant and what appears to be an explosion, click on the link below.

Joe

Joe T. Gilliland

(b)(6)

<http://www.washingtonpost.com/wp-dyn/content/article/2011/03/12/AR2011031203627.html?hpid=topnews&sid=ST2011031100651>

The Washington Post
March 12, 2011

Nuclear power industry watches warily as Japan's aging reactor is hit hard

By Joel Achenbach
Washington Post Staff Writer
Saturday, March 12, 2011; 8:25 PM

It's the oldest nuclear reactor still online in Japan, a boiling-water unit made by General Electric, just a couple weeks shy of 40 years old and close to retirement age. On Saturday, something went very wrong. The explosion at Fukushima Daiichi unit one rattled an already shaken nation, and renewed anxiety that the exquisite technology of nuclear power may yet be overmatched by the natural violence of the earth.

There is no confirmation of a meltdown, but the situation is exceedingly tense in a nation uniquely sensitive to the dangers of radiation - no other country knows the pain of being attacked with atomic weapons. Japan prides itself on the nation's preparation for calamity, but now finds itself tested by a technological crisis piled mercilessly upon a horrific natural disaster.

The incident at Fukushima Daiichi has been felt across the planet's nuclear power industry.

"Obviously, any time you have an incident at a nuclear plant that involves any kind of damage or an explosion, it's not good," said Mitch Singer, spokesman for the Nuclear Energy Institute, the industry's lobbying arm. "But in the scheme of things, is it a disaster? We don't think so."

The explosion was not nuclear. Industry officials said it was created by the release of hydrogen gas that mixed with oxygen and exploded.

The building around the reactor vessel is partially destroyed, but Japanese officials say the primary vessel and the reactor core within are intact.

"If the reactor vessel is breached . . . then this radioactive stuff starts coming out in copious amounts," said Robert Alvarez, a former senior adviser to the Department of Energy who studies nuclear power at the Institute for Policy Studies in Washington.

The three operating nuclear units at the complex all shut down automatically when the earthquake hit. But stopping a fission reactor isn't quite like throwing a switch. The reactors use nuclear fission to boil water, create steam, power turbines and generate electricity. But Friday the Fukushima complex was hit by a double whammy: violent shaking from the historic magnitude-8.9 earthquake, and then the battering-ram tsunami that crashed ashore.

During the shutdown, rods dropped into the reactor core to absorb neutrons and halt all nuclear fission. But radioactive elements continue to give off heat through radioactive decay.

To sap that heat, the plant needed power to circulate cooling water through the core. The tremor, however, knocked out the electrical grid, and the tsunami took the backup generators offline. Engineers then switched to batteries. But the batteries have limited duration, and the backup generators were brought in.

The term "meltdown" does not necessarily mean that the entire nuclear core has turned into a glob of metal and ceramic. It can be any event in which the core overheats and damages the apparatus. Such an event carries with it the danger of a release of radiation into the environment.

The Japanese nuclear regulatory agency reported a jump in radiation near the main gate of the complex over the course of five hours Saturday. Another spike in radiation, including the radioactive isotope cesium-137, was reported at a nearby observation post.

The cesium-137 could come only from the radioactive fuel within the reactor core, Alvarez said. That means it escaped either from the reactor vessel itself, which would indicate a catastrophic breach, or from piping outside the reactor.

The Japanese broadcasting company NHK reported that one hour of exposure to the level of radiation outside the plant would be equal to what an ordinary person could safely experience in an entire year.

The nuclear power industry speaks of "defense in depth," a concept of multiple layers of containment and backup plans to ensure that, even if something goes wrong, catastrophe won't ensue. The failure of these systems in Japan carries an echo of the BP oil spill disaster, in which backup safety devices and redundancies turned out to be unequal to the unfolding blowout.

"The problem with the BP event is that they didn't have a plan B," said Alex Marion, vice president of nuclear operations for the Nuclear Energy Institute. "We have, I would say, sufficient defense in depth. We have plan B, C, D and possibly E."

Tom Clements, southeastern nuclear campaign coordinator for Friends of the Earth, said the damaged Japanese reactor was of a design "haunted by questions about its ability to survive a severe accident."

Clements added, "We're against nuclear power because of this very reason: a nuclear power accident can turn into a disaster of huge proportions in just a short period of time, and it's not worth taking that risk."

The nuclear industry has had two previous high-profile calamities: a partial meltdown in 1979 at the Three Mile Island plant in Pennsylvania, and the far more disastrous 1986 fire at a plant near the Ukrainian city of Chernobyl.

As at Fukushima, the Three Mile Island accident was triggered by a disruption of water flow to the reactor. Several instruments failed and operators did not realize that pressure was building inside the reactor. A heavy secondary containment shield ultimately prevented all but a tiny amount of radiation from escaping into the environment.

The Chernobyl disaster, in contrast, was caused by a crude reactor design and at least six fatally flawed decisions by operators during a risky test. A huge power spike and the bad decisions drove the reactor out of control. An explosion then blew the reactor apart and spewed radioactive debris for a week.

Unlike U.S. and Japanese nuclear plants, Chernobyl lacked the heavy shielding that eventually halted the Three Mile Island disaster - and that all of Japan desperately hopes will prevent Fukushima Daiichi's unit one from melting down.

Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Saturday, March 12, 2011 10:14 PM
To: Bob Newlin; ' Hunt (?); 'Al Belisle'; 'Al Gibson
'; 'Al Ignatonis'; 'Bill Kleinsorge'; 'Bill Miller
'; [REDACTED] (b)(6); 'Bob Wright';
'Ed Girard'; 'Hellan Kreeger'; 'Hugh Dance
[REDACTED] (b)(6); 'Jim Coley'; 'Jim Hufham
'Ken Clark'; 'Kerry Landis
'Nick Economos'; 'Phil Stohr'; 'Taylor
Gena
Subject: Impact on industry

And here is a New York Times sidebar on the nuclear industry's fears about the ramifications of the accident. This piece has quotes by former NRC Chairman Nils Diaz.

joe

Joe T. Gilliland

[REDACTED]
(b)(6)

The New York Times
March 12, 2011

Nuclear Industry Braces for Increased Scrutiny

This article is by Norimitsu Onishi, Henry Fountain and Tom Zeller Jr.

The explosion and radiation leaks at the earthquake-damaged nuclear plant will raise fresh questions about the ambitious plans to develop nuclear energy in Japan, despite the industry's troubled history there and years of grass-roots objections from a people uniquely sensitive to the ravages of nuclear destruction.

The damage to the plant, the Fukushima Daiichi Nuclear Power Station, could also stir wider doubts in a world that, while long skeptical of nuclear energy's safety, has increasingly accepted it as a source of clean energy in a time of mounting concerns about the environmental and public health tolls of fossil fuels.

In France, for example, green parties and environmental groups have called for an end to the dependence on nuclear power. The failures of the 40-year-old Fukushima Daiichi plant's cooling system apparently caused the explosion, which destroyed a structure surrounding the reactor. The reactor was unaffected, government officials and the plant's operator, Tokyo Electric Power, said. They described the resulting radiation leak as small and getting smaller.

Foreign experts have agreed with that assessment so far, although Japanese plant operators, wary of the public reaction, have minimized past accidents.

James M. Acton of the Carnegie Endowment for International Peace said the accident had unquestionably dealt a blow to the nuclear industry. While Japan may close the Fukushima Daiichi plant, one of its oldest, and point to the safety of its newer facilities, that might not satisfy concerns in Japan and elsewhere, he said. Decades ago, after the Chernobyl and Three Mile Island accidents, Mr. Acton said, the nuclear industry tried to argue that newer reactors incorporated much better safety features. "That made very little difference to the public," he said.

Benjamin Leyre, a utilities industry analyst with Exane BNP Paribas in Paris, said that politicians in Europe and elsewhere would almost certainly come under increased pressure to revisit safety measures at nuclear power plants — existing ones and those being planned — and that a pause in development could result.

"What is likely to come will depend a lot on how transparent the regulators in Japan are," Mr. Leyre said. "There will be a lot of focus on whether people feel confident that they know everything and that the truth is being put in front of them."

Nuclear advocates argued that the accident in Japan was singular in many ways and might have been mishandled, and that it was caused by a natural disaster on a scale never before experienced in Japan. They said that the excavation of fossil fuels has its own history of catastrophic accidents, including coal mine collapses and the recent BP oil spill in the Gulf of Mexico.

Critics of nuclear energy have long questioned the viability of nuclear power in earthquake-prone regions like Japan. Reactors have been designed with such concerns in mind, but preliminary assessments of the Fukushima Daiichi accident suggested that too little attention was paid to the threat of tsunami. It appeared that the reactors withstood the powerful earthquake, but the ocean waves damaged generators and backup systems, harming the ability to cool the reactors.

A quick alternative source of water for cooling the destabilizing core should have been immediately available, said Nils J. Diaz, a nuclear engineer who led the United States Nuclear Regulatory Commission from 2003 to 2006 and had visited the Daiichi plant.

Mr. Diaz also suggested that the Japanese might have acted too slowly to prevent overheating, including procedures that might have required the venting of small amounts of steam and radiation, rather than risk a wholesale meltdown. Fear among Japanese regulators over public reaction to such small releases may have delayed plant operators from acting as quickly as they

might have, he said — a problem arising in part from the country's larger nuclear regulatory culture.

"They would rather wait and do things in a perfect manner instead of doing it as good as it needs to be now," Mr. Diaz said. "And this search for perfection has often led to people sometimes hiding things or waiting too long to do things."

With virtually no natural resources, Japan has considered nuclear power as an alternative to oil and other fossil fuels since the 1960s; looking into the future, Japan regards its expertise in nuclear power as a way to cut down on its emission of greenhouse gases and to capture energy-hungry markets in Asia.

It was too early to tell whether Saturday's accident would have any effect on a national policy that has made Japan one of the world's top consumers of nuclear energy, with some 55 nuclear reactors, providing about 30 percent of its electricity needs, or whether it would fan public opposition sharpened by the atomic bomb attacks on Hiroshima and Nagasaki in 1945.

To make plants resistant to earthquakes, operators are required to build them on bedrock to minimize shaking and to raise anti-tsunami seawalls for plants along the coast. But the government gives power companies wide discretion in deciding whether a site is safe.

In the case of Saturday's blast, experts said that problem was avoidable.

Mr. Diaz said that a comprehensive nuclear power plant safety program developed in the United States after the Sept. 11 attacks would have prevented a similar accident at any of the nation's nuclear facilities.

Over the years, Japanese plant operators, along with friendly government officials, have sometimes hidden episodes at plants from a public increasingly uneasy with nuclear power.

In 2007, an earthquake in northwestern Japan caused a fire and minor radiation leaks at a plant in Kashiwazaki City. An ensuing investigation found that the plant's operator, also Tokyo Electric, had unknowingly built the facility, the world's largest nuclear plant, directly on top of an active seismic fault. Though a series of fires inside the plant after the earthquake deepened the public's fear, the company, which said it upgraded the facility to withstand stronger tremors, was allowed to reopen it in 2009.

Last year, another reactor with a troubled history was allowed to reopen, 14 years after a fire shut it down. The operator of the plant, the Monju Prototype Fast Breeder Reactor, located along the coast about 220 miles west of Tokyo, tried to cover up the extent of the fire by releasing altered video after the accident in 1995.

Andrew C. Kadak, a consultant and former chief executive of the Yankee Atomic Electric Company, said Japanese and American cultures were different when it came to communicating nuclear issues to the public.

"We have the Nuclear Regulatory Commission — everything is out in public view," he said. "The Japanese system is a little different. They are not used to openness and transparency."

Woodruff, Gena

From: LIA04 Hoc
Sent: Sunday, March 13, 2011 7:24 AM
To: Maier, Bill; McNamara, Nancy; Tifft, Doug; Barker, Allan; Logaras, Harral; Trojanowski, Robert; Woodruff, Gena
Cc: Virgilio, Rosetta
Subject: Richard Turti in Ops Center. Government Liaison Counterpar Link Bridge line is open. Rich (eom)

Travick, Vanette

From: McCree, Victor
Sent: Sunday, March 13, 2011 8:43 AM
To: R2SR_MANAGER
Subject: Fw: 0630 Japan event status update
Attachments: USNRC Earthquake-Tsunami Update.031211.0730EST.docx

See attached updated information on the impact of the Japanese earthquake.

Vic

This email is being sent from an NRC BlackBerry device.

From: LIA07 Hoc

To: [REDACTED] (b)(6)

(b)(6)

Sent: Sun Mar 13 06:30:40 2011
Subject: 0630 Japan event status update

Woodruff, Gena

From: LIA04 Hoc
Sent: Sunday, March 13, 2011 9:40 AM
To: Maier, Bill
Cc: Virgilio, Rosetta; Barker, Allan; Logaras, Harral; Tifft, Doug; McNamara, Nancy; Trojanowski, Robert; Woodruff, Gena; Thaggard, Mark

Bill:

I just added to the log:

(9:33 a.m. EST) - I spoke with Gary Butner (916-806-1898) of California Dept. of Public Health. He is still developing direct numbers for contacting appropriate personnel with State of CA. Has not yet concluded that effort. He has my cell and knows also to go direct through NRC Ops Center.

As necessary, contact me at [REDACTED] (b)(6) or on the Ops Center line 301-816-5100, Counterpart link # [REDACTED] (b)(6).

Richard Turtl

Woodruff, Gena

From: McNamara, Nancy
Sent: Sunday, March 13, 2011 10:53 AM
To: Tifft, Doug
Cc: Barker, Allan; Logaras, Harral; Trojanowski, Robert; Woodruff, Gena; Maier, Bill
Subject: EAL criteria for earthquake fyi

All, we had a question this morning regarding eal criteria. Below is the NEI 99-01 eal scheme language that is public information if you need it at your finger tips.

UE – natural destructive phenomena affecting the protected area.

Alert – natural destructive phenomena affecting vital areas.

Example Emergency Action Level: (1 or 2 or 3 or 4 or 5)

1. Seismic event identified by ANY 2 of the following:

Seismic event confirmed by (site specific indication or method)

Earthquake felt in plant

NaBasis:

These EALs are categorized on the basis of the occurrence of an event of sufficient magnitude to be of concern to plant operators.

EAL #1

Damage may be caused to some portions of the site, but should not affect ability of safety functions to operate.

As defined in the EPRI-sponsored Guidelines for Nuclear Plant Response to an Earthquake, dated October 1989, a "felt earthquake" is: An earthquake of sufficient intensity such that: (a) the vibratory ground motion is felt at the nuclear plant site and recognized as an earthquake based on a consensus of control room operators on duty at the time, and (b) for plants with operable seismic instrumentation, the seismic switches of the plant are activated.

[For most plants with seismic instrumentation, the seismic switches are set at an acceleration of about 0.01g. This EAL should be developed on site specific basis. The method of detection can be based on instrumentation, validated by a reliable source, or operator assessment.]

The National Earthquake Center can confirm if an earthquake has occurred in the area of the plant.

From: LIA04 Hoc
Sent: Sunday, March 13, 2011 10:18 AM
To: Tifft, Doug
Cc: McNamara, Nancy; Virgilio, Rosetta; Barker, Allan; Logaras, Harral; Trojanowski, Robert; Woodruff, Gena; Maier, Bill
Subject: Word version

Doug:

Per your request for a word version, please use the attached. I have NOT deleted the non-public information.

If you are able, delete what you wish and convert to a pdf. This way, it won't get changed/manipulated by others.

If you want me to convert to a pdf, send me the final word version you want and I'll attempt to get it pdf.ed here.

Rich

Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Sunday, March 13, 2011 11:36 AM
To: Bob Newlin; Mitch & Carol Carnell; ' Hunt (?); 'Al Belisle'; 'Al Gibson'; 'Al Herdt'; 'Al Ignatonis'; 'Bill Kleinsorge'; 'Bill Miller'; 'Bill Tobin'; [REDACTED] (b)(6); 'Bob Wright'; 'Bob/Angie Martin'; 'Ed Girard'; 'Hellan Kreeger'; 'Hugh Dance'; [REDACTED] (b)(6); 'Jim Coley'; 'Jim Hufham'; 'Ken Clark'; 'Kerry Landis'; 'Milt Hunt (?'); 'Nick Economos'; 'Phil Stohr'; 'Taylor'; 'Uryc'; 'Woodruff, Gena';
Subject: Impact on U.S. nuke industry

This news analysis piece is in this morning's Washington Post. Down near the end you'll find the chairman of the House Energy and Commerce Committee quoted as saying the NRC chairman is scheduled to testify this coming week before that House panel.

joe

Joe T. Gilliland

(b)(6)

Japan disaster may mean setback for U.S. nuclear industry

By Jia Lynn Yang
Washington Post Staff Writer

Stymied by concerns about safety and cost, the U.S. nuclear power industry has struggled to make a comeback for decades. Now the revival may have to wait even longer, as earthquake damage to a reactor in northern Japan has again highlighted the potential hazards of going nuclear.

The timing is tough for the industry, which recently has been enjoying more support in Washington than on Wall Street. President Obama as well as Republican leaders on Capitol Hill want to lend the industry billions of dollars in additional taxpayer funds to help pay for building new nuclear plants. Even some environmentalists had begun to embrace nuclear energy in the wake of last summer's oil spill in the Gulf of Mexico and amid concerns about global warming.

But banks and investors worry that the plants are too expensive and risky to finance. The crisis in Japan could jeopardize or at least tone down political support for nuclear energy just as the industry needs all the financial backing it can get from the government.

"The nuclear renaissance in the U.S. was on the rocks in any case," said Peter Bradford, former commissioner of the U.S. Nuclear Regulatory Commission. "There's no way this is a positive for a technology that's dependent entirely on political support."

Cost remains the biggest obstacle for any revival of nuclear energy. Billions of dollars are required to build a single plant. And lenders have been leery of financing projects because of a history of incomplete projects, blown budgets and bankrupted companies.

Momentum for a comeback also has been slowed because other energy sources remain less expensive. Natural gas is cheap, especially with the expansion of supplies from shale rock, and there's been no legislative action to tax carbon emissions.

Representatives of the nuclear industry said Saturday that it's too soon to know what impact the disaster in Japan could have on U.S. policy.

"Until we know exactly what happened in the plants in Japan it's very hard to know what conclusions to draw," said Alex Flint, senior vice president of governmental affairs for the Nuclear Energy Institute, a group that lobbies for the industry.

Just over a year ago, Obama pledged more than \$8 billion in additional loan guarantees for the construction of the first nuclear power plant in the United States in almost three decades. The president has also touted the potential of nuclear energy in two State of the Union speeches.

"He is as supportive as any administration in recent history," Flint said.

On Saturday, the White House said it supports developing a variety of energy sources, of which nuclear is only one.

"The president believes that we need to continue to diversify our nation's energy supply, including a focus on clean energy sources from renewables like wind and solar, to natural gas, clean coal and nuclear power," said Clark Stevens, a spokesman for the White House. "The administration is committed to ensuring that nuclear energy is produced safely and responsibly, and will continue to incorporate best practices and lessons learned into that process."

Meanwhile the Republican takeover of the House last year catapulted one of the industry's biggest backers, Rep. Fred Upton (R-Mich.), to the head of the Energy and Commerce Committee.

"The details of this tragedy are still unfolding," Upton said in a statement Saturday evening. "The head of the Nuclear Regulatory Commission is scheduled to testify before the Energy and Commerce Committee next week, and we will use that opportunity to explore what is known in the early aftermath of the damage to Japanese nuclear facilities, as well as to reiterate our unwavering commitment to the safety of U.S. nuclear sites."

Momentum for the nuclear industry grew following the passage of the Energy Policy Act in 2005, which included several subsidies for nuclear energy.

Of the 65 reactors being constructed worldwide, three are in the United States, according to NEI. Flint estimates that by 2020, four to eight new plants will be running.

Nuclear energy provides 20 percent of this country's electricity, compared with 30 percent in Japan.

Unlike past crises such as Three Mile Island and Chernobyl, which did not involve natural disasters, the problems at the plant in Japan were triggered by earthquakes, which disrupted the power supply to the reactors' cooling systems. As a result, some experts said that two plants in California that lie near fault lines - Diablo Canyon and San Onofre - could come under extra scrutiny. Both plants have been checked by the Nuclear Regulatory Commission for their ability to withstand tsunamis and earthquakes.

"Just when Japan needed power most for recovering from the natural disaster, the collapse of the electrical grid system basically complicated the crisis because the nuclear power plants themselves had to shut down to mitigate the inherent radiation hazard," said Paul Gunter, director of the Reactor Oversight Project at Beyond Nuclear. "It clearly demonstrates that this technology in times of national crisis . . . cannot be relied upon when you need it the most."

Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Sunday, March 13, 2011 12:38 PM
To: Bob Newlin; Mitch & Carol Carnell; ' Hunt (?); 'Al Belisle'; 'Al Gibson'; 'Al Herdt'; 'Al Ignatonis'; 'Bill Kleinsorge'; 'Bill Miller'; 'Bill Tobin'; [REDACTED] (b)(6); 'Bob Wright'; 'Bob/Angie Martin'; 'Ed Girard'; 'Hellan Kreeger'; 'Hugh Dance'; [REDACTED] (b)(6); 'Jim Coley'; 'Jim Hulham'; 'Ken Clark'; 'Kerry Landis'; 'Milt Hunt (?); 'Nick Economos'; 'Phil Stohr'; 'Taylor'; 'Uryc'; Woodruff, Gena
Subject: Turbine building speculation

The New York Times today has an updated story on the Japanese nuclear plants' damage that introduces speculation that the explosion that rocked one unit may have originated in the turbine hall, rather than in the reactor building, one such statement by a Japanese official, the other by David Lochbaum of the Union of Concerned Scientists.

The story begins with an account of reports concerning officials' statements about presumed partial meltdowns at two crippled reactors and fears that a second explosion could occur, along with details about some serious radiation releases, evacuations, etc. About midway through the story, the first discussion of a possible turbine hall explosion is introduced. Quoting from the report:

Worries about the safety of the two plants worsened on Saturday because executives of the company that runs them, Tokyo Electric Power, and government officials gave confusing accounts of the location and causes of the dramatic midday explosion and the damage it caused.

Late Saturday night, officials said that the explosion at Daiichi occurred in a structure housing turbines near its No. 1 reactor at the plant, rather than inside the reactor itself. But photographs of the damage did not make clear that this was the case.

They said that the blast, which may have been caused by a sharp buildup of hydrogen when the reactor's cooling system failed, destroyed the concrete structure surrounding the reactor but did not collapse the critical steel container inside. This pattern of damage cast doubt on the idea that the explosion was in the turbine building.

"We've confirmed that the reactor container was not damaged," Mr. Edano said in a news conference on Saturday night. "The explosion didn't occur inside the reactor container. As such there was no large amount of radiation leakage outside. At this point, there has been no major change to

the level of radiation leakage outside, so we'd like everyone to respond calmly."

And then several paragraphs later comes this discussion:

David Lochbaum, who worked at three reactors in the United States with designs similar to Daiichi, and who was later hired by the Nuclear Regulatory Commission to teach its personnel about that technology, said that judging by photographs of the stricken plant, the explosion appeared to have occurred in the turbine hall, not the reactor vessel or the containment that surrounds the vessel.

The Daiichi reactor is a boiling-water reactor. Inside the containment, the reactor sends its steam out to a turbine. The turbine converts the steam's energy into rotary motion, which turns a generator and makes electricity.

But as the water goes through the reactor, some water molecules break up into hydrogen and oxygen. A system in the turbine hall usually scrubs out those gases. Hydrogen is also used in the turbine hall to cool the electric generator. Hydrogen from both sources has sometimes escaped and exploded, Mr. Lochbaum said, but in this case, there is an additional source of hydrogen: interaction of steam with the metal of the fuel rods. Operators may have vented that hydrogen into the turbine hall.

The full story may be found at
<http://www.nytimes.com/2011/03/14/world/asia/14nuclear.html?pagewanted=2&hp>.

Lochbaum's current organization, the Union of Concerned Scientists, has a section on its web site devoted to the Japanese situation at
http://allthingsnuclear.org/tagged/Japan_nuclear?utm_source=SP&utm_medium=more&utm_campaign=japan-crisis-3-13-11-more .

joe

Joe T. Gilliland (NRC PAO ret.)

(b)(6)

(b)(6)

Woodruff, Gena

From: LIA04 Hoc
Sent: Sunday, March 13, 2011 12:53 PM
To: McNamara, Nancy; Maier, Bill; Tifft, Doug; Barker, Allan; Logaras, Harral; Trojanowski, Robert; Woodruff, Gena
Cc: Noonan, Amanda; Virgilio, Rosetta
Subject: RE: 2 Requests

Thank you Nancy and Doug.

From: McNamara, Nancy
Sent: Sunday, March 13, 2011 12:52 PM
To: LIA04 Hoc; Maier, Bill; Tifft, Doug; Barker, Allan; Logaras, Harral; Trojanowski, Robert; Woodruff, Gena
Cc: Noonan, Amanda; Virgilio, Rosetta
Subject: RE: 2 Requests

Rich, we had a few questions from NY this morning we were able to answer directly. No more from Region I at this time, but that may change as some states become aware that we've been sending them information and asking for questions.

From: LIA04 Hoc
Sent: Sunday, March 13, 2011 12:10 PM
To: Maier, Bill; McNamara, Nancy; Tifft, Doug; Barker, Allan; Logaras, Harral; Trojanowski, Robert; Woodruff, Gena
Cc: Noonan, Amanda; Virgilio, Rosetta
Subject: 2 Requests
Importance: High

In addition to the Q&A information that went out early this morning (attached), I have been requested to inquire:

- 1) Are there any additional questions from the States that need to be addressed by the NRC? And
- 2) (for Region IV)... why are only OR, WA, and CA being communicated with? Why are Alaska and Hawaii personnel not being directly communicated with?

Rich

(b)(6)

Nielsen, Adam

From: Ruben Hamilton [REDACTED] (b)(6)
Sent: Sunday, March 13, 2011 1:05 PM
To: Bonser, Brian; Nielsen, Adam; Hamilton, Ruben
Subject: FYI NISA - Nuclear and Industrial Safety Agency

<http://www.nisa.meti.go.jp/english/index.html>

The link is to a site that is giving status reports from the earthquake and on the reactors.

Hydrogen explosion concurrent with seismic event destroyed unit 1 secondary containment.
Unit 3 HPCI has failed.

Based on the numbers I was able to pick out I would estimate at least 5% MELT in unit 1 much higher if drywell integrity is higher than I expect. They had to vent the drywell to prevent it from failing. (670 mr/hr at site boundary)

Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Sunday, March 13, 2011 1:13 PM
To: Mitch & Carol Carnell; Bob Newlin; 'Hunt (?); 'Al Belisle'; 'Al Gibson'; 'Al Herdt'; 'Al Ignatonis'; 'Bill Kleinsorge'; 'Bill Miller'; 'Bill Tobin'; [REDACTED]; 'Bob Wright'; 'Bob/Angie Martin'; 'Ed Girard'; 'Hellan Kreeger'; 'Hugh Dance'; [REDACTED]; 'Jim Coley'; 'Jim Hufham'; 'Ken Clark'; 'Kerry Landis'; 'Milt Hunt (?); 'Nick Economos'; 'Phil Stohr'; 'Taylor'; 'Uryc'; Woodruff, Gena
Subject: NRC resources
Attachments: Two NRC BWR experts to Japan.pdf; NRC speaks with Japanese counterparts.pdf

NRC issued two brief press releases Saturday concerning the nuclear plant crises in Japan. The first said agency officials had spoken with their counterparts in Japan. The second said two BWR experts from NRC had been sent to Japan as part of a team put together by the U.S. Agency for International Development. Because the releases are PDF documents, I cannot (or don't know how to) paste them into this message, but are sending them as attachments. They are also accessible at www.nrc.gov. Note that one of them says NRC will not try to provide information on the Japanese plants, but that it has generic information on BWRs, included an animated graphic, on its web site.

joe

Joe T. Gilliland (NRC PAO ret.)

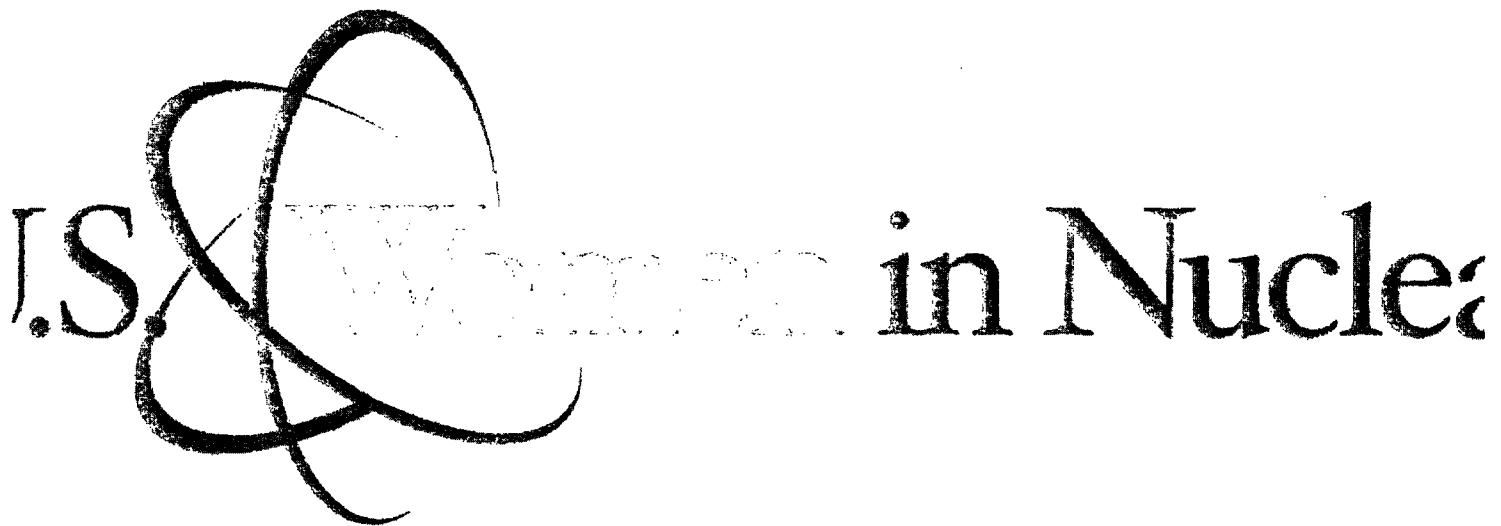
[REDACTED]
(b)(6)

Woodruff, Gena

From: McNamara, Nancy
Sent: Sunday, March 13, 2011 1:21 PM
To: Tifft, Doug; Maier, Bill; Barker, Allan; Logaras, Harral; Woodruff, Gena; Trojanowski, Robert
Cc: Virgilio, Rosetta; LIA04 Hoc
Subject: NEI's Information on the Japanese earthquake and reactors in that region

Here is another link that you can pass on. As you can see from below, you can click on the "dedicated page" and it forwards you to the NEI website that is following this. Its got updates and good schematics of the Japanese design.

From: Richie Hayes [mailto:slh@nei.org]
Sent: Saturday, March 12, 2011 12:09 PM
To: McNamara, Nancy
Subject: Information on the Japanese earthquake and reactors in that region



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

rovide periodic updates on the current status of events in Japan and on tsunami preparations for West Coast n

Click [here](#) to unsubscribe

Woodruff, Gena

From: Logaras, Harral
Sent: Sunday, March 13, 2011 2:11 PM
To: LIA04 Hoc; Maier, Bill; McNamara, Nancy; Tifft, Doug; Barker, Allan; Trojanowski, Robert; Woodruff, Gena
Cc: Noonan, Amanda; Virgilio, Rosetta
Subject: Re: 2 Requests

Rich,
I've received NO questions from Region 3 States.
Harral

From: LIA04 Hoc
To: Maier, Bill; McNamara, Nancy; Tifft, Doug; Barker, Allan; Logaras, Harral; Trojanowski, Robert; Woodruff, Gena
Cc: Noonan, Amanda; Virgilio, Rosetta
Sent: Sun Mar 13 12:10:04 2011
Subject: 2 Requests

In addition to the Q&A information that went out early this morning (attached), I have been requested to inquire:

- 1) Are there any additional questions from the States that need to be addressed by the NRC? And
- 2) (for Region IV)... why are only OR, WA, and CA being communicated with? Why are Alaska and Hawaii personnel not being directly communicated with?

Rich

(b)(6)

Michel, Eric

From: Eric Michel [REDACTED] (b)(6)
Sent: Sunday, March 13, 2011 2:17 PM
To: Michel, Eric
Subject: Fwd: New comment on "Massive earthquake hits Japan"

----- Forwarded message -----

From: Cool Hand Nuke <groups-remail@linkedin.com>
Date: Sun, Mar 13, 2011 at 12:42 PM
Subject: New comment on "Massive earthquake hits Japan"
To: Eric Michel <eric96@alumni.ufl.edu>

LinkedIn Groups

- **Group:** Cool Hand Nuke
- **Discussion:** [Massive earthquake hits Japan](#)

The American Nuclear Society distributed the following on Saturday:

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 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. Even if the fuel in the reactor melts, the reactor's containment systems are designed to prevent the spread of radioactivity into the environment. The nuclear power industry will learn from this event, and redesign our facilities as needed to make them safer in the future.

Posted by John Caves

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Woodruff, Gena

From: LIA04 Hoc
Sent: Sunday, March 13, 2011 2:34 PM
To: McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena; Barker, Allan; Logaras, Harral; Maier, Bill
Cc: Virgilio, Rosetta; Piccone, Josephine; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Flannery, Cindy
Subject: NRC SEES NO RADIATION AT HARMFUL LEVELS REACHING U.S. - Just Posted NRC Press Release (2:00 pm)

Regional SLOs: Please see attached most recent Press Release from U.S. NRC.

Contact me with questions.

Richard Turtl
[redacted] (b)(6)
301-816-5193

From: LIA04 Hoc
Sent: Sunday, March 13, 2011 2:27 PM
To: LIA04 Hoc
Subject: NRC SEES NO RADIATION AT HARMFUL LEVELS REACHING U.S.

http://148.184.213.135/eoc7/boards/boardfile.aspx?fileid=1686&tableid=215&fieldname=press_release&viewid=919

Woodruff, Gena

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

Woodruff, Gena

From: LIA04 Hoc
Sent: Sunday, March 13, 2011 2:49 PM
To: Virgilio, Rosetta; Piccone, Josephine; Ryan, Michelle; Rivera, Alison; Rautzen, William;
Noonan, Amanda; Maier, Bill; Tifft, Doug; McNamara, Nancy; Trojanowski, Robert; Woodruff,
Gena; Barker, Allan; Logaras, Harral; White, Duncan
Subject: Openable NRC Press Release from 2:00 pm, 3/13/2011
Attachments: 3_13 2pmNRC PressRelease.pdf

Woodruff, Gena

From: LIA04 Hoc
Sent: Sunday, March 13, 2011 3:19 PM
To: Maier, Bill; Trojanowski, Robert; Woodruff, Gena; Tifft, Doug; McNamara, Nancy; Barker, Allan; Logaras, Harral
Cc: Harrington, Holly
Subject: Latest Press Release and an inquiry from Office of Public Affairs

RSLOs:

The latest NRC press release states: "NRC SEES NO RADIATION AT HARMFUL LEVELS REACHING U.S. FROM DAMAGED JAPANESE NUCLEAR POWER PLANTS."

Holly in Public Affairs is preparing for incoming questions resulting from this press release. Her question:

OPA wants to ensure that our indicating to incoming callers that they contact their respective state professional/environmental/health organizations to get answers to their questions.

Specifically, Holly provides the following:

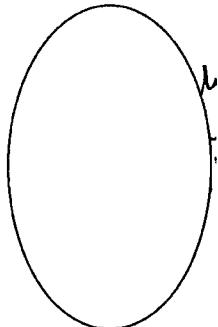
We have a blog comment that asks this: Can you give us information on who is monitoring the US West Coast for dangerous environmental radiation levels and how we may contact that entity?

We are in a region with NO US atomic energy plants and have no preparedness for nuclear accidents – What agency should we contact to acquire protective equipment and supplies?

We want to answer this: See our latest blog post. In short – no, we do not believe the U.S. West Coast (or any part of the U.S.) will receive harmful amounts of radiation from the nuclear power plants in Japan. If you have concerns specifically about your community, you can contact your state radiological or environmental office for information.

I (Rich) ask the following: are the RSLOs ok with this approach?

Rich



Ellis, Kevin

From: Andy Sabisch [REDACTED] (b)(6)
Sent: Sunday, March 13, 2011 3:47 PM
To: Ottenberg, Geoffrey; Ellis, Kevin
Subject: Info on Japanese Reactors
Attachments: image001.jpg; Page11.jpg; Page1.jpg; Page2.jpg; Page3.jpg; Page4.jpg; Page5.jpg; Page6.jpg; Page7.jpg; Page8.jpg; Page9.jpg; Page10.jpg

I asked John Stang to send you this in a single document - not sure if this method will work but it gives some useful information on the Japanese nuclear program – I put it together yesterday (Saturday)

Go to <http://www.tepco.co.jp/en/index-e.html> for updates from the affected utility

=====

Andrew T. Sabisch
U.S. Nuclear Regulatory Commission
Senior Resident Inspector
Oconee Nuclear Station
7812B Rochester Highway, Seneca, SC 29672
(O) 864-873-3001 / (C) [REDACTED] (b)(6) / (H) [REDACTED] (b)(6)

- At 6:08pm, we announced the increase in reactor containment vessel pressure, assumed to be due to leakage of reactor coolant. However, we do not believe there is leakage of reactor coolant in the containment vessel at this moment.
- At 5:22am, the temperature of the suppression chamber exceeded 100 degrees. As the reactor pressure suppression function was lost, at 5:22am, it was determined that a specific incident stipulated in article 15, clause 1 has occurred.
- We decided to prepare implementing measures to reduce the pressure of the reactor containment vessel (partial discharge of air containing radioactive materials) in order to fully secure safety. This preparation work started at around 9:43am and finished at 6:00pm.

Unit 2 (shut down at 2:48pm on March 11th)

- Reactor is shut down and reactor water level is stable.
- Offsite power is available.
- Control rods are fully inserted (reactor is in subcritical status)
- Status of main steam isolation valve: closed
- Injection of water into the reactor is done by Make-up Water Condensate System.
- We do not believe there is leakage of reactor coolant in the containment vessel.
- At 5:32am, the temperature of the suppression chamber exceeded 100 degrees. As the reactor pressure suppression function was lost, at 5:32am, it was determined that a specific incident stipulated in article 15, clause 1 has occurred.
- We decided to prepare implementing measures to reduce the pressure of the reactor containment vessel (partial discharge of air containing radioactive materials) in order to fully secure safety. This preparation work started at around 10:33am and finished at 10:58pm.

Unit 3 (shut down at 2:48pm on March 11th)

- Reactor is shut down and reactor water level is stable.
- Offsite power is available.
- Control rods are fully inserted (reactor is in subcritical status)
- Status of main steam isolation valve: closed
- We do not believe there is leakage of reactor coolant in the containment vessel.
- We decided to prepare implementing measures to reduce the pressure of the reactor containment vessel (partial discharge of air containing radioactive materials) in order to fully secure safety. The preparation work started at around 12:08pm and finished at 12:13pm.
- Reactor cold shutdown at 12:15pm

Unit 4 (shut down at 2:48pm on March 11th)

- Reactor is shut down and reactor water level is stable.
- Offsite power is available.
- Control rods are fully inserted (reactor is in subcritical status)
- Status of main steam isolation valve: closed
- Injection of water into the reactor is done by Make-up Water Condensate System.
- We do not believe there is leakage of reactor coolant in the containment vessel.
- In order to cool down the reactor, injection of water into the reactor had been done by the Reactor Core Isolation Cooling System, however, at 6:07am, the temperature of the suppression chamber exceeded 100 degrees. As the reactor pressure suppression function was lost, at 6:07am, it was determined that a specific incident stipulated in article 15, clause 1 has occurred.
- We decided to prepare implementing measures to reduce the pressure of the reactor containment vessel (partial discharge of air containing radioactive materials) in order to fully secure safety. The preparation work started at around 11:44am and finished at around 11:52am.

- Indication from monitoring posts installed at the site boundary did not show any difference from ordinary level.
- No radiation impact to the external environment has been confirmed.
- We will continue to monitor in detail the possibility of radioactive material being discharged from exhaust stack or discharge canal.

JAPANESE NUCLEAR POWER PROGRAM

There are currently 55 operating nuclear power plants in Japan. The ten FEPC member companies own and operate 52 Light Water Reactors (LWR). Three more LWRs are operated by the private company Japan Atomic Power Corporation (JAPC). The Monju Fast Breeder Reactor (a prototype reactor which was taken off line in the 90's but expected to start up again soon) is run by the semi-governmental organization Japan Nuclear Cycle Development Institute (JNC). There are also two more nuclear plants currently under construction, as well as another 11 that are in advanced planning stages. One of those reactors in the planning stage will be owned and operated by another semi-private corporation, The Electric Power Development Co, Inc. (EPDC). Two reactors in Japan, JAPC's Tokai and JNC's Fugen Advanced Thermal Reactor prototype have been permanently closed.

Commercial Nuclear Power Facilities in Japan

- Tomari PS,Hokkaido EPC
- JNFL facilities
- Onagawa NPS,Tohoku EPC
- Fukushima Daiichi NPS,Tokyo EPC
- Fukushima Daini NPS Tokyo EPC
- Tokai Daini PS,Japan Atomic Power Co.
- Kashiwazaki Kariwa NPS,Tokyo EPC
- Shika NPS,Hokuriku EPC
- Tsuruga PS,Japan Atomic Power Co
- Hamaoka NPS,Chubu EPC
- Mihama PS,Kansai EPC
- Ohi PS,Kansai EPC
- Takahama PS,Kansai EPC
- Shimane NPS,Chugoku EPC
- Ikata NPS,Shikoku EPC
- Genkai NPS,Kyushu EPC
- Sendai NPS,Kyushu EPC

[Note] EPC Electric Power Company JNFL Japan Nuclear Fuel Limited (NPS) Nuclear Power Station

JAPANESE NUCLEAR PLANT OVERVIEW

| | Name of Plant | Unit Number | Company | Installed Capacity (MW) | Type of Reactor | Start |
|---|-----------------------|-------------|----------|-------------------------|-----------------|---------|
| ① | Tomari | 1 | Hokkaido | 579 | PWR | 1989.6 |
| | | 2 | | 579 | PWR | 1991.4 |
| ② | Higashi-Dori | 1 | Tohoku | 1,100 | BWR | 2005.12 |
| ③ | Onagawa | 1 | Tohoku | 524 | BWR | 1984.6 |
| | | 2 | | 825 | BWR | 1995.7 |
| | | 3 | | 825 | BWR | 2002.1 |
| ④ | Fukushima Daiichi | 1 | Tokyo | 460 | BWR | 1971.3 |
| | | 2 | | 784 | BWR | 1974.7 |
| | | 3 | | 784 | BWR | 1976.3 |
| | | 4 | | 784 | BWR | 1978.10 |
| | | 5 | | 784 | BWR | 1978.4 |
| | | 6 | | 1,100 | BWR | 1979.10 |
| ⑤ | Fukushima Daini | 1 | Tokyo | 1,100 | BWR | 1982.4 |
| | | 2 | | 1,100 | BWR | 1984.2 |
| | | 3 | | 1,100 | BWR | 1985.6 |
| | | 4 | | 1,100 | BWR | 1987.8 |
| ⑥ | Kashiwazaki Kariwa | 1 | Tokyo | 1,100 | BWR | 1985.9 |
| | | 2 | | 1,100 | BWR | 1990.9 |
| | | 3 | | 1,100 | BWR | 1993.8 |
| | | 4 | | 1,100 | BWR | 1994.8 |
| | | 5 | | 1,100 | BWR | 1990.4 |
| | | 6 | | 1,356 | ABWR | 1996.11 |
| | | 7 | | 1,356 | ABWR | 1997.7 |
| ⑦ | Hamaoka | 1 | Chubu | 540 | BWR | 1976.3 |
| | | 2 | | 840 | BWR | 1978.11 |
| | | 3 | | 1,100 | BWR | 1987.8 |
| | | 4 | | 1,137 | BWR | 1993.9 |
| | | 5 | | 1,267 | ABWR | 2005.1 |
| ⑧ | Shika | 1 | Hokuriku | 540 | BWR | 1993.7 |
| | | 2 | | 1,358 | ABWR | 2006.3 |
| ⑨ | Mihama | 1 | Kansai | 340 | PWR | 1970.11 |
| | | 2 | | 500 | PWR | 1972.7 |
| | | 3 | | 826 | PWR | 1976.12 |
| ⑩ | Takahama | 1 | Kansai | 826 | PWR | 1974.11 |
| | | 2 | | 826 | PWR | 1975.11 |
| | | 3 | | 870 | PWR | 1985.1 |
| | | 4 | | 870 | PWR | 1985.6 |
| ⑪ | Ohi | 1 | Kansai | 1,175 | PWR | 1979.3 |
| | | 2 | | 1,175 | PWR | 1979.12 |
| | | 3 | | 1,180 | PWR | 1991.12 |
| | | 4 | | 1,180 | PWR | 1993.2 |
| ⑫ | Shimane | 1 | Chugoku | 460 | BWR | 1974.3 |
| | | 2 | | 820 | BWR | 1989.2 |

| | | | | | | |
|-----------|-------------|---|------------------------|----------|-----|---------|
| 13 | Ikata | 1 | Shikoku | 566 | PWR | 1977.9 |
| | | 2 | | 566 | PWR | 1982.3 |
| | | 3 | | 890 | PWR | 1994.12 |
| 14 | Genkai | 1 | Kyushu | 559 | PWR | 1975.10 |
| | | 2 | | 559 | PWR | 1981.3 |
| | | 3 | | 1,180 | PWR | 1994.3 |
| | | 4 | | 1,180 | PWR | 1997.7 |
| 15 | Sendai | 1 | Kyushu | 890 | PWR | 1984.7 |
| | | 2 | | 890 | PWR | 1985.11 |
| 16 | Tokai Daini | | Japan Atomic Power Co. | 1,100 | BWR | 1978.11 |
| 17 | Tsuruga | 1 | Japan Atomic Power Co. | 357 | BWR | 1970.3 |
| | | 2 | | 1,160 | PWR | 1987.2 |
| Total | 55 Units | | | 49,467MW | | |

•Under Construction

(Estimated start)

| | | | | | |
|---------|---------|----------|---------|------|---------|
| Tomari | 3 | Hokkaido | 912 | PWR | 2009.12 |
| Shimane | 3 | Chugoku | 1,373 | ABWR | 2011.12 |
| Total | 2 Units | | 2,285MW | | |

•Closed

| | | | | | |
|-------|--|------------------------|-----|-----|--------|
| Tokai | | Japan Atomic Power Co. | 166 | GCR | 1998.3 |
|-------|--|------------------------|-----|-----|--------|

•Others

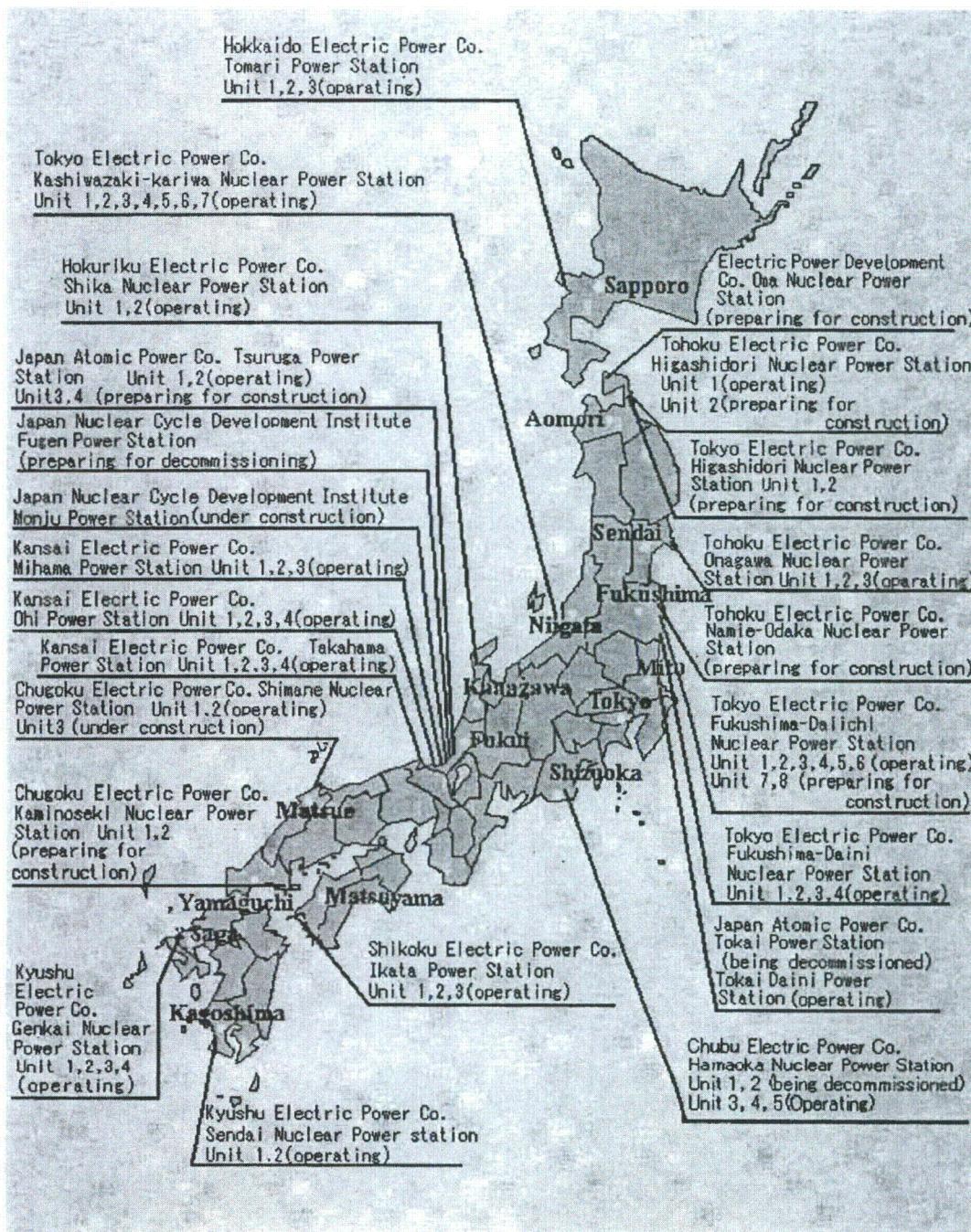
| | | | | | |
|-------|--|----------------------------|-----|----------------|--|
| Fugen | | Japan Atomic Energy Agency | 165 | ATR(Prototype) | |
| Monju | | Japan Atomic Energy Agency | 280 | FBR(Prototype) | |

•Preparing for Construction

(Estimated start)

| | | | | | |
|--------------|----------|------------------------|----------|------|---------|
| Namie-Odaka | | Tohoku | 825 | BWR | FY2018 |
| Higashi-Dori | 2 | Tohoku | 1,385 | ABWR | FY2018~ |
| Fukushima | 7 | Tokyo | 1,380 | ABWR | 2013.10 |
| Daiichi | 8 | | 1,380 | ABWR | 2014.10 |
| Higashi-Dori | 1 | Tokyo | 1,385 | ABWR | 2014.12 |
| | 2 | | 1,385 | ABWR | FY2017~ |
| Kaminoseki | 1 | Chugoku | 1,373 | ABWR | FY2014 |
| | 2 | | 1,373 | ABWR | FY2017 |
| Ohma | | EPDC | 1,383 | ABWR | 2012.3 |
| Tsuruga | 3 | Japan Atomic Power Co. | 1,538 | APWR | 2016.3 |
| | 4 | | 1,538 | APWR | 2017.3 |
| Total | 11 Units | | 14,945MW | | |

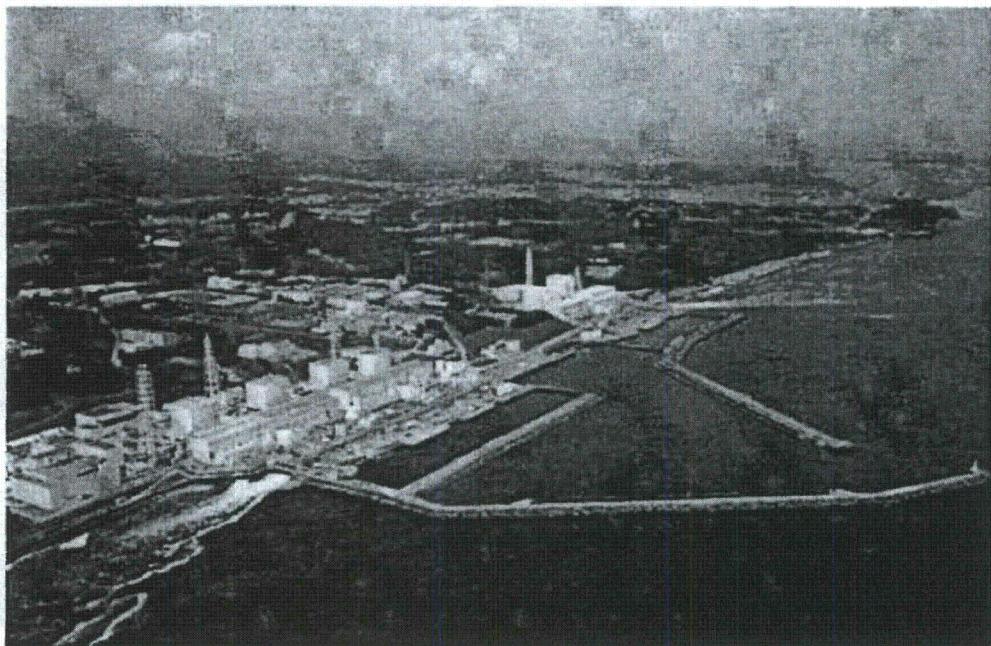
Note: PWR=Pressurized Water Reactor, BWR=Boiling Water Reactor, APWR=Advanced Pressurized Water Reactor, ABWR=Advanced Boiling Water Reactor, GCR=Gas Cooled Reactor, ATR=Advanced Thermal Reactor, FBR=Fast Breeder Reactor



TOKYO ELECTRIC POWER COMPANY (TEPCO)

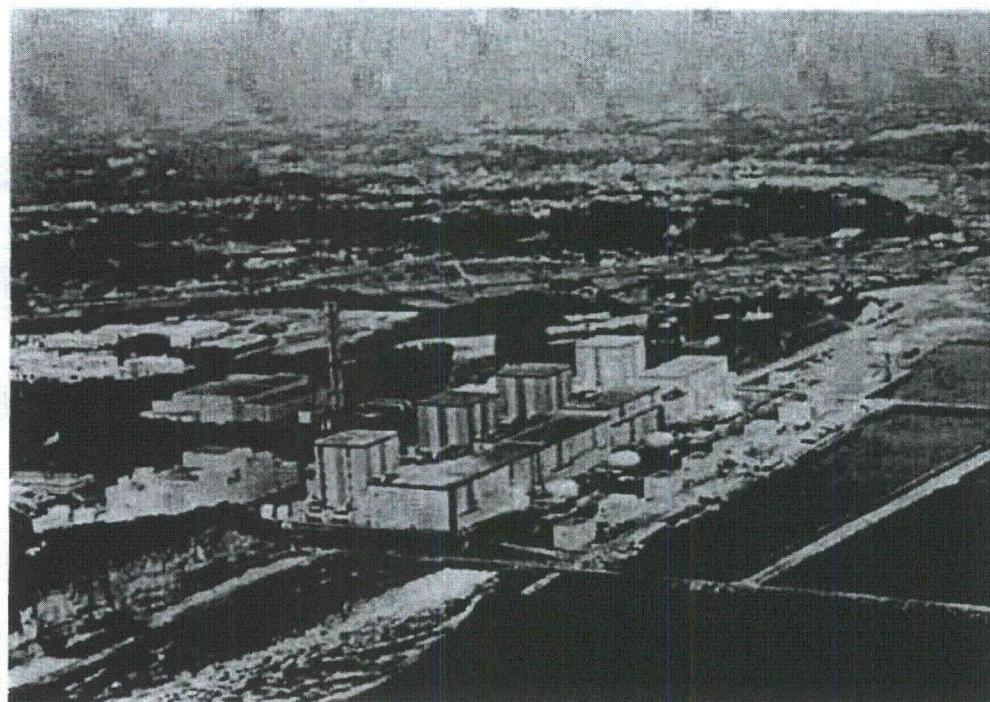
Fukushima Daiichi

| Power plant name (Unit number) | Location | Reactor type | Licensed output (MWe) | Start of commercial operation |
|-----------------------------------|-------------------------|-----------------|-----------------------------|-------------------------------------|
| Fukushima Daiichi (Unit.1) | Fukushima prefecture | BWR | 460 | Mar.26.1971 |
| Fukushima Daiichi (Unit.2) | Fukushima prefecture | BWR | 784 | Jul.18.1974 |
| Fukushima Daiichi (Unit.3) | Fukushima prefecture | BWR | 784 | Mar.27.1976 |
| Fukushima Daiichi (Unit.4) | Fukushima prefecture | BWR | 784 | Oct.12.1978 |
| Fukushima Daiichi (Unit.5) | Fukushima prefecture | BWR | 784 | Apr.18.1978 |
| Fukushima Daiichi (Unit.6) | Fukushima prefecture | BWR | 1100 | Oct.24.1979 |



Fukushima Daini

| Power plant name (Unit number) | Location | Reactor type | Licensed output (MWe) | Start of commercial operation |
|-----------------------------------|-------------------------|-----------------|-----------------------------|-------------------------------------|
| Fukushima Daini (Unit.1) | Fukushima prefecture | BWR | 1100 | Apr.20.1982 |
| Fukushima Daini (Unit.2) | Fukushima prefecture | BWR | 1100 | Feb. 3.1984 |
| Fukushima Daini (Unit.3) | Fukushima prefecture | BWR | 1100 | Jun.21.1985 |
| Fukushima Daini (Unit.4) | Fukushima prefecture | BWR | 1100 | Aug.25.1987 |



EARTHQUAKE IMPACT

The Fukushima Daiichi Nuclear Power Station and the nearby Fukushima Daini Nuclear Power Station were the hardest hit following the 8.9 magnitude earthquake that struck Japan. Both of these sites are operated by Tokyo Electric Power Company (TEPCO) and include 10 operating units (6 at Daiichi and 4 at Daini) with 2 more at Daiichi under construction.

All 6 units of **Fukushima Daiichi Nuclear Power Station** have been shut down and the status according to the TEPCO corporate website as of 0200 on 3/13/11 (local time in Japan) are as follows:

Unit 1(Shut down)

- Reactor has been shut down. However, the unit is under inspection due to the explosive sound and white smoke that was confirmed after the big quake occurred at 3:36PM.
- We have been injecting sea water and boric acid which absorbs neutron into the reactor core.

Unit 2(Shut down)

- Reactor and Reactor Core Isolation Cooling System have been shut down.
- Current reactor water level is lower than normal level, but the water level is steady. After fully securing safety, we are preparing to implement a measure to reduce the pressure of the reactor containment vessels under the instruction of the national government.

Unit 3(Shut down)

- Reactor has been shut down and we continue injecting water by High Pressure Core Injection System. After fully securing safety, we are preparing to implement a measure to reduce the pressure of the reactor containment vessels under the instruction of the national government.
- Currently, we do not believe there is any reactor coolant leakage inside the reactor containment vessel.

Unit 4 (shut down 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 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

All 4 units of **Fukushima Daini Nuclear Power Station** have been shut down and the status according to the TEPCO corporate website as of 2300 on 3/12/11 (local time in Japan) are as follows:

Unit 1 (shut down at 2:48pm on March 11th)

- Reactor is shut down and reactor water level is stable.
- Offsite power is available.
- At 8:19am, there was an alarm indicating that one of the control rods was not properly inserted, however, at 10:43am the alarm was spontaneously called off. Other control rods has been confirmed that they are fully inserted (reactor is in subcritical status)
- Status of main steam isolation valve: closed
- Injection of water into the reactor is done by Make-up Water Condensate System.

- At 6:08pm, we announced the increase in reactor containment vessel pressure, assumed to be due to leakage of reactor coolant. However, we do not believe there is leakage of reactor coolant in the containment vessel at this moment.
- At 5:22am, the temperature of the suppression chamber exceeded 100 degrees. As the reactor pressure suppression function was lost, at 5:22am, it was determined that a specific incident stipulated in article 15, clause 1 has occurred.
- We decided to prepare implementing measures to reduce the pressure of the reactor containment vessel (partial discharge of air containing radioactive materials) in order to fully secure safety. This preparation work started at around 9:43am and finished at 6:00pm.

Unit 2 (shut down at 2:48pm on March 11th)

- Reactor is shut down and reactor water level is stable.
- Offsite power is available.
- Control rods are fully inserted (reactor is in subcritical status)
- Status of main steam isolation valve: closed
- Injection of water into the reactor is done by Make-up Water Condensate System.
- We do not believe there is leakage of reactor coolant in the containment vessel.
- At 5:32am, the temperature of the suppression chamber exceeded 100 degrees. As the reactor pressure suppression function was lost, at 5:32am, it was determined that a specific incident stipulated in article 15, clause 1 has occurred.
- We decided to prepare implementing measures to reduce the pressure of the reactor containment vessel (partial discharge of air containing radioactive materials) in order to fully secure safety. This preparation work started at around 10:33am and finished at 10:58pm.

Unit 3 (shut down at 2:48pm on March 11th)

- Reactor is shut down and reactor water level is stable.
- Offsite power is available.
- Control rods are fully inserted (reactor is in subcritical status)
- Status of main steam isolation valve: closed
- We do not believe there is leakage of reactor coolant in the containment vessel.
- We decided to prepare implementing measures to reduce the pressure of the reactor containment vessel (partial discharge of air containing radioactive materials) in order to fully secure safety. The preparation work started at around 12:08pm and finished at 12:13pm.
- Reactor cold shutdown at 12:15pm

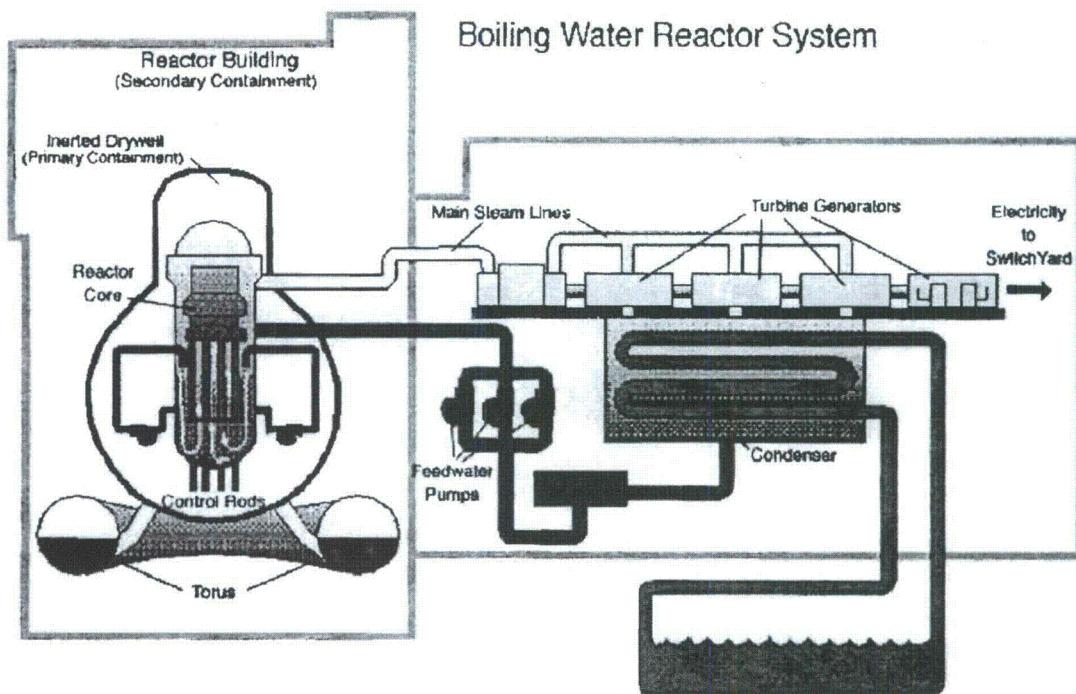
Unit 4 (shut down at 2:48pm on March 11th)

- Reactor is shut down and reactor water level is stable.
- Offsite power is available.
- Control rods are fully inserted (reactor is in subcritical status)
- Status of main steam isolation valve: closed
- Injection of water into the reactor is done by Make-up Water Condensate System.
- We do not believe there is leakage of reactor coolant in the containment vessel.
- In order to cool down the reactor, injection of water into the reactor had been done by the Reactor Core Isolation Cooling System, however, at 6:07am, the temperature of the suppression chamber exceeded 100 degrees. As the reactor pressure suppression function was lost, at 6:07am, it was determined that a specific incident stipulated in article 15, clause 1 has occurred.
- We decided to prepare implementing measures to reduce the pressure of the reactor containment vessel (partial discharge of air containing radioactive materials) in order to fully secure safety. The preparation work started at around 11:44am and finished at around 11:52am.
- Indication from monitoring posts installed at the site boundary did not show any difference from ordinary level.
- No radiation impact to the external environment has been confirmed.
- We will continue to monitor in detail the possibility of radioactive material being discharged from exhaust stack or discharge canal.

- There is no missing person within the power station.
- We are presently checking on the site situation of each plant while keeping the situation of aftershock and Tsunami in mind.
- A seriously injured worker who had been trapped in the crane operating console of the exhaust stack was transported to the ground at 5:13pm and confirmed dead at 5:17pm. We sincerely pray for the repose of his soul.
- A worker was lightly injured spraining his left ankle and cutting both knees when he fell while walking at the site. The worker has returned to work after medical treatment and rest

There was an explosion at the Fukushima Daiichi Nuclear Power Station Unit 1 early Saturday. It affected the secondary containment structure at the station. The primary containment and reactor vessel were not affected.

As quoted in the Japanese press; "An explosion that sent white smoke rising above the Fukushima Daiichi plant Saturday afternoon buckled the walls of a concrete building that surrounded one of the plant's nuclear reactors, but did not damage the reactor itself, Chief Cabinet Secretary Yukio Edano told reporters" and "The International Atomic Energy Agency, citing Japanese authorities, said the explosion occurred outside the plant's primary containment vessel and that the vessel remained intact. The explosion injured four workers, it said."



To limit damage to the reactor core, Tokyo Electric Power Company began injecting sea water mixed with boron into the primary containment vessel in an operation that got under way Saturday night, IAEA said.

While Cabinet Secretary Edano said later in the day that radiation levels appeared to be falling, the government nevertheless ordered an evacuation of residents within a 20-kilometer radius of the Daiichi plant, as well as a second facility where the cooling system had failed -- the Fukushima Daini plant.

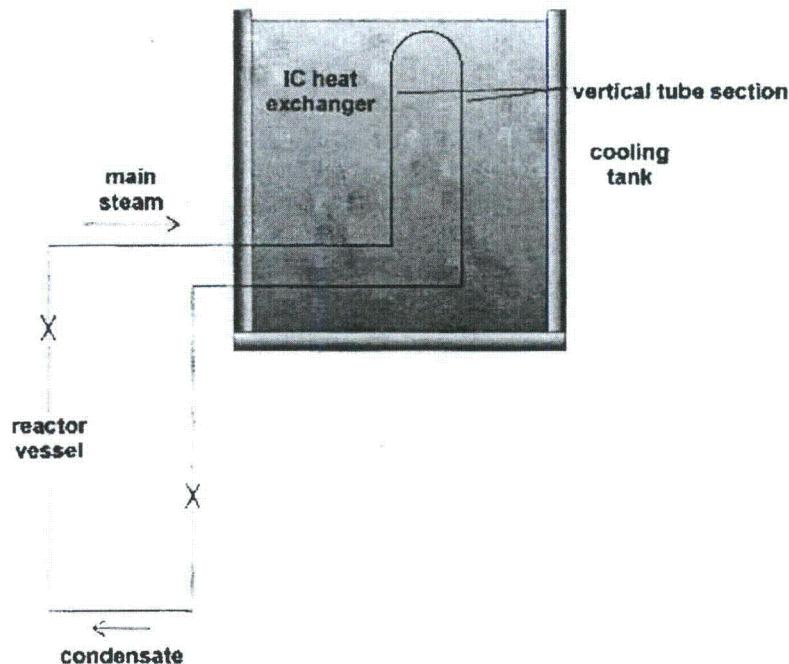
TECHNICAL BACKGROUND MATERIAL

Fukushima Daiichi Nuclear Power Station Unit 1 is older design BWR that uses an ISOLATION CONDENSER for decay heat removal. It is currently a design that is found at Oyster Creek, Nine Mile Point 1 and Dresden Units 2 and 3.

The following description (from Access Science / McGraw Hill) provides a good discussion of the Isolation Condenser and how it operates.

Isolation condenser system

The isolation condenser system (ICS) is a passive system. Passively cooled core isolation condensers are designed to provide cooling to a boiling water reactor (BWR) core subsequent to its isolation from the primary heat sink—the turbine/condenser set. During power operations, the reactor is normally isolated from the isolation condenser (IC) heat exchanger by closed valves. In the event that the core must be isolated from its primary heat sink, the valves are opened and main steam is diverted to the IC heat exchanger where it is condensed in its vertical tube section. Heat is transferred to the atmosphere through the heat exchanger and isolation condenser system/ passive containment cooling system (ICS/PCCS) pool (cooling tank). The condensate returns to the core by gravity, draining inside the tubes. If the cooling tank runs out of water, the function of the IC is lost.



The other BWR units use RCIC for decay heat removal which is similar to most BWR's in operation in the United States. The following comes from the NRC's Standard Review Plan on RCIC (NUREG-0800)

The reactor core isolation cooling (RCIC) system in a boiling water reactor (BWR) is a safety system which serves as a standby source of cooling water to provide a limited decay heat removal capability whenever the main feedwater system is isolated from the reactor vessel. Abnormal events which could cause such a situation to arise include an inadvertent isolation of all main steam lines, loss of condenser vacuum, pressure regulator failures, loss of feedwater, and the loss of offsite power. For

each of these events, the high pressure part of the emergency core cooling system (ECCS) provides a backup function to the RCIC system. In some plant designs, the RCIC system, in conjunction with the high pressure core flooder (HPCF) system, may be part of the emergency core cooling system. In addition, the RCIC system may provide decay heat removal necessary for coping with a station blackout.

The RCIC system consists of a steam-driven turbine-pump unit and associated valves and piping capable of delivering makeup water to the reactor vessel and supplying steam to and removing condensate from the RCIC steam turbine where applicable. Fluid removed from the reactor vessel following a shutdown from power operation is normally made up by the feedwater system, supplemented by in leakage from the control rod drive system. If the feedwater system is inoperable, the RCIC turbine-pump unit starts automatically or is started by the operator from the control room. The water supply for the RCIC system comes from the condensate storage tank, with a secondary supply from the suppression pool.

The following is from utility licensee training material (PPL):

The purpose of the RCIC system is to provide sufficient coolant to the RPV to maintain sufficient water inventory for adequate cooling of the reactor following a RPV isolation event accompanied by loss of flow from the FW system.

The Reactor Core Isolation Cooling (RCIC) system maintains sufficient water inventory in the Reactor Pressure Vessel (RPV) to permit adequate core cooling following a RPV isolation event accompanied by loss of flow from the Reactor Feedwater (FW) system.

The RCIC system consists of a high pressure pump driven by a steam turbine. The RCIC system pumps water either from the Condensate Storage Tank (CST) or the Suppression Pool into the RPV via the 'A' FW line. The RCIC system supplies the design flow rate within a specified initiation time over a range of RPV pressures from approximately 150 to 1187 psig. The steam to drive the RCIC turbine is taken from the 'C' main steam line upstream of the main steam isolation valves (MSIVs). Steam exhausted from the RCIC turbine is directed to the Suppression Pool. The RCIC system is capable of startup and operation without auxiliary AC power, compressed air, or an external cooling water system.

The Design Basis for the RCIC system is:

- Maintain sufficient water in the reactor vessel to assure adequate core cooling to prevent fuel from overheating in the event of reactor isolation with loss of feedwater. Prevent level from reaching TAF without ECCS.
- Allow for plant shutdown, when feedwater is lost, by maintaining level until vessel is depressurized to the point where shutdown cooling can be placed in operation.
- Makeup capacity to assure vessel level does not drop to top of core. Flow rate is approximately equal to the boil off rate 15 minutes after shutdown from 100% power.
- System will start automatically and deliver design flow in 30 seconds over a steam pressure range of 150-1210 psig. Independent of external AC power (only AC component is inboard steam isolation valve which is normally open), service air, and external cooling systems.
- Capable of remote manual startup, operation, and shutdown from the Remote Shutdown Panel.
- Full flow functional testing may be performed during normal plant operation.

REFERENCE LINKS

- TEPCO Corporate News Site (<http://www.tepco.co.jp/en/index-e.html>)
- Access Science (<http://accessscience.proxy.mpcc.edu/content.aspx?id=YB100214>)
- CNN Updates (<http://www.cnn.com/2011/WORLD/asiapcf/03/12/japan.nuclear/index.html>)

Sabisch, Andrew

From: Batson, Scott L [Scott.Batson@duke-energy.com]
Sent: Sunday, March 13, 2011 4:11 PM
To: Sabisch, Andrew
Subject: RE: Japanese BWR Info

Thanks for the additional information once again Andy. Interesting insights on their EP programs and their training. The training piece surprised me the most.

Good luck with the moving piece tomorrow. I know that you aren't looking forward to that.

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

From: Sabisch, Andrew [mailto:Andrew.Sabisch@nrc.gov]
Sent: Sunday, March 13, 2011 2:40 PM
To: Batson, Scott L
Subject: RE: Japanese BWR Info

Scott,

Sounds like two of their units will never operate again - pumping sea water in to Daiichi Units 1 and 3 says a lot and it appears that site boundary dose measurements are once again on the increase after dropping last night and this morning. Not being able to restart HPCI or RCIC on Unit 3 must have been devastating to the staff working to control the reactor and the core was uncovered for some time. The focus is also moving to the spent fuel pools which are shared among the units and since they reprocess in Japan, the fuel that is in the pools will have the highest decay heat loading

I think that one of their struggles is the E-Plan process they have in Japan. They do not have the EP infrastructure we do here in the US nor do their EP staff have the training that we do in the US. When I was there, the belief was that the design was robust enough that events could be handled and the EP aspects took a back seat. Even simulator training is far different there. They do not have site specific simulators but rather use a vendor facility much like we did pre-TMI where we went to Lynchburg for training. And the entire crew does not go to the simulator at the same time - one person per crew goes to the simulator for 2 weeks of training and works with operators from other units doing observations for WANO there was a different experience to say the least

Thankfully half the Daiichi units were in the required outage that they take in the Spring each year - hate to imagine if all 6 units had been at 100% when the quake hit.

On another note, I will be in Rock Hill tomorrow with the movers getting things packed up. Geoff has the lead for the office and has what I gave him for the 0915 so we can plan on that tomorrow. I will be available by cell or pager if needed.

Andy

=====

Andrew T. Sabisch
U.S. Nuclear Regulatory Commission
Senior Resident Inspector
Oconee Nuclear Station
7812B Rochester Highway, Seneca, SC 29672

(O) 864-873-3001 / (C) (b)(6) / (H) (b)(6)

From: Batson, Scott L [Scott.Batson@duke-energy.com]
Sent: Sunday, March 13, 2011 2:19 PM

To: Sabisch, Andrew
Subject: RE: Japanese BWR Info

Thanks for the continued updates Andy. I do appreciate them.

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

From: Sabisch, Andrew [mailto:Andrew.Sabisch@nrc.gov]
Sent: Sunday, March 13, 2011 11:50 AM
To: Morris, Jim; Gillespie, T P Jr; Batson, Scott L; Ray, Tom; Bohlmann, Joel E; Waldrep, Benjamin C; Pitesa, Bill; Repko, Regis T; Jamil, Dhiaa M
Subject: Japanese BWR Info

Apparently the Tokyo Electric Power Company (TEPCO) website has been crippled with the demand for information and access to the news portion is spotty at best (<http://www.tepcos.co.jp/en/index-e.html>)

The IAEA site has information not sure of the update frequency but at least teh information has been checked for accuracy unlike some of the news sites that are hyping the event to show the "specter of death looming on the horizon" - The IAEA site for updates is - <http://www.iaea.org/press/>

The issues at the Daiichi facility continue and it appears that at both the Daini and Onagawa sites, they are also dealing with challenges in terms of inventory and pressure control.

Andy

=====

Andrew T. Sabisch
U.S. Nuclear Regulatory Commission
Senior Resident Inspector
Oconee Nuclear Station
7812B Rochester Highway, Seneca, SC 29672
(O) 864-873-3001 / (C) (b)(6) / (H) (b)(6)

Woodruff, Gena

From: LIA04 Hoc
Sent: Sunday, March 13, 2011 4:27 PM
To: Woodruff, Gena; Trojanowski, Robert; McNamara, Nancy; Tifft, Doug; Barker, Allan; Logaras, Harral; Maier, Bill
Cc: LIA07 Hoc; Rautzen, William; Noonan, Amanda
Subject: CCing your Regional Administrators

I want to confirm that we will likely cc your Regional Administrators (and Jared in RIII) on certain, "priority" attachments/messages regarding the Japan event. Some of you are engaged and need to be engaged in a very timely fashion, while others possibly may not be reading them all in "real" time.

Accordingly, as we forward to you certain talking points and/or press releases, etc., we may choose to also cc your management.

No insult is meant by this. But it will help ensure Regional managers receive all important documents, such as HQ-generated Qs and As, in a timely fashion.

Rich

Woodruff, Gena

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

Woodruff, Gena

From: LIA04 Hoc
Sent: Sunday, March 13, 2011 5:43 PM
To: McNamara, Nancy; Maier, Bill; Trojanowski, Robert; Woodruff, Gena; Tifft, Doug; Barker, Allan; Logaras, Harral
Subject: RE: Opinion Req from Info briefed at last briefing

Let me get back to you all on this.

Rich

From: McNamara, Nancy
Sent: Sunday, March 13, 2011 5:40 PM
To: LIA04 Hoc; Maier, Bill; Trojanowski, Robert; Woodruff, Gena; Tifft, Doug; Barker, Allan; Logaras, Harral
Subject: Opinion Req from Info briefed at last briefing
Importance: High

All, apparently on the last NRC briefing the following was briefed and summarized for the Region I staff....."An erroneous release of projected Japanese plant release plume data, using the NRC logo without our knowledge, contains information that the release rates could be as high as 75 Rem and reach Colorado, USA. There has been an attempt to remove this mis-leading and unauthorized information; however the info still may exist on some social media locations. "

Should we be letting our states know this is out there and that the NRC had nothing to do with it???????

From: LIA04 Hoc
Sent: Sunday, March 13, 2011 3:19 PM
To: Maier, Bill; Trojanowski, Robert; Woodruff, Gena; Tifft, Doug; McNamara, Nancy; Barker, Allan; Logaras, Harral
Cc: Harrington, Holly
Subject: Latest Press Release and an inquiry from Office of Public Affairs

RSLOs:

The latest NRC press release states: "NRC SEES NO RADIATION AT HARMFUL LEVELS REACHING U.S. FROM DAMAGED JAPANESE NUCLEAR POWER PLANTS."

Holly in Public Affairs is preparing for incoming questions resulting from this press release. Her question:

OPA wants to ensure that our indicating to incoming callers that they contact their respective state professional/environmental/health organizations to get answers to their questions.

Specifically, Holly provides the following:

We have a blog comment that asks this: Can you give us information on who is monitoring the US West Coast for dangerous environmental radiation levels and how we may contact that entity?

We are in a region with NO US atomic energy plants and have no preparedness for nuclear accidents – What agency should we contact to acquire protective equipment and supplies?

We want to answer this: See our latest blog post. In short – no, we do not believe the U.S. West Coast (or any part of the U.S.) will receive harmful amounts of radiation from the nuclear power plants in Japan. If you have concerns specifically about your community, you can contact your state radiological or environmental office for information.

I (Rich) ask the following: are the RSLOs ok with this approach?

Rich

Woodruff, Gena

From: McNamara, Nancy
Sent: Sunday, March 13, 2011 6:20 PM
To: LIA04 Hoc; Maier, Bill; Trojanowski, Robert; Woodruff, Gena; Tifft, Doug; Barker, Allan; Logaras, Harral
Cc: Harrington, Holly; Virgilio, Rosetta; Rautzen, William; Noonan, Amanda
Subject: RE: Opinion Req from Info briefed at last briefing

thanks

From: LIA04 Hoc
Sent: Sunday, March 13, 2011 6:19 PM
To: McNamara, Nancy; Maier, Bill; Trojanowski, Robert; Woodruff, Gena; Tifft, Doug; Barker, Allan; Logaras, Harral
Cc: Harrington, Holly; Virgilio, Rosetta; Rautzen, William; Noonan, Amanda
Subject: RE: Opinion Req from Info briefed at last briefing

Nancy et al:

It is recommended that, along with the attached Press Release (NRC SEES NO RADIATION AT HARMFUL LEVELS REACHING U.S. FROM DAMAGED JAPANESE NUCLEAR POWER PLANTS), you suggest to your states: We believe there is a lot of inaccurate and misleading information in press reports; however the NRC is not in a position to fact-check these reports. We do encourage folks to consult credible government sources of information in addition to press reports.

Hope this helps. This was contributed by Holly Harrington and the NRC Blog that she manages.

Rich

From: McNamara, Nancy
Sent: Sunday, March 13, 2011 5:40 PM
To: LIA04 Hoc; Maier, Bill; Trojanowski, Robert; Woodruff, Gena; Tifft, Doug; Barker, Allan; Logaras, Harral
Subject: Opinion Req from Info briefed at last briefing
Importance: High

All, apparently on the last NRC briefing the following was briefed and summarized for the Region I staff....."An erroneous release of projected Japanese plant release plume data, using the NRC logo without our knowledge, contains information that the release rates could be as high as 75 Rem and reach Colorado, USA. There has been an attempt to remove this mis-leading and unauthorized information; however the info still may exist on some social media locations. "

Should we be letting our states know this is out there and that the NRC had nothing to do with it???????

From: LIA04 Hoc
Sent: Sunday, March 13, 2011 3:19 PM
To: Maier, Bill; Trojanowski, Robert; Woodruff, Gena; Tifft, Doug; McNamara, Nancy; Barker, Allan; Logaras, Harral
Cc: Harrington, Holly
Subject: Latest Press Release and an inquiry from Office of Public Affairs

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I (Rich) ask the following: are the RSLOs ok with this approach?

Rich

Woodruff, Gena

From: Harrington, Holly
Sent: Sunday, March 13, 2011 6:50 PM
To: Andrews, Tom; Barkley, Richard; Cain, Chuck; Hay, Michael; Heck, Jared; Tifft, Doug;
Subject: Woodruff, Gena
NRC Blog Update

Be sure to check out the multiple posts on the NRC Blog as the agency responded to events in Japan. The blog worked very well to get information out in a way that augmented our press releases. We had more than 2,000 views on Friday alone and about 3,000 total over the weekend.

Woodruff, Gena

From: Logaras, Harral
Sent: Sunday, March 13, 2011 8:04 PM
To: LIA04 Hoc; Maier, Bill; Trojanowski, Robert; Woodruff, Gena; Tifft, Doug; McNamara, Nancy; Barker, Allan
Cc: Harrington, Holly
Subject: Re: Latest Press Release and an inquiry from Office of Public Affairs

I see this as a proper response to the question.
Harral

From: LIA04 Hoc
To: Maier, Bill; Trojanowski, Robert; Woodruff, Gena; Tifft, Doug; McNamara, Nancy; Barker, Allan; Logaras, Harral
Cc: Harrington, Holly
Sent: Sun Mar 13 15:18:40 2011
Subject: Latest Press Release and an inquiry from Office of Public Affairs

RSLOs:

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I (Rich) ask the following: are the RSLOs ok with this approach?

Rich

Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Sunday, March 13, 2011 8:39 PM
To: Bob Newlin; ' Hunt (?); 'Al Belisle ; 'Al Gibson ; 'Al Herdt
; 'Al Ignatonis ; 'Bill Kleinsorge'; 'Bill Miller ; 'Bill Tobin
; 'Bob Wright ; 'Bob/Angie Martin ;
(b)(6) ; 'Ed Girard ; 'Hellan Kreeger ; 'Hugh Dance ;
(b)(6) ; 'Jim Coley ; 'Jim Hufham ;
'Ken Clark'; 'Kerry Landis ; 'Milt Hunt (?) ;
'Nick Economos'; 'Phil Stohr ; 'Taylor ; 'Uryc ;
Gena ; 'Woodruff,
Subject: FW: Fukushima-Daiichi-1
Attachments: Fukushima%201%20Unit%201%20damaged%20reactor[2].jpg

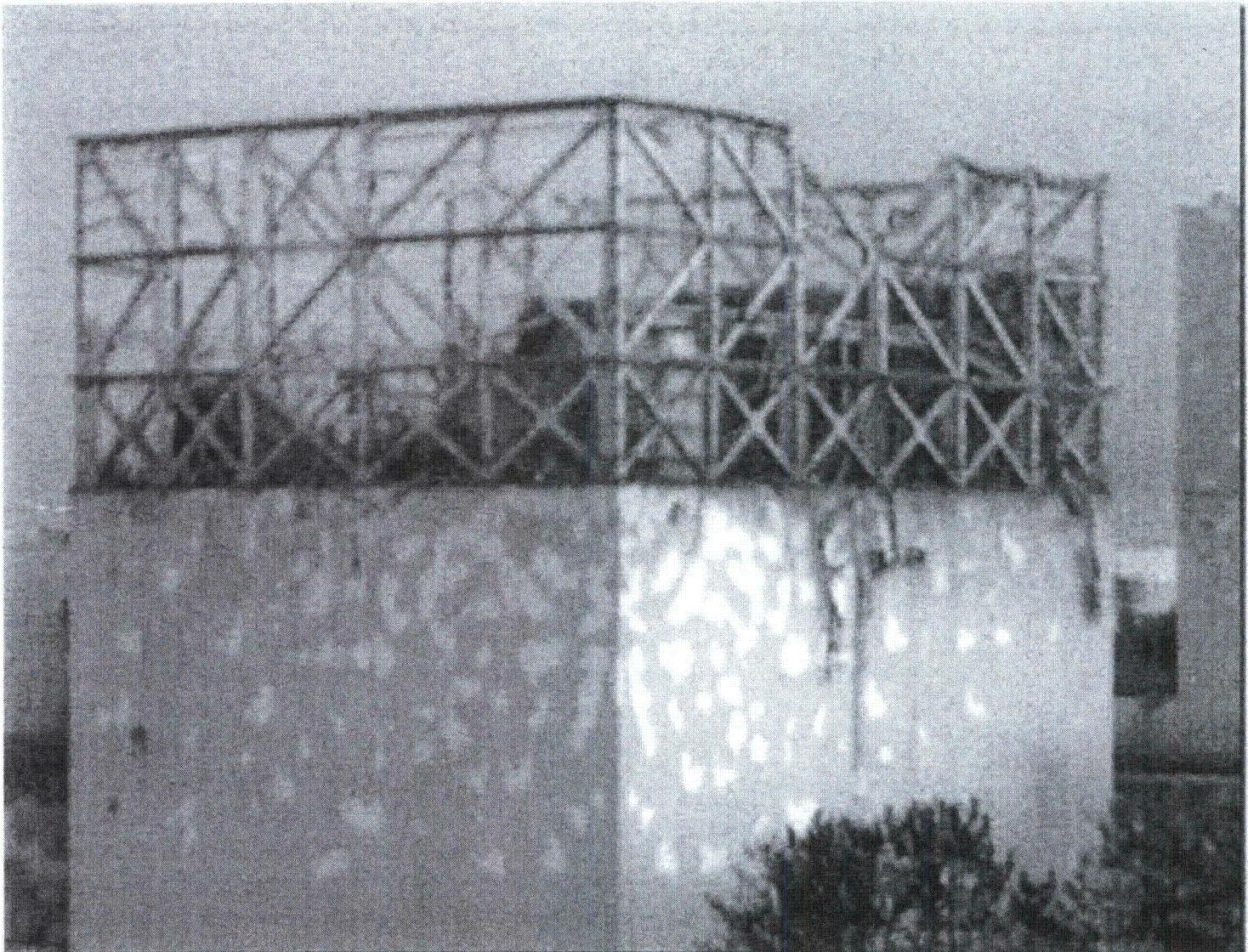
I got this from Charles Hackney, retired state liaison officer in RIV, who had received it from Pat Gwynn, who was, as best I recall, deputy RIV administrator.

Joe G.

Subject: Fukushima-Daiichi-1

Here is a picture of the damaged Fukushima 1 Unit 1 Reactor Building. Assuming this is similar to a GE BWR-3 in a MK I Containment (similar to Cooper Nuclear Station in Nebraska), the damage is to the "blowout panels" above the refueling floor. The reactor building itself appears intact. The blowout panels are designed to blow off in a design basis tornado/hurricane/cyclone to protect the main structure from damage resulting from the wind loading. In this case, an energetic event (e.g., steam explosion or hydrogen detonation) blew the panels off. Based on my observation of the explosive event video, it looked like a major steam explosion to me. This is the first close-up picture I have seen of the damage. The refueling area includes the spent fuel storage pool which is now exposed to the environment. If the station is still without electric power, the spent fuel pool will continually heat up (because of the spent fuel in the pool). Eventually, the fuel pool itself could become a problem resulting in an uncontrolled release of radioactivity. This is a longer term concern, depending on how long it has been since the last refueling at the facility.

BTW – I read this morning that this particular unit was scheduled for decommissioning in February 2011 but its license was just extended for 10 additional years of operation by the Japanese authorities. After having injected sea water into the reactor vessel, I think they will decommission the facility.



Woodruff, Gena

From: Milligan, Patricia
Sent: Sunday, March 13, 2011 10:34 PM
To: McIntyre, David; Harrington, Holly; Maier, Bill
Cc: LIA04 Hoc; McNamara, Nancy; Trojanowski, Robert; Tifft, Doug; Woodruff, Gena; Logaras, Harral; Barker, Allan; Virgilio, Rosetta; Turtl, Richard; Brenner, Eliot
Subject: Re: NEED TO INFORM YOU OF A POTENTIAL ISSUE WITH 11-046

The US does not distribute ki. States do
Sent from my NRC Blackberry
Patricia A Milligan, CHP RPh

(b)(6)

From: McIntyre, David
To: Harrington, Holly; Maier, Bill
Cc: LIA04 Hoc; Milligan, Patricia; McNamara, Nancy; Trojanowski, Robert; Tifft, Doug; Woodruff, Gena; Logaras, Harral; Barker, Allan; Virgilio, Rosetta; Turtl, Richard; Brenner, Eliot
Sent: Sun Mar 13 17:04:00 2011
Subject: RE: NEED TO INFORM YOU OF A POTENTIAL ISSUE WITH 11-046

Bill, et al – we are not revisiting the KI dispute in our press releases. KI is used in the United States, after all, or at least is available for use. The descriptions of protective measures in both versions of the press release were included at the direct request of the Chairman, who was responding to the US Ambassador in Tokyo. The Ambassador was concerned that US citizens in Japan were ignoring the Japanese government's protective measures recommendations, and sought reassurance from us that the measures were comparable to what we would do here in the US.

Dave Mc, OPA

From: Harrington, Holly
Sent: Sunday, March 13, 2011 4:55 PM
To: Maier, Bill; McIntyre, David
Cc: LIA04 Hoc; Milligan, Patricia; McNamara, Nancy; Trojanowski, Robert; Tifft, Doug; Woodruff, Gena; Logaras, Harral; Barker, Allan; Virgilio, Rosetta
Subject: RE: NEED TO INFORM YOU OF A POTENTIAL ISSUE WITH 11-046

Bill – I've cc'd Dave on this response. He wrote the release and I believe had a specific reason for this inclusion.

Holly

From: Maier, Bill
Sent: Sunday, March 13, 2011 4:46 PM
To: Harrington, Holly
Cc: LIA04 Hoc; Milligan, Patricia; McNamara, Nancy; Trojanowski, Robert; Tifft, Doug; Woodruff, Gena; Logaras, Harral; Barker, Allan; Virgilio, Rosetta
Subject: NEED TO INFORM YOU OF A POTENTIAL ISSUE WITH 11-046
Importance: High

Holly,

I noticed in the revised news release (attached) and in its pre-revision predecessor, that the following statement appears:

The United States also uses sheltering in place and potassium iodide, protective measures also available in Japan.

(b)(5)

I don't know what the fix is, but I wanted to alert you (and the cc addressees) that some backlash is possible from this.

Bill Maier
RSLO
Region IV

From: opa administrators [mailto:opa@nrc.gov]
Sent: Sunday, March 13, 2011 4:23 PM
To: Maier, Bill
Subject: Revised -NRC Sees No Radiation at Harmful Levels Reaching U.S. From Damaged Japanese Nuclear Power Plants

Crowe, Eddy

From: Croteau, Rick
Sent: Monday, March 14, 2011 6:24 AM
To: Croteau, Rick; Davenport, Patricia; Jones, William; Bartley, Jonathan; Guthrie, Eugene; Hopper, George; McCoy, Gerald; Musser, Randy; Rich, Daniel; Shaeffer, Scott; Bartley, Jonathan; Brady, Joseph; Cureton, Ronald; Davis, Angel; Ellis, Kevin; Hamman, Joyce; Harmon, Lee; Heath, Jermaine; Hutto, Andy; Ottenberg, Geoffrey; Rapp, Curtis; Sabisch, Andrew; Stamm, Eric; Barrett, Amy; Cain, Loyd; Chandler, Timothy; Crowe, Eddy; Davis, Angel; Dyal, Edna; Evans(R2), Marilyn; Hickey, James; Lighty, Tonya; Morris, Eddie; Niebaum, Phillip; Pressley, Lundy; Rose, Steven; Shaeffer, Scott; Sowa, Jeffrey; Barillas, Martha; Childs, Natasha; Higgins, Patrick; Hoeg, Tim; Maldonado, Militza; Morrison, Catherine; Morrissey, Thomas; Ninh, Son; Orr, Laura; Reyes, Rogerio; Rich, Daniel; Sanchez, Steven; Schroer, Suzanne; Sonneville, Gail; Stewart, Scott; Andrews, Susan; Austin, Joseph; Ellis, Kevin; Hitchuk, Betty; Kolcum, Gregory; Kroeger, Ann; Lessard, Patrick; Morrison, Catherine; Musser, Randy; OBryan, Phil; Wilson, Gerald; Worosilo, Jannette; Arnett, Daniel; Bush, Pamela; Clagg, Rodney; Coffman, Ellery; Dodson, Jim; Lippard, Katherine; Longley, Barbara; Mills, Daniel; Nadel, Jared; Reece, James; Schwieg, Mark; Zeiler, John; Chattin, Linda; Deschaine, Wesley; Guthrie, Eugene; Hamman, Jeffrey; Kontz, Craig; Monk, Robert; Niebaum, Phillip; Pressley, Lundy; Ross, Thierry; Scott, Christian; Speck, Mark; Stancil, Charles; White, Charlotte; Young, Cale; Hopper, George; King, Michael; Quinones-Navarro, Joylynn; Rivera-Ortiz, Joel; Taylor, Ryan
Cc: Munday, Joel
Subject: Events in Japan
Attachments: ~~OTUO_USNRC Earthquake-Tsunami Update 031411 0430EDT.docx; ANS Talking Points - 2011-03-13 R1_2.pdf~~

I'm sure we all have been closely following the ongoing events in Japan on the news this weekend. Attached is some info on the events. Please note the first is ~~OTUO~~. The second is an ANS document FYI. There have been several press releases from the NRC on the NRC web site at www.nrc.gov and you may want to mention that to any members of the media/public that may contact you (as you direct them to OPA.) From the previous Op Center Bulletins please note:

- Employees contacted by the media are asked to refer the calls to the Office of Public Affairs at 301-415-8200.
- 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.

Not that we need any reminder, but preventing these types of events and mitigating the consequences to protect public health and safety is what we are all about.

Rick

Seymour, Deborah



From: Seymour, Deborah
Sent: Monday, March 14, 2011 8:01 AM
To: Jeb at work; 'Jennifer.Napier@kimley-horn.com'
Subject: Japanese reactor situation

The NYtimes has "reasonable" coverage of the situation www.nytimes.com
Also you can go to the NRC public web site at www.nrc.gov

(b)(6)

Travick, Vanette

From: Munday, Joel
Sent: Monday, March 14, 2011 7:47 AM
To: R2DRS
Subject: FW: Events in Japan
Attachments: OHO_USNRC Earthquake-Tsunami Update 031411 0430EDT.docx; ANS Talking Points - 2011-03-13 R1_2.pdf

All,

I'm sure we all have been closely following the ongoing events in Japan on the news this weekend. Attached is some info on the events. Please note the first is OHO. The second is an ANS document FYI. There have been several press releases from the NRC on the NRC web site at www.nrc.gov and you may want to mention that to any members of the media/public that may contact you (as you direct them to OPA.) From the previous Op Center Bulletins please note:

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Joel

Woodruff, Gena

From: Trojanowski, Robert
Sent: Monday, March 14, 2011 8:32 AM
To: Ledford, Joey
Cc: Woodruff, Gena
Subject: RE: Solution for Cooling the Core
Attachments: image001.png

.....as well as a self proclaimed Expert and Alarmist, Joey, thanks

From: Ledford, Joey
Sent: Monday, March 14, 2011 8:11 AM
To: Trojanowski, Robert; Vias, Steven; Rudisail, Steven; Gody, Tony; Hannah, Roger; Evans, Carolyn
Subject: RE: Solution for Cooling the Core

Bob: She is the former NFS employee who was a whistleblower and source for TV news reports on NFS. She later ran for the state legislature (she lost) and during the campaign flipped back to pro-NFS.

***Joey Ledford**
Public Affairs Officer
Region II – Atlanta, Ga.
O: 404.997.4416
C: (b)(6)
joey.ledford@nrc.gov*



From: Trojanowski, Robert
Sent: Monday, March 14, 2011 7:59 AM
To: Vias, Steven; Rudisail, Steven; Gody, Tony; Hannah, Roger; Ledford, Joey; Evans, Carolyn
Subject: RE: Solution for Cooling the Core

Who is Karen Brackett?

From: Vias, Steven
Sent: Saturday, March 12, 2011 4:59 PM
To: Rudisail, Steven; Gody, Tony; Trojanowski, Robert; Hannah, Roger; Ledford, Joey; Evans, Carolyn
Subject: Fw: Solution for Cooling the Core

From: Karen Brackett <(b)(6)>
To: Vias, Steven
Sent: Sat Mar 12 15:07:50 2011
Subject: Solution for Cooling the Core

There is only one hope to cool that core now... They have to remove all water and vent in nitrogen gas and keep the fuel under one half percent exposure to any oxygen. It is oxygen that is their worse enemy now... water will not work for

anything now and will actually only help further the critcality at this point... and make no mistake this is a nuclear critcality.

Sincerely,
Karen S. Brackett

Woodruff, Gena

From: Trojanowski, Robert
Sent: Monday, March 14, 2011 8:33 AM
To: Woodruff, Gena
Subject: FW: Japan's real nuclear deal

FYI

From: Vias, Steven
Sent: Saturday, March 12, 2011 4:44 PM
To: Trojanowski, Robert; Hannah, Roger; Ledford, Joey; Gody, Tony; Evans, Carolyn
Subject: Fw: Japan's real nuclear deal

From: Karen Brackett <(b)(6)>
To: Vias, Steven
Sent: Fri Mar 11 13:44:20 2011
Subject: Japan's real nuclear deal

Dear Mr. Vias:

Just listening to the President speak to reporters on CNN... from his speech it is not clear that he has been updated on the current status of the Nuclear plant closest to the quake site in Japan. About two hours ago the American wife of a production operator working at this plant spoke with her husband and then reported their conversation to CNN. The CNN reporter of course did not really understand why the wife had called the station to give the report... and so the ball may have been dropped there. Obviously her husband was trying to get word to officials the state of the plant and the help that is needed and the crisis level it is currently in. She reported that he told her that glass was breaking all around him in the plant and that the ventilation ducts were falling from the ceiling onto the equipment below and breaking more things... He also advised that something very large had dropped from the ceiling and landed on fellow workers whom he was afraid and assumed had been crushed. As the plant was collapsing around them those that were able run outside all loaded up in groups into vehicles and agreed to meet up at the hotel in the local town they all stay at. When they reached the hotel apparently through great difficulty due to road damage... they found the hotel unstable. She reported that there was only a door left to the room he had been staying in.. and the one part of the hotel that was standing as they drove up they witnessed the people who were in it as they were coming running out due to fear it was going to collapse on them because of an occurring after shock. His cell phone was not working and he was able to borrow the phone of one these hotel people guests to call her and get word out. He also was wounded during his escape from the plant and was suffering from lacerations due to the breaking glass and falling objects... for which there was no medical help available for him or his co-workers who had also been injured. Most common production workers do not memorize their emergency contact list... and some of the plant managers are on the crisis teams when things go wrong... and they are suppose to go to a command control certain... however... they may not have been able to reach it and if they did... it sounds like all of the phones are down. This worker who called his wife... thankfully had the fore thought to tell her to call CNN.... It's important this information reach the secretary of energy and the director of FEMA as well as the navy in route.

Judging from what he has reported... any American aid groups going into this situation need to go with the expectation... of full exposure... and odds are they will be too late for cooling anything if they are able to help the ones out who are crushed... they need to know up front that they are doing so at the risk and jeopardy of their own lives. Needless to say if ventilation ducts have fallen down... there is exposure through air levels happening already to the local citizens.... how far that contamination will reach is of course of concern... even for Hawaii. The Japanese will have coolants available... I know Americans like to be gunho about rushing in to help people in need... but the unfortunate truth about this situation is... we can't get there in time... and even if we get there .. we are sending our soldiers into dangerous peril... to help people who are trapped is one thing.. but getting them free of entrapment is not going to free them from the radiation damage to their bodies that is already done... and at this point reversible. We need to get our service men and women and families off the island of course and help as much as possible... but the idea that we going to arrive with coolant and save the day... is just not possible at this point. We will be arriving to disaster... and unless we want our men and women

going down with the disaster... we need to make certain they understand that this is not a practice in nuclear exposure... this is the real deal.

With the cold temperatures there... hyperthermia will be a great concern as well... this is a terrible day for Japan.

Sincerely,
Karen S. Brackett

Woodruff, Gena

From: Trojanowski, Robert
Sent: Monday, March 14, 2011 8:33 AM
To: Woodruff, Gena
Subject: FW: Boron coat will not work

More FYI

From: Vias, Steven
Sent: Saturday, March 12, 2011 4:53 PM
To: Trojanowski, Robert; Hannah, Roger; Ledford, Joey; Evans, Carolyn; Gody, Tony; Rudisail, Steven
Subject: Fw: Boron coat will not work

From: Karen Brackett <(b)(6)>
To: Vias, Steven
Sent: Sat Mar 12 15:48:48 2011
Subject: Boron coat will not work

Please listen to me... a boron coat is not going to work at this stage. The general concept in using it to seal out the oxygen is good... but it will not cool the fuel and at this point nitrogen gas is their only hope. They have to keep oxygen away... oxygen will cause the fuel to expand and grow exponentially... the energy given off from that will be uncontrollable by water and boron because this solution will only feed the chain reaction now. It's just too late for using boron period. Nitrogen gas is it... that's the only hope they have.

Woodruff, Gena

From: Trojanowski, Robert
Sent: Monday, March 14, 2011 8:34 AM
To: Woodruff, Gena
Subject: FW: Eclipsing Chernobyl

.....and more FYI

From: Vias, Steven
Sent: Saturday, March 12, 2011 4:56 PM
To: Rudisail, Steven; Hannah, Roger; Ledford, Joey; Trojanowski, Robert; Gody, Tony; Evans, Carolyn
Subject: Fw: Eclipsing Chernobyl

From: Karen Brackett <(b)(6)>
To: Vias, Steven
Sent: Sat Mar 12 13:21:00 2011
Subject: Eclipsing Chernobyl

Good Afternoon:

I apologize because this is a form letter I am sending to multiple contacts in multiple agencies.

It's been a busy morning and I only just turned on the news. However, I am greatly concerned to see Americans still loading up to head to Japan. Now that the roof and wall has blown off one of the reactors... we have a Chernobyl on our hands... the wind will carry this in all directions. There simply is no safe way to send help. Bubble suits even would be required because they are using MOX in the number three... and at this point it is sadly only logical to assume it will go soon too. You have to have a crew to assist if you work in a bubble suit... and then you are two hours in and two hours out. There is nothing we can do at this point to help them. What we have to do... is not hurt innocent American workers by sending them to a certain death... not a fast death... but a certain death over time from exposure. It is a hard call but it is one the American people will understand... and it is the only right thing to do. I am seeing plenty of damage on our own west coast and in Hawaii to just public relations wise advise for now that all aid has been diverted to these locations.

What you have to understand is the Japanese are not lying directly when they say the roof and wall did not affect the reactor... That reactor is just an open pan... and they have had heat build up so quickly that it has flash evaporated all of or most of the coolant they had in the pan and the pressure of its release has blown the roof and walls... This happened at Chernobyl right before the meltdown. Sadly we are not talking about one reactor now that MOX is known to be in a number three reactor which is being reported as not being able to be cooled down... we are now dealing with Plutonium... People in Hawaii are not safe... nor the west coast. The fall out will cross the ocean by air. You have to start a broadcast to educate people of this country on what they have to do to be prepared.

You do not have a lot of time to prepare Hawaii... and time is critical at this point. The wind will carry the radiation across the ocean... and Hawaii is going to be directly effected... if not even the entire west coast. Plutonium is not anything we can afford as a country to play around with it and sit in on committees over. This is do it now... or have the blood of millions on your hands. This is now a national emergency for the United States. Please... please understand this... and do the right things quickly. My heart is breaking for the Japanese people of course... and I wish we could help them... but we have to help ourselves at this point. You need to evacuate all U.S. service men and women off of Japan... as of yesterday... but get it done today... just leave any gear for the Japanese and get our people out of there. If the MOX goes... this will eclipse Chernobyl. You have to understand this. And the odds are now... that it will blow. We are at an event horizon never known by man before. The worst possible mistake is to do nothing. People can take simple precautions like staying in doors for a few days and knowing to use alcohol and 409 or simple ammonia to clean up with after they have been outside... and to shower and keep out door clothes away from the interior of their homes... or wash them in these cleaners as soon as coming in doors. Cranberry juice or any antioxidant will help as well as iodine tablets.

These are simple steps that save lives... but they are only going to help those here in the U.S. and Hawaii... those at ground zone will face certain cancers at some point in their lives... there's a long list of what will come for them. Those too close will face kidney failure and die within the next six months. This is the real deal... this is not a movie... or something we can wish away. It has happened... and all we can do is act accordingly.

Sincerely,
Karen S. Brackett

Kirby, Janice

From: Sreenivas, V
Sent: Monday, March 14, 2011 8:59 AM
To: NMSS_DHLWRS Distribution
Subject: FW: Update on Japan Situation
Attachments: ANS Japan Backgrounder.pdf

FYI

V. Sreenivas, Ph.D., C.P.M.,
North Anna Plants Licensing PM
On Rotation with HLWRS
301-415-2597

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

From: Beltz, Terry
Sent: Sunday, March 13, 2011 11:36 AM
To: NRR_DORL Distribution
Subject: Update on Japan Situation

fyi

Backgrounder provided by ANS - best unofficial summary of the event that I've heard. The sequence of events appears to make sense.



Michel, Eric

From: Collins, Brendan
Sent: Monday, March 14, 2011 10:16 AM
To: Michel, Eric; Artayet, Alain
Subject: RE: Long-term view on Japan issues

Yeah...I wasn't sure exactly to whom that should be directed, because I don't know DCI org structure that well, but I knew you'd know where to go with it.

From: Michel, Eric
Sent: Monday, March 14, 2011 10:14 AM
To: Collins, Brendan; Artayet, Alain
Subject: RE: Long-term view on Japan issues

I understand your question/concern. This is pretty far outside our reach, but may be a consideration for the vendor branch.

From: Collins, Brendan
Sent: Monday, March 14, 2011 10:01 AM
To: Michel, Eric; Artayet, Alain
Subject: Long-term view on Japan issues

Obviously, most folks are focused on the short-term as relates to the Japan nuclear issues, as they should be. But over the weekend, a thought occurred to me that has a longer-term perspective and I figured I'd pass it on to you guys.

The thought is this:

(b)(5)

Food for thought.

BC

Michel, Eric

From: Artayet, Alain
Sent: Monday, March 14, 2011 10:20 AM
To: Collins, Brendan; Michel, Eric
Subject: RE: Long-term view on Japan issues

(b)(5)

From: Collins, Brendan
Sent: Monday, March 14, 2011 10:01 AM
To: Michel, Eric; Artayet, Alain
Subject: Long-term view on Japan issues

Obviously, most folks are focused on the short-term as relates to the Japan nuclear issues, as they should be. But over the weekend, a thought occurred to me that has a longer-term perspective and I figured I'd pass it on to you guys.

The thought is this:

(b)(5)

Food for thought.

BC

Heisserer, Jamie

From: Heisserer, Jamie
Sent: Monday, March 14, 2011 10:24 AM
To: Mellen, Larry
Subject: Before/after pictures

<http://www.cnn.com/2011/WORLD/asiapcf/03/12/japan.before.after/index.html?iref=obinsite>

Click on the Fukushima power plant pictures...may give you an idea of what structures near the water were destroyed by the tsunami

Jamie M. Heisserer
Construction Inspector
Region II - Division of Construction Inspection
U.S. Nuclear Regulatory Commission
(404) 997-4451 (ph)
(404) 997-4902 (fax)

Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Monday, March 14, 2011 11:03 AM
To: Bob Newlin; Mitch & Carol Carnell; ' Hunt (?); 'Al Belisle'; 'Al Gibson'; 'Al Herdt'; 'Al Ignatonis'; 'Bill Kleinsorge'; 'Bill Miller'; 'Bill Tobin'; 'Bob Wright'; 'Bob/Angie Martin'; 'Ed Girard'; 'Hellan Kreeger'; 'Hugh Dance'; [REDACTED] (b)(6); 'Jim Coley'; 'Jim Hufham'; 'Ken Clark'; 'Kerry Landis'; 'Milt Hunt (?); 'Nick Economos'; 'Phil Stohr'; 'Taylor'; 'Uryc'; 'Woodruff, Gena'
Subject: 'No harmful levels in US'

NRC issued a statement this morning saying it sees no harmful levels of radiation from damaged Japanese nuclear power plants reaching the U.S., including Hawaii and Alaska, given the distance between the two countries. It reiterates that NRC will not comment on hour-to-hour developments in Japan. See the press release at <http://www.nrc.gov/reading-rm/doc-collections/news/2011/11-046.pdf>.

joe

Joe T. Gilliland

[REDACTED] (b)(6)

Hamilton, Ruben

From: Hamilton, Ruben
Sent: Monday, March 14, 2011 11:07 AM
To: Bonser, Brian
Subject: FW: Japanese Nuclear Plant Problems Continue

From: HPS Headquarters [mailto:HPS@BurkInc.com]

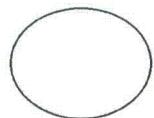
Sent: Sunday, March 13, 2011 6:45 PM

To: Hamilton, Ruben

Subject: Japanese Nuclear Plant Problems Continue



Japanese Nuclear Plant Problems Continue



Current News (<http://hps.org/newsandevents/societynews.html>)

13 March 2011

Japanese Nuclear Plant Problems Continue

As you are well aware the Japanese experienced the worst earthquake in their history, followed by a devastating tsunami. These natural disasters have had a serious impact on several Japanese nuclear reactors, principally those at the Fukushima Daiichi site. Although the Health Physics Society has little expertise in nuclear power plant safety, we are concerned about radiation exposures associated with these reactor problems and desire to keep our members and the concerned public advised on current events associated with the Japanese nuclear plants.

Consequently, we are recommending that the following sources of useful information. Although we cannot verify the accuracy of all the information that you may find, we believe these sources are generally reliable and trustworthy. As events unfold and the potential radiation exposures become better known, we hope to be able to share additional information with you regarding radiation safety.

- Nuclear Regulatory Commission (<http://www.nrc.gov/>),
- International Atomic Energy Agency (<http://www.iaea.org/>),
- World Health Organization (<http://www.who.int/en/>),

- American Nuclear Society (<http://www.new.ans.org/>),
- International Radiation Protection Association (<http://www.irpa.net/>),
- National Academy of Sciences (<http://www.nationalacademies.org/>),
- Nuclear Energy Agency (<http://www.oecd-nea.org/>) and
- Environmental Protection Agency (<http://www.epa.gov/>)

Additionally, you will find a Facebook icon on our home page that will direct you to the Health Physics Society News Café where we try to post the latest breaking news items, including ones pertinent to the Japanese nuclear situation.

Travick, Vanette

From: Bernhard, Rudolph
Sent: Monday, March 14, 2011 11:09 AM
To: McCree, Victor; Wert, Leonard; Christensen, Harold; Casto, Chuck; Munday, Joel; Jones, William; Croteau, Rick
Subject: current news - best public source

These guys beat all local and national sources hands down:

<http://english.kyodonews.jp/>

their current offering:

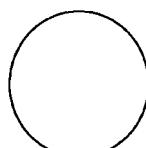
Fukushima No. 2 reactor's fuel rods fully exposed, melting feared

TOKYO, March 14, Kyodo

Fuel rods at the quake-hit Fukushima No. 1 nuclear power plant's No. 2 reactor were fully exposed at one point after its cooling functions failed, the plant operator said Monday, indicating the critical situation of the reactor's core beginning to melt due to overheating.

The rods were exposed as a fire pump to pour seawater into the reactor to cool it down ran out of fuel, Tokyo Electric Power Co. said. The firm had reported the loss of cooling functions as an emergency to the government.

TEPCO said water levels later recovered to cover 30 centimeters in the lower parts of the fuel rods.



The seawater injection operation started at 4:34 p.m., but water levels in the No. 2 reactor have since fallen sharply with only one out of five fire pumps working. The other four were feared to have been damaged by a blast that occurred in the morning at the nearby No. 3 reactor.

The utility firm said a hydrogen explosion at the nearby No. 3 reactor that occurred Monday morning may have caused a glitch in the cooling system of the No. 2 reactor.

Similar cooling down efforts have been taken at the plant's No. 1 and No. 3 reactors and explosions occurred at both reactors in the process, blowing away the roofs and walls of the buildings that house the reactors.

It is feared that the No. 2 reactor will follow the same path. To prevent a possible hydrogen explosion at the No. 2 reactor, TEPCO said it will look into opening a hole in the wall of the building that houses the reactor to release hydrogen.

The company has also begun work to depressurize the containment vessel of the No. 2 reactor by releasing radioactive steam, the government's Nuclear and Industrial Safety Agency said. Such a step is necessary to prevent the vessel from sustaining damage and losing its critical containment function.

With only one fire pump working, TEPCO is placing priority on injecting water into the No. 2 reactor, although both the No. 1 and No. 3 reactors still need coolant water injections, according to the agency.

The blast earlier in the day injured 11 people but the reactor's containment vessel was not damaged, with the government dismissing the possibility of a large amount of radioactive material being dispersed, as radiation levels did not jump after the explosion.

TEPCO said seven workers at the site and four members of the Self-Defense Forces were injured. Of the 11, two were found to have been exposed to radiation and are receiving treatment.

Since the magnitude 9.0 quake hit northeastern Japan last Friday, some reactors at the Fukushima No. 1 plant have lost their cooling functions, leading to brief rises in radiation levels.

As a result, the cores of the No. 1 and No. 3 reactors have partially melted.

The government ordered residents within a 20-kilometer radius of the plant to evacuate Saturday in the wake of the initial blast at the plant's No. 1 reactor. A total of 483 people are still attempting to leave the area, according to the nuclear agency.

The agency ruled out the possibility of broadening the area subject to the evacuation order for now.

==Kyodo

Musser, Randy

From: Musser, Randy
Sent: Monday, March 14, 2011 2:34 PM
To: Croteau, Rick
Subject: Re: EOC Meetings

Rick,

(b)(5)

Jannette is checking with NRR. This could possibly come up at come the EOC meeting.

This email is being sent from an NRC Blackberry device.

From: Croteau, Rick
To: R2DRP_BRANCHCHIEF; Jones, William
Sent: Mon Mar 14 11:48:05 2011
Subject: EOC Meetings

If you have any particular questions you think may come up at the EOC meetings considering the events in Japan, please send them to me today. Vic asked for these and we will feed to HQ/OPA for a coordinated response.

Thanks,
Rick

Hamilton, Ruben

From: Hamilton, Ruben
Sent: Monday, March 14, 2011 11:13 PM
To: 'Carol Hamilton'
Subject: Emailing: 11-048.pdf
Attachments: 11-048.pdf

NRC Sent 8 more. Chuck Casto was sent from Atlanta.

Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Monday, March 14, 2011 11:19 AM
To: Bob Newlin; Mitch & Carol Carnell; Charles and Barbara Hackney; ' Hunt (?); 'Al Belisle
'; 'Al Gibson'; 'Al Herdt'; 'Al Ignatonis'; 'Bill Kleinsorge'; 'Bill Miller'; 'Bill Tobin'; [REDACTED]; 'Bob Wright'; 'Bob/Angie Martin'; 'Ed Girard'; 'Hellan Kreeger'; 'Hugh Dance'; [REDACTED]; 'Jim Coley'; 'Jim Hufham'; [REDACTED]; 'Ken Clark'; 'Kerry Landis'; 'Milt Hunt (?'); 'Nick Economos'; 'Phil Stohr'; 'Taylor'; 'Uryc
'; 'Woodruff, Gena'
Subject: 'Chernobyl on steroids'

This story was posted early this morning on The Post's web site. It has a quote from former NRC Commissioner Victor Gilinsky.

joe

Joe T. Gilliland

[REDACTED]
(b)(6)

The Washington Post
March 14, 2011

Japanese plant races to contain meltdowns after two blasts; third reactor loses cooling capacity

By Chico Harlan and Steven Mufson

TOKYO — A second explosion rocked Japan's seaside Fukushima Daiichi nuclear complex Monday, this time destroying an outer building at unit 3. A Japanese government official separately said that a third reactor at the six-reactor facility had lost its cooling capacity, adding to the complications facing the engineers who try to limit the damage of a partial meltdown.

The explosion at unit 3 did not damage the core containment structure, and Japanese authorities asserted that there would be little increase in radiation levels around the plant. But the explosion -- a result of hydrogen build-up -- prompted Japan's nuclear agency to warn those within 12 miles to stay indoors and keep air conditioners off.

The blast injured 11 people, one seriously.

The string of earthquake- and tsunami-triggered troubles at the Fukushima Daiichi plant began with the failure of the primary and back-up cooling systems, necessary to keep reactors from overheating.

On Saturday, a similar explosion occurred at unit 1. Trace amounts of radioactive elements cesium-137 and iodine-131 have been detected outside the plant.

The U.S. Seventh Fleet said on Monday that some of its personnel, who are stationed 100 miles offshore from the Fukushima Daiichi plant, had come into contact with radioactive contamination. The airborne radioactivity prompted the fleet to reposition its ships and aircraft.

Using sensitive instruments, precautionary measurements were conducted on three helicopter aircrews returning to USS Ronald Reagan after conducting disaster relief missions near Sendai. Those measurements identified low levels of radioactivity on 17 air crew members.

The low level radioactivity was easily removed from affected personnel by washing with soap and water, and later tests detected no further contamination.

Like the Saturday explosion at unit 1, the blast at unit 3 took place after a buildup of hydrogen was vented by the reactor. The hydrogen was produced by the exposure of the reactor's fuel rods and their zirconium alloy casing to hot steam.

In normal conditions, the fuel rods would be covered and cooled by water.

The explosion occurred as Tokyo Electric entered day four of its battle against a cascade of failures at its two Fukushima nuclear complexes, using fire pumps to inject tens of thousands of gallons of seawater into two reactors to contain partial meltdowns of ultra-hot fuel rods.

The tactic produced high pressures and vapors that the company vented into its containment structures and then into the air, raising concerns about radioactivity levels in the surrounding area where people have already been evacuated. The utility said that at one of the huge, complicated reactors, a safety relief valve was opened manually to lower the pressure levels in a containment vessel.

But the limited vapor emissions were seen as far less dire than the consequences of failure in the fight against a more far-reaching partial or complete meltdown that would occur if the rods blazed their way through the reactor's layers of steel and concrete walls.

The potential size of the area affected by radioactive emissions could be large. A state of emergency was declared briefly at another nuclear facility, the Onagawa plant, after elevated radioactivity levels were detected there. Later, Japanese authorities blamed the measurement on radioactive material that had drifted from the Fukushima plant, more than 75 miles away, according to the International Atomic Energy Agency.

The IAEA noted that forecasts said winds would be blowing to the northeast, away from the Japanese coast, over the next three days.

Tokyo Electric said radioactivity levels inside the plant and at its nearby monitoring post were higher than normal. Although levels had fallen Sunday, the Kyodo News Agency said that radiation at the plant's premises rose Monday over the benchmark limit of 500 microsievert per hour at two locations, measuring 751 microsievert at the first location at 2:20 a.m. and 650 at the second at 2:40 a.m., according to information Tokyo Electric gave the government. The hourly amounts are more than half the 1,000 microsievert to which people are usually exposed in one year.

In addition to one worker hospitalized for radiation exposure, two others felt ill during stints in the control rooms of Fukushima Daiichi units 1 and 2.

Although Tokyo Electric said it also continued to deal with cooling system failures and high pressures at half a dozen of its 10 reactors in the two Fukushima complexes, fears mounted about the threat posed by the pools of water where years of spent fuel rods are stored.

At the 40-year-old Fukushima Daiichi unit 1, where an explosion Saturday destroyed a building housing the reactor, the spent fuel pool, in accordance with General Electric's design, is placed above the reactor. Tokyo Electric said it was trying to figure out how to maintain water levels in the pools, indicating that the normal safety systems there had failed, too. Failure to keep adequate water levels in a pool would lead to a catastrophic fire, said nuclear experts, some of whom think that unit 1's pool may now be outside.

"That would be like Chernobyl on steroids," said Arnie Gundersen, a nuclear engineer at Fairewinds Associates and a member of the public oversight panel for the Vermont Yankee nuclear plant, which is identical to the Fukushima Daiichi unit 1.

People familiar with the plant said there are seven spent fuel pools at Fukushima Daiichi, many of them densely packed.

Gundersen said the unit 1 pool could have as much as 20 years of spent fuel rods, which are still radioactive.

At Fukushima Daiichi unit 3, the explosion was an indicator of serious problems inside the reactor core.

Victor Gilinsky, a former commissioner at the Nuclear Regulatory Commission, said that to produce hydrogen, temperatures in the reactor core had to be well over 2,000 degrees and as high as 4,000 degrees Fahrenheit. He said a substantial amount of fuel had to be exposed at least at some point.

"That's the significance of the hydrogen — it means there was serious fuel damage and probably melting," said Gilinsky, who was at the NRC when Pennsylvania's Three Mile Island

reactor had a partial meltdown in 1979. "How much? We won't know for a long time. At TMI we didn't know for five years, until the vessels were opened. It was a shock."

The Fukushima Daiichi unit 3 was built by Toshiba. Last year, the unit began using some reprocessed fuel known as "mox," a mixture of plutonium oxide and uranium oxide, produced from recycled material from nuclear weapons as part of a program known as "from megatons to megawatts." Anti-nuclear activists have called mox more unsafe than enriched uranium. If it escapes the reactor, plutonium even in small quantities can have much graver consequences on human health and the local environment for countless years, much longer than other radioactive materials.

The Kyodo News Agency cited Tokyo Electric as saying that more than three yards of a mox nuclear-fuel rod had been left above the water level, raising concerns that bits of plutonium or its byproducts may already be mixed into vapors or molten material.

The Fukushima Daiichi unit 3, once capable of generating 784 megawatts of power, is substantially bigger than unit 1, which generated about 460 megawatts. As a result, lowering temperatures in its reactor core could prove a much tougher task, experts said.

Japanese officials were also trying to figure out whether Friday's earthquake, or the subsequent high pressures and temperatures in the reactors, had caused other cracks or leaks in reactors in the region. So far officials have not said that they have found any, though they have noted still unexplained losses of water in some reactor vessels.

Although Fukushima Daiichi units 1 and 3 posed the gravest dangers for now, Tokyo Electric said it was still working on its other units.

Tokyo Electric also said it had released vapors with some radioactive materials at all four of the reactors at its second Fukushima complex — Fukushima Daini — on Saturday. After injecting water into the reactors, the company said that water levels were stable, off-site power restored, and shutdowns complete or in progress. Nonetheless, Japan's Nuclear and Industrial Safety Agency said Monday that Fukushima Daini units 1, 2 and 4 remained in a nuclear state of emergency.

Woodruff, Gena

From: Jones, Cynthia
Sent: Monday, March 14, 2011 11:21 AM
To: HOO Hoc
Cc: Hayden, Elizabeth; Harrington, Holly; McIntyre, David; Brandon, Lou; Temple, Jeffrey; Gott, William; ICWG; Brown, Cris; Evans, Michele; Ballam, Nick; NSIR_IT_Services Resource
Subject: INES link on NSIR NRC website
Attachments: image002.jpg

FYI-

I have gotten several phone calls about the location of where the INES information is on the NSIR website. Since last week have I been trying to get the NSIR webmaster contact to move the INES link on the NSIR Homepage back to the front page of NSIR where it was until the recent web page renovations last week.

In the meantime, the NRC link is <http://148.184.213.252/NSIR/docs/INES.pdf>. I'll let you know when the NSIR webmaster gets its located back to the NSIR home page. (where it will be located on the lower left of the home page under "Quicklinks.")

Cyndi

Cynthia G. Jones, Ph.D.,
US INES National Officer
Sr. Technical Advisor for Nuclear Security
U.S. Nuclear Regulatory Commission
Office of Nuclear Security & Incident Response
Mail Stop T4-D22A, Washington, D.C. 20555
cynthia.jones@nrc.gov
caj@nrc.safev.gov
Work: 301-415-0298
Blackberry: (b)(6)



Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Monday, March 14, 2011 11:34 AM
To: Bob Newlin; Mitch & Carol Carnell; Charles and Barbara Hackney; 'Hunt (?); 'Al Belisle
'; 'Al Gibson'; 'Al Herdt'; 'Al Ignatonis'; 'Bill Kleinsorge'; 'Bill Miller'; 'Bill Tobin'; [REDACTED] (b)(6); 'Bob Wright'; 'Bob/Angie Martin'; 'Ed Girard'; 'Hellan Kreeger'; 'Hugh Dance'; [REDACTED] (b)(6); 'Jim Coley'; 'Jim Hufham'; [REDACTED] (b)(6); 'Ken Clark'; 'Kerry Landis'; 'Milt Hunt (?); 'Nick Economos'; 'Phil Stohr'; 'Taylor'; 'Woodruff, Gena'; 'Uryc
Subject: Washington reaction

A much shorter version of this New York Times story is in this morning's edition of the Atlanta Journal Constitution. Politicians quoted run the gamut of the political spectrum. Note that the House committee hearing will be on Wednesday when NRC Chairman Jaczko will be testifying. Here's hoping it will be carried by C-SPAN.

joe

Joe T. Gilliland

[REDACTED] (b)(6)

The New York Times
March 14, 2011

U.S. Nuclear Industry Faces New Uncertainty

By JOHN M. BRODER

WASHINGTON — The fragile bipartisan consensus that nuclear power offers a big piece of the answer to America's energy and global warming challenges may have evaporated as quickly as confidence in Japan's crippled nuclear reactors.

Until this weekend, President Obama, mainstream environmental groups and large numbers of Republicans and Democrats in Congress agreed that nuclear power offered a steady energy source and part of the solution to climate change, even as they disagreed on virtually every other aspect of energy policy. Mr. Obama is seeking tens of billions of dollars in government insurance for new nuclear construction, and the nuclear industry in the United States, all but paralyzed for decades after the Three Mile Island accident in 1979, was poised for a comeback.

Now, that is all in question as the world watches the unfolding crisis in Japan's nuclear reactors and the widespread terror it has spawned.

"I think it calls on us here in the U.S., naturally, not to stop building nuclear power plants but to put the brakes on right now until we understand the ramifications of what's happened in Japan," Senator Joseph I. Lieberman, independent of Connecticut and one of the Senate's leading voices on energy, said on CBS's "Face the Nation."

Nuclear power, which still suffers from huge economic uncertainties and local concerns about safety, had been growing in acceptance as what appeared to many to be a relatively benign, proven and (if safe and permanent storage for wastes could be arranged) nonpolluting source of energy for the United States' future growth.

But even staunch supporters of nuclear power are now advocating a pause in licensing and building new reactors in the United States to make sure that proper safety and evacuation measures are in place. Environmental groups are reassessing their willingness to see nuclear power as a linchpin of any future climate change legislation. Mr. Obama still sees nuclear power as a major element of future American energy policy, but he is injecting a new tone of caution into his endorsement.

"The president believes that meeting our energy needs means relying on a diverse set of energy sources that includes renewables like wind and solar, natural gas, clean coal and nuclear power," said Clark Stevens, a White House spokesman. "Information is still coming in about the events unfolding in Japan, but the administration is committed to learning from them and ensuring that nuclear energy is produced safely and responsibly here in the U.S."

Three of the world's chief sources of large-scale energy production — coal, oil and nuclear power — have all experienced eye-popping accidents in just the past year. The Upper Big Branch coal mine explosion in West Virginia, the Deepwater Horizon blowout and oil spill in the Gulf of Mexico and the unfolding nuclear crisis in Japan have dramatized the dangers of conventional power generation at a time when the world has no workable alternatives able to operate at sufficient scale.

The policy implications for the United States are vexing. "It's not possible to achieve a climate solution based on existing technology without a significant reliance on nuclear power," said Jason Grumet, president of the Bipartisan Policy Center in Washington and an energy and climate change adviser to the 2008 Obama campaign. "It's early to reach many conclusions about what happened in Japan and the relevance of what happened to the United States. But the safety of nuclear power will certainly be high on the list of questions for the next several months."

"The world is fundamentally a set of relative risks," Mr. Grumet added, noting the confluence of disasters in coal mining, oil drilling and nuclear plant operations. "The accident certainly has

diminished what had been a growing impetus in the environmental community to support nuclear power as part of a broad bargain on energy and climate policy.”

Mitch McConnell of Kentucky, the Senate Republican leader, said that the United States should not overreact to the Japanese nuclear crisis by clamping down on the domestic industry indefinitely. Republicans have loudly complained that the Obama administration did just that after the BP oil spill last spring when it imposed a moratorium on deepwater oil drilling until new safety and environmental rules were written.

“I don’t think right after a major environmental catastrophe is a very good time to be making American domestic policy,” Mr. McConnell said on “Fox News Sunday.”

He said that the American public and politicians had recoiled after Three Mile Island, rejecting permits for the construction of dozens of nuclear plants on the “not in my backyard” impulse.

“My thought about it is, we ought not to make American and domestic policy based upon an event that happened in Japan,” Mr. McConnell said.

Mr. Obama has been as supportive of nuclear power as any recent president as he has tried to devise a political and technical strategy for ensuring energy supplies and reducing greenhouse gas emissions. Nuclear power, along with expanded offshore oil drilling, “clean coal” development and extensive support for renewable energy, are part of his “all-of-the-above energy strategy,” an approach and terminology borrowed from Republicans. But his support for coal and oil as part of a grand compromise on energy were set back by last year’s mining and drilling disasters, and today’s problems with nuclear in Japan cannot help.

Concerns about earthquakes and nuclear power have been around for a long time; new questions might also be raised now about tsunamis and coastal reactors.

In Mr. Obama’s State of the Union address and in his budget, he proposed an expansion of nuclear energy technology and \$36 billion in Department of Energy loan guarantees for the construction of as many as 20 new nuclear plants.

That policy will be on the table at a hearing of the Energy and Commerce Committee on Wednesday, when Steven Chu, the energy secretary, and Gregory B. Jaczko, chairman of the Nuclear Regulatory Commission, are scheduled to testify.

“We will use that opportunity to explore what is known in the early aftermath of the damage to Japanese nuclear facilities,” said Representative Fred Upton, Republican of Michigan, the committee chairman, “as well as to reiterate our unwavering commitment to the safety of U.S. nuclear sites.”

Representative Edward J. Markey, Democrat of Massachusetts and a skeptic of nuclear power who nonetheless supported expansion of nuclear power as part of the House energy and climate legislation he co-sponsored, said the United States needed tougher standards for siting and operating nuclear plants.

He said regulators should consider a moratorium on locating nuclear plants in seismically active areas, require stronger containment vessels in earthquake-prone regions and thoroughly review the 31 plants in the United States that use similar technology to the crippled Japanese reactors. “The unfolding disaster in Japan must produce a seismic shift in how we address nuclear safety here in America,” Mr. Markey said.

Woodruff, Gena

From: Joe Gilliland (b)(6)
Sent: Monday, March 14, 2011 11:53 AM
To: Bob Newlin; Mitch & Carol Carnell; Charles and Barbara Hackney; ' Hunt (?); 'Al Belisle
'; 'Al Gibson ; 'Al Herdt ; 'Al Ignatonis ; 'Bill
Kleinsorge'; 'Bill Miller ; 'Bill Tobin ; (b)(6) ; 'Bob
Wright ; 'Bob/Angie Martin ; 'Ed Girard ; 'Hellan Kreeger
'Hugh Dance ; (b)(6) ; 'Jim Coley ; 'Jim Hufham
(b)(6) ; 'Ken Clark'; 'Kerry Landis ; 'Milt Hunt (?)
'Nick Economos ; 'Phil Stohr ; 'Taylor ; 'Uryc
'; Woodruff, Gena

Subject: Online panel discussion

Anyone interested might want to look in at the New York Times online opinion page which has a panel discussion by four people representing various viewpoints on nuclear power policy in the U.S. Each one has a relatively brief statement, to which readers can offer comments. The panelists and their topics are: Frank N. von Hippel, nuclear physicist and professor of public and international affairs at Princeton, "How to Retrofit Reactors"; Michio Kaku, physicist, author and professor at City College of New York, "Faust and Nuclear Power"; Michael W. Golay, professor of nuclear science and engineering, MIT, "Realism About Costs and Benefits"; and David Lochbaum of the Union of Concerned Scientists, "Disasters Fail to Follow Scripts." Click on <http://www.nytimes.com/roomfordebate/2011/03/13/japans-nuclear-crisis-lessons-for-the-us/what-us-reactors-need>.

joe

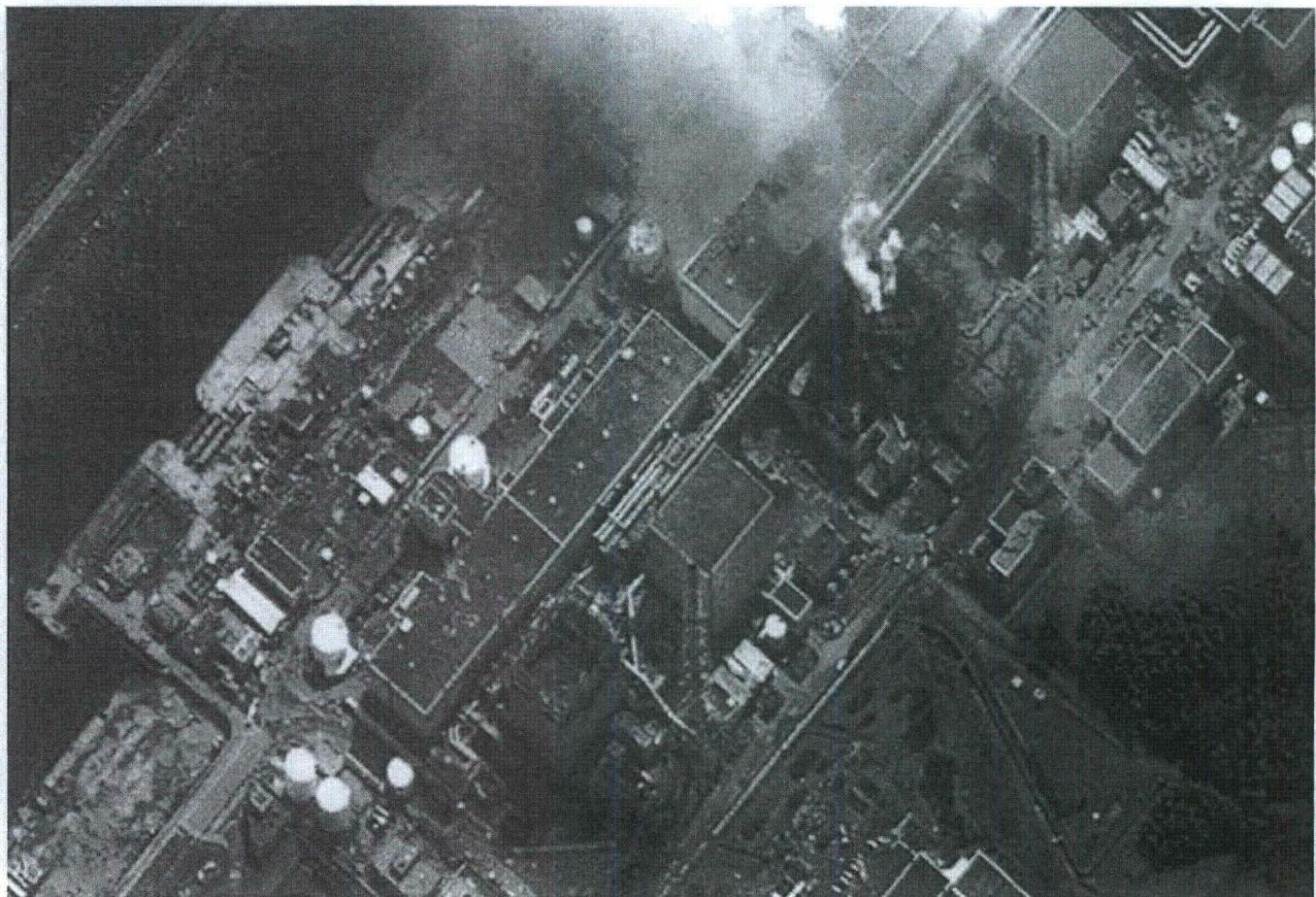
Joe T. Gilliland

(b)(6)

Seymour, Deborah

From:
Sent:
To:
Subject:

Burin, Julia F [julia.f.burin@lmco.com]
Monday, March 14, 2011 2:23 PM
Seymour, Deborah; Monahan, William J [jeb.napier@fundtech.com]
Fukushima plant picture



Woodruff, Gena

From: Turtl, Richard
Sent: Monday, March 14, 2011 2:27 PM
To: Turtl, Richard; Logaras, Harral; LIA04 Hoc; Jackson, Deborah
Cc: Virgilio, Rosetta; Rautzen, William; Lukes, Kim; Flannery, Cindy; McNamara, Nancy; Tifft, Doug; Woodruff, Gena; Barker, Allan; Maier, Bill; Trojanowski, Robert; Piccone, Josephine; Jackson, Deborah
Subject: My Title should have been: State Liaison Emergency Response Role (not State Liaison Officer Roles)

Correction... Please see my title in this e-mail

From: Turtl, Richard
Sent: Monday, March 14, 2011 2:25 PM
To: Logaras, Harral; LIA04 Hoc; Jackson, Deborah
Cc: Virgilio, Rosetta; Rautzen, William; Lukes, Kim; Flannery, Cindy; McNamara, Nancy; Tifft, Doug; Woodruff, Gena; Barker, Allan; Maier, Bill; Trojanowski, Robert; Piccone, Josephine; Jackson, Deborah
Subject: State Liaison Officer Roles
Importance: High

Regional Folks:

Note that we've been tasked with populating a roster for 24/7, State Liaison Role in the NRC Ops Center for the next two weeks.

Those populating – 8 folks: Turtl, Rosetta, Cindy Flannery, Amanda Noonan, Bill Rautzen, Kim Lukes, Alison Rivera, Michelle Ryan.

There are 2 State Liaison computers in the Ops Center. So, as you receive e-mails from the Ops Center computer (LIA04, LIA0?), it's from one of us.

Thanks

Rich

Richard Turtl, Chief
Intergovernmental Liaison Branch
Office of Federal and State Materials and Environmental Management Programs
U.S. Nuclear Regulatory Commission
301-415-2308
800-368-5642

Munday, Joel

From: Munday, Joel
Sent: Monday, March 14, 2011 3:47 PM
To: Aiello, Ronald
Subject: Re: Events in Japan

You can refer them to NRC website. The press releases are there.

This email is being sent from an NRC Blackberry device.

From: Aiello, Ronald
To: Munday, Joel
Sent: Mon Mar 14 15:01:03 2011
Subject: RE: Events in Japan

If someone ask me, is it OK to refer them to this press releases that you attached?

From: Munday, Joel
Sent: Monday, March 14, 2011 7:47 AM
To: R2DRS
Subject: FW: Events in Japan

All,

I'm sure we all have been closely following the ongoing events in Japan on the news this weekend. Attached is some info on the events. Please note the first is OOO. The second is an ANS document FYI. There have been several press releases from the NRC on the NRC web site at www.nrc.gov and you may want to mention that to any members of the media/public that may contact you (as you direct them to OPA.) From the previous Op Center Bulletins please note:

- Employees contacted by the media are asked to refer the calls to the Office of Public Affairs at 301-415-8200.
- 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.

Not that we need any reminder, but preventing these types of events and mitigating the consequences to protect public health and safety is what we are all about.

Joel

Seymour, Deborah

From: Gloersen, William
Sent: Monday, March 14, 2011 3:54 PM
To: Mellen, Larry
Cc: Seymour, Deborah
Subject: re: info from FPL on Fukushima
Attachments: Fukushima Event - FPL Response.ppt



William B. Gloersen
Senior Fuel Facility Project Inspector
Division of Construction Projects
USNRC Region II
404-997-4443

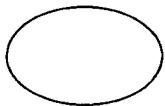
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Travick, Vanette

From: McCree, Victor
Sent: Monday, March 14, 2011 4:42 PM
To: Croteau, Rick
Cc: Wert, Leonard; Jones, William
Subject: RE: Potential questions for EOC meetings

Got it – thanks.

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:

Do US nuclear plants have better capabilities to respond to natural disasters than the plants in Japan?
Did the NRC share the post 9/11 enhancements to the U.S. facilities with the Japanese?
Could there be core damage and radiation release at a US plant if a natural disaster exceeding the plant design were to occur?
Could explosions like those that occurred in Japan happen at a U.S facility?
How would the U.S. have responded to the events of March 11?
How are US BWRs similar and/or different from the plants experience problems in Japan?
Why are US plants safe to operate considering the events in Japan?
How big an earthquake is plant X designed to handle (for each plant)?
Is plant X designed to withstand a tsunami (for each coastal plant)?
What is the NRC doing to ensure this (Japan event) doesn't happen at US plants?
How will the U.S. learn from the failures at the Japanese reactors?
Is the NRC relooking at seismic analysis for US plants?
Is the event in Japan worse than TMI and Chernobyl?
What is the longer term prognosis for keeping the reactors cooled at the Japanese facilities?
Does the NRC participate in inspection of the Japanese facilities?
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?
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

Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Monday, March 14, 2011 7:17 PM
To: Bob Newlin; Mitch & Carol Carnell; Charles and Barbara Hackney; ' Hunt (?); 'Al Belisle
'; 'Al Gibson ; 'Al Herdt ; 'Al Ignatonis ; 'Bill
Kleinsorge'; 'Bill Miller ; 'Bill Tobin ; [REDACTED] (b)(6) ; 'Bob
Wright ; 'Bob/Angie Martin ; 'Ed Girard ; 'Hellan Kreeger
'Hugh Dance ; [REDACTED] (b)(6) ; 'Jim Coley ; 'Jim Hufham
[REDACTED] (b)(6) ; 'Ken Clark'; 'Kerry Landis ; 'Milt Hunt (?)
; 'Nick Economos ; 'Phil Stohr ; 'Taylor ; 'Uryc
; Woodruff, Gena
Subject: 'no harmful radiation levels' coming to US
Attachments: image001.gif

The story pasted below from the National Journal, which is widely read in Washington, almost certainly reflects what Chairman Jaczko said when he appeared in the White House press briefing room today (CNN had a brief sound bite from it).

The quotation from Congressman Markey is one of several that have been reported today coming from various congressional figures. Sen. Joe Lieberman of Connecticut said on Face the Nation Sunday that, while nuclear plant licensing should not stop, the NRC should "quietly and quickly put on the brakes" on further licensing until the ramifications of the Japanese accidents are sorted out. Sen. Mitch McConnell of Kentucky, who heads the Senate's Republican minority, said an accident in Japan should not govern a U.S. domestic policy.

In addition to appearing on CNN over the weekend to voice his views, Rep. Markey has fired off four letters and/or statements. On March 11 he wrote Chairman Jaczko a letter with a number of specific questions about seismic safety, which he wants answered by the close of business April 8. On March 13, he wrote the President saying that emergency preparedness for a nuclear-related accident is in disarray and asked who is in charge of it. The same day, he issued a statement declaring that an accident like the one in Japan could happen in the U.S. And today, he announced that he had written the President's science adviser calling for implementation of a law he sponsored in 2002 providing for distribution of potassium iodide to residents in a 20-mile radius of nuclear power plants. All of these pronouncements may be accessed at http://markey.house.gov/index.php?option=com_content&task=blogcategory&id=486&Itemid=141. Markey is a senior member of the House Energy and Commerce Committee, which will hear testimony Wednesday from Chairman Jaczko as well as the secretary of energy and the head of FEMA.

joe

Joe T. Gilliland

[REDACTED] (b)(6)

National Journal

WHITE HOUSE

Japan's Nuclear Fallout Unlikely to Reach the U.S., NRC Official Says

U.S. dispatches two evaluation teams to examine Japan nukes

by Aamer Madhani

Monday, March 14, 2011 | 2:27 p.m.

The head of the Nuclear Regulatory Commission expressed confidence on Monday that there's little chance of radioactivity from Japan's badly damaged nuclear power plants reaching the United States.

"Based on the type of reactor design and the nature of the accident, we see a very low likelihood—really, a very low probability—that there's any possibility of harmful radiation levels in the United States or in Hawaii or any other U.S. territories," said Gregory Jaczko, the chairman of the NRC.

Jaczko also told reporters that his office has dispatched two NRC technical experts to Tokyo to huddle with U.S. embassy officials and assist Japanese officials dealing with the fallout of the nuclear plant damage caused by last week's earthquake and tsunami.

In the aftermath of the catastrophe in Japan, Rep. **Edward Markey**, D-Mass., has called on the Obama administration to impose a moratorium on building new nuclear power plants in earthquake-prone areas of the U.S.

"We are always focused on the safety and security of nuclear power plants in this country—that will always be something we do," Jaczko said. "Whenever there's any new information, we always take that information into consideration and make changes if necessary. But right now, we continue to believe that nuclear power plants in this country operate safely and securely."

U.S. nuclear plants are "designed to withstand significant phenomena," such as earthquakes and tsunamis, but Jaczko could not say definitively that U.S. plants could withstand the kind of massive earthquake that hit Japan.

White House press secretary Jay Carney said nuclear power remains a part of President Obama's overall energy plan. Nuclear power amounts for 20 percent of U.S. electricity.

Woodruff, Gena

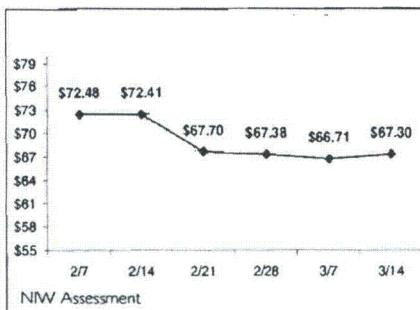
From: opa administrators [opa@nrc.gov]
Sent: Monday, March 14, 2011 9:56 PM
To: Woodruff, Gena
Subject: NRC SENDS ADDITIONAL EXPERTS TO ASSIST JAPAN
Attachments: 11-048.docx



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Vol. V, No. 11, March 14, 2011

UPP: \$67.30/lb U3O8



Market Points

The spot price has fallen more than \$7/lb since the Uranium Price Panel returned a price of \$67.30/lb U3O8 on Friday, and market participants say they expect it to fall further.

Traxys sold at \$60/lb U3O8 on Monday, and Deutsche Bank is trying to unload 500,000 lbs U3O8 quickly (bids due Friday), which will probably mean another cut-rate sale.

Market participants say that, in the short term, they see the spot price weakening because of the psychological effect of the events in Japan, but that they expect it to strengthen again, since the supply-demand equation has not fundamentally changed.

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WEEKLY ROUNDUP: Japan in Crisis

- A third explosion at the Fukushima-Daiichi plant means all bets are off in the unfolding Japanese nuclear disaster precipitated by the earthquake and tsunami that struck on Friday. Never before have multiple reactors been simultaneously at risk of full meltdown. As NIW went to publication, there were reports that workers were evacuating the site, potentially putting all three crippled reactors in danger of meltdown (p3). Authorities are also concerned about continued cooling at the spent fuel pools, which may pose as much or more risk as the reactors themselves (p5).

- "My homeland has been struck by a tragedy of cataclysmic proportions," said International Atomic Energy Agency Secretary General Yukiya Amano in a statement released this evening. "This has been one of the greatest natural disasters of modern times, the full extent of which is still becoming clear." Indeed, Amano pointed out that the entire island of Honshu has been shifted 2-1/2 meters, and that the scale of the disaster resulting from Friday's earthquake and tsunami are unprecedented. "The nuclear plants have been shaken, flooded and cut off from electricity. Operators have suffered personal tragedies. In the face of all of this, I pay tribute to their efforts to stabilize the reactors. The reactor vessels have held and radioactive release is limited."

- The impact of the disaster sent the nuclear world reeling. Most expect prolonged outages for the affected nuclear plants in Japan, as well as potentially a seismic shift in public acceptance of nuclear power (p5). Outside Japan, countries are already pulling away from nuclear plans; most prominent among them is Germany, where Chancellor Angela Merkel today launched a three-month inquiry that she says could end a plan to extend the lives of the country's 17 nuclear reactors, or even result in the near-term closure of some units (p7).

- Although the Japanese crisis looks set to destabilize the entire global nuclear industry, that industry still keeps operating. Most crucially, China continues to build huge numbers of new nuclear plants. The East Asian powerhouse spent just over \$2 billion importing over 38 million lbs of uranium concentrates last year (p8). Meanwhile, Rosatom President Sergei Kiriyenko is scheduled to arrive in the US Mar. 19 for a four-day visit, during which he will discuss the possibility of building an enrichment facility that would be jointly owned and operated by one or two other investors (p9).

- With its production and sales skyrocketing, Uranium One's revenues more than doubled between 2009 and 2010, but its net loss quintupled during the same period, reaching \$189.7 million in 2010 (p10). And Canada's Denison increased its uranium and vanadium sales last year, boosting its revenues 62% above their 2009 level, while expenses fell 41% over the same period (p11). ☀

MARKET

Spot Price Tumbles On Japan Crisis

The Uranium Price Panel (UPP) on Friday returned a spot price of \$67.30/lb U3O8, up slightly from the previous week's \$66.71/lb. But, since then, the price has plummeted because of the events in Japan. A trader sold at more than \$7 below that Friday price this morning, and market participants are expecting to see published prices at even lower levels in the near term.

One market participant told NIW that a Traxys trader was "haggling like a Marrakesh rug salesman over twenty cents" per pound with a potential buyer on Friday, and didn't end up making the deal. Then he got word from his bosses that he had to sell, and ended up giving the material away at \$60/lb U3O8.

The RFP Deutsche Bank sent out today to sell 500,000 lbs will surely add to that downward pressure on the price. The German uranium market regular will accept rolling proposals until Friday, with delivery by book transfer at ConverDyn any time between Mar. 31, 2011 and Dec. 31, 2012.

While some players like Traxys and Deutsche Bank are apparently trying to sell before prices fall further, traditional market participants appear to be taking a more conservative approach. "I think there's a huge pause and people are holding their breath until there's some resolution to this crisis — until we know it has passed or it's going to get worse," one producer said.

They insist that the spot price drop is psychological, and that events in Japan shouldn't have any major effect on the fundamentals. Even if all 14 reactors hit by the earthquake remain offline for a couple of years, that should not increase available supply enough to significantly depress the price, they believe.

Overall, market participants NIW talked to Monday uniformly said they believe the crisis in Japan will not derail the global nuclear renaissance. It may slow down or stop new nuclear development in the US and Europe, where relatively few new plants were planned anyway, because of all the "hand-wavers and hand-wringers," another producer said. But it's unlikely to significantly affect newbuild in the markets that matter most: China and India.

"I've lived through Three Mile Island and Chernobyl. This is just another temporary setback," the producer said.

Of course, there's also the potential effect on the supply side to consider: With uranium stock prices tumbling, and a sudden onset of pessimism — rational or irrational — about the future of nuclear, companies could pull back on plans to develop new supply. One immediate casualty might be China Guangdong Nuclear's (CGN's) \$1.2 billion bid to buy into and help develop the massive Husab project in Namibia (NIW Mar. 7, p1).

CGN's offer for Kalahari was entirely conditional ("There can be no certainty that a firm offer will be made even if all preconditions are satisfied or waived," it said), and Japan may pull the uranium price south for years to come. Moreover, CGN previously walked away from buying into Areva's Trekkopje project just north of Husab, and there's little reason to think it would have any compunctions about doing the same with Kalahari.

In a piece of lucky timing, Usec last week managed to sell the Department of Energy (DOE) UF6 before the earthquake hit Japan and the price plummeted (NIW Mar. 7, p2). The company got 18 bids from 11 different bidders, and selected four winners — including a Japanese trading company — for the 349,988 kg. Prices were said to be within last week's (pre-earthquake) bid-ask spread. "I think that worked out very well for them [Usec]," a market participant said Monday.

The next DOE transfer should go to Fluor-B&W Portsmouth in about three months. In the meantime, though, the Uranium Producers of America (UPA) and others will continue to push the DOE to limit such transfers to avoid depressing prices for uranium, conversion and enrichment.

ConverDyn last week released a rare public statement, saying previous US government barters have had a 10% (in 2009) 50% (in 1998) negative impact on conversion prices. The statement contrasts this with the much more conservative price impact estimates the DOE is relying on. "Even if the current \$0.20/kgU impact [estimate] is correct, it comes out of an already negative bottom line for US conversion," ConverDyn's statement says. ☈

Sam Tranum, Washington and Phil Chaffee, London
stranum@energyintel.com; pchaffee@energyintel.com

URANIUM PRICE PANEL

For the week ended March 11, 2011

Weekly Spot Market Prices

| Price (\$/lb U3O8) | Change | Mar. | | Feb. | | | | Jan. | | | | Dec. | |
|--------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 3/14 | 67.30 | 66.71 | 67.38 | 67.70 | 72.41 | 72.48 | 69.54 | 68.18 | 66.00 | 64.18 | 61.42 |
| Total Assessments | -1.00 | 14.00 | 15.00 | 15.00 | 14.00 | 16.00 | 14.00 | 18.00 | 15.00 | 16.00 | 15.00 | 15.00 | 14.00 |
| % within 1 StdDev | 6.19 | 92.86 | 86.67 | 93.33 | 85.71 | 87.50 | 92.86 | 83.33 | 86.67 | 75.00 | 93.33 | 86.67 | 78.57 |
| Low (\$/lb U3O8) | 1.50 | 66.00 | 64.50 | 66.00 | 65.00 | 71.50 | 72.00 | 68.00 | 66.00 | 65.00 | 62.00 | 60.00 | 59.00 |
| High (\$/lb U3O8) | 0.00 | 68.00 | 68.00 | 68.00 | 70.00 | 74.00 | 73.00 | 72.00 | 70.00 | 67.50 | 66.25 | 63.25 | 62.00 |
| Variability* | -0.12 | 0.05 | 0.17 | 0.21 | 0.20 | 0.29 | 0.00 | 0.75 | 0.89 | 0.50 | 0.25 | 0.54 | 0.28 |
| | | | | | | | | | | | | | |

The Uranium Price Panel (UPP) represents the average price assessment reported by active spot market participants for a transaction of 100,000 lbs of U3O8 by book transfer on the date given. In the UPP, participants are assigned a market position of seller, buyer or intermediate. Each week Energy Intelligence eliminates assessments that are statistical outliers, and double-checks the market position of intermediates. It then uses random elimination to maintain an equal number of buyer and seller assessments in the final average. "Variability" represents the absolute range of conceivable final averages resulting from this random elimination. "High" and "Low" assessments represent the extremes of the non-eliminated market assessments. For a detailed explanation of the price panel methodology, see www.energyintel.com.

JAPAN

Nuclear Earthquake

The nuclear crisis under way in Japan's Fukushima province is unprecedented in its scope — never before have multiple reactors been at risk of full meltdown — and that risk has now intensified with a third explosion at the Fukushima-Daiichi plant. The underlying story in this episodic event is the almost complete failure of emergency backup power systems at the Daiichi plant, which directly or indirectly led to explosions at two reactors and — and as NIW went to press — a third of greater severity.

Although the Japanese government has continued to maintain a "situation under control" posture, events are spiraling in precisely the opposite direction. The latest explosion which reportedly occurred in or near the pressure suppression pool of unit 2 may have damaged the containment leading to the possibility of a widespread radioactive release and the evacuation of workers from the site. And there were reports that workers were evacuating.

Although initially rated "Level 4" on the International Nuclear and Radiological Event Scale (INES) — three levels from Chernobyl's "7" INES rating — there remains a danger that in the event of an evacuation the other facilities could be at risk of meltdown - and the spent fuel pools eventually catching fire — because there would presumably be no way to keep these facilities cooled.

Even now, one leading US nuclear scientist says the risk rating is pitched too low. "TMI II [referring to Three Mile Island] was rated as a '5.' We are far beyond that. I would say a '6' (Chernobyl was a '7')," said Frank von Hippel, professor of public and international affairs at Princeton University's Program on Science and Global Security. And that was before the third explosion.

What this means for the nuclear industry in Japan and globally is difficult to predict, but for the immediate future, selling nuclear as an environmentally friendly option will pose challenges, and reactor safety and reliability will be called into question (see story).

"Several of the failures were through pathways that were evidently not thought about during design — for example, the possibility that the location for hooking up new diesel generators could be flooded. These remind us yet again that it is not possible to protect against accident possibilities that one hasn't thought about and that assurances that nuclear systems are absolutely safe cannot be considered credible," says M.V. Ramana, associate research scholar with Princeton University's Program on Science and Global Security.

Daiichi is located in Onahama City, Fukushima Prefecture, some 170 miles (270 km) north of Tokyo. By Monday evening, Fukushima Daiichi Units 1 and 3 had both seen hydrogen explosions in the upper shell covering their containment buildings (these are designed with blowout panels), and the Japanese government had ordered plant operator Tokyo

Japanese NPPs Shut by Earthquake

| Reactor | Prefecture | Reactor Model | Reactor Supplier | Net MWe | Reactor Owner | First Connected to Grid | Connected Status |
|---------------------|------------|---------------|------------------|---------|---------------|-------------------------|--|
| Fukushima-Daiichi 1 | Fukushima | BWR 3 | GE | 439 | Tepco | 11/17/1970 | Backup generators broken. Melted core. Flooded with seawater and boron. Hydrogen explosion at 3:36 p.m. Sat., Mar. 12. |
| Fukushima-Daiichi 2 | Fukushima | BWR 4 | GE / Toshiba | 760 | Tepco | 12/24/1973 | Back-up generators broken. Mon., Mar. 14, 1:25 p.m.: Temporary coolant system halted due to increased pressure. Tepco begins injecting seawater, but water levels continue to decrease. 8:50 p.m.: "Based on radiation detected in the environment," determination is made that some fuel rods are broken. |
| Fukushima-Daiichi 3 | Fukushima | BWR 4 | Toshiba | 760 | Tepco | 10/26/1974 | Back-up generators broken. Trying to avert melt-down. Was flooded with seawater, and venting begun Sun., Mar. 13, 9:20 a.m. Mon. 11:01 a.m.: Hydrogen explosion in reactor building, injuring six people but not damaging the containment vessel. |
| Fukushima-Daiichi 4 | Fukushima | BWR 4 | Hitachi | 760 | Tepco | 2/24/1978 | Down for servicing. |
| Fukushima-Daiichi 5 | Fukushima | BWR 4 | Toshiba | 760 | Tepco | 9/22/1977 | Down for servicing. |
| Fukushima-Daiichi 6 | Fukushima | BWR 5 | GE / Toshiba | 1,067 | Tepco | 5/4/1979 | Down for servicing. |
| Fukushima-Daini 1 | Fukushima | BWR 5 | Toshiba | 1,067 | Tepco | 7/31/1981 | Retains off-site power. On Sunday, a residual heat removal system restored to operation; work begun to achieve a cold shutdown. |
| Fukushima-Daini 2 | Fukushima | BWR 5 | Hitachi | 1,067 | Tepco | 6/23/1983 | Retains off-site power. On Monday, operators working to restore a residual-heat removal system. |
| Fukushima-Daini 3 | Fukushima | BWR 5 | Toshiba | 1,067 | Tepco | 12/14/1984 | Safe, cold shut-down. |
| Fukushima-Daini 4 | Fukushima | BWR 5 | Hitachi | 1,067 | Tepco | 12/17/1986 | Retains off-site power. On Monday, operators working to restore a residual heat removal system. |
| Onagawa 1 | Miyagi | BWR 4 | Toshiba | 498 | Tohoku | 11/18/1983 | Fire reported in the joint turbine hall after earthquake. Increased radioactivity levels detected Sunday, but authorities suspect them to have come from Daiichi releases. |
| Onagawa 2 | Miyagi | BWR 5 | Toshiba | 796 | Tohoku | 12/23/1994 | |
| Onagawa 3 | Miyagi | BWR 5 | Toshiba | 796 | Tohoku | 5/30/2001 | |
| Tokai 2 | Ibaraki | BWR 5 | GE | 1,060 | Japco | 3/13/1978 | One of three backup generators broken, but cooling system functional. |
| Total | | | | 11,964 | | | |

Electric Power Co. (Tepco) to introduce seawater mixed with boron into all three of the reactors in a last-ditch effort to cool the reactor cores and prevent full-scale meltdown.

In the meantime, more than 200,000 people have been evacuated from the area, and the fallout in terms of both immediate casualties and long-term health consequences for the nearby population (let alone the workers at Daiichi) was already taking its toll. "Radiation levels have risen, not just within the facilities but also at the perimeters, and there have been at least two worker deaths and several illnesses," according to Sharon Squassoni of the Center for Strategic and International Studies in Washington. NIW was unable to confirm those deaths, but a Tepco press release stated that at least 9 workers had already been taken to the hospital for excess radiation exposure. One of those had exposure exceeding 100 mSv. Two others were sent to the Daini medical station for consultation.

Unprecedented Disaster

The problems for Tepco's Daiichi plant became truly dire not immediately after the earthquake — at 9.0 on the Richter Scale, it was the largest recorded earthquake in Japan's history, and the fifth-largest ever recorded anywhere — but an hour later, with the resultant tsunami. Tepco had successfully stopped operations at Units 1-3 at Daiichi, as well as Units 1-4 at the nearby Daini plant, just as Tohoku Electric successfully stopped operations of its three Onagawa reactors in Miyagi prefecture (despite a fire in the turbine hall, quickly put out), and Japan Atomic Power (Japco) stopped operations of its Tokai-2 reactor in Ibaraki prefecture (see table). Almost instantaneously Japan had lost about 12 GW of power — over 8% of its electricity supply and nearly a quarter of its nuclear capacity (including three additional reactors down for maintenance at Daiichi and certain not to be up and running anytime soon).

But when the tsunami rolled in, real trouble struck, almost certainly causing the backup diesel generators to fail. With no offsite power to the plant, Tepco was dependent on short-life batteries to keep the cooling systems running. The reactor pressure-suppression function on Unit 1 was lost early Saturday morning, after which higher-than-normal radiation levels were reported at Daiichi. The government ordered an evacuation for people within a 10 kilometer radius of the plant. At 3:36 p.m. the outer wall and roof of the building housing Unit 1 exploded. At 7 p.m. the government expanded its evacuation zone to 20 km. More than an hour later, workers, under government orders, took the unprecedented step of flooding the containments with seawater, apparently first at Unit 1 and then at Unit 3.

"Unit 1 had two backup diesel generators to run [the] emergency core-cooling system, but they wouldn't start," said Masashi Goto, a former

Toshiba engineer who worked on and designed BWR containment. "Why is not exactly clear, but apparently they were damaged in some way, either by the quake or the tsunami. Other plants had two to four backup generators, but experienced [the] same problems and wouldn't start or broke down. Since it seemed across the board, [it was] probably not due to lack of maintenance. They are normally tested, but those pieces of emergency equipment that do not operate regularly are less reliable than the equipment that does."

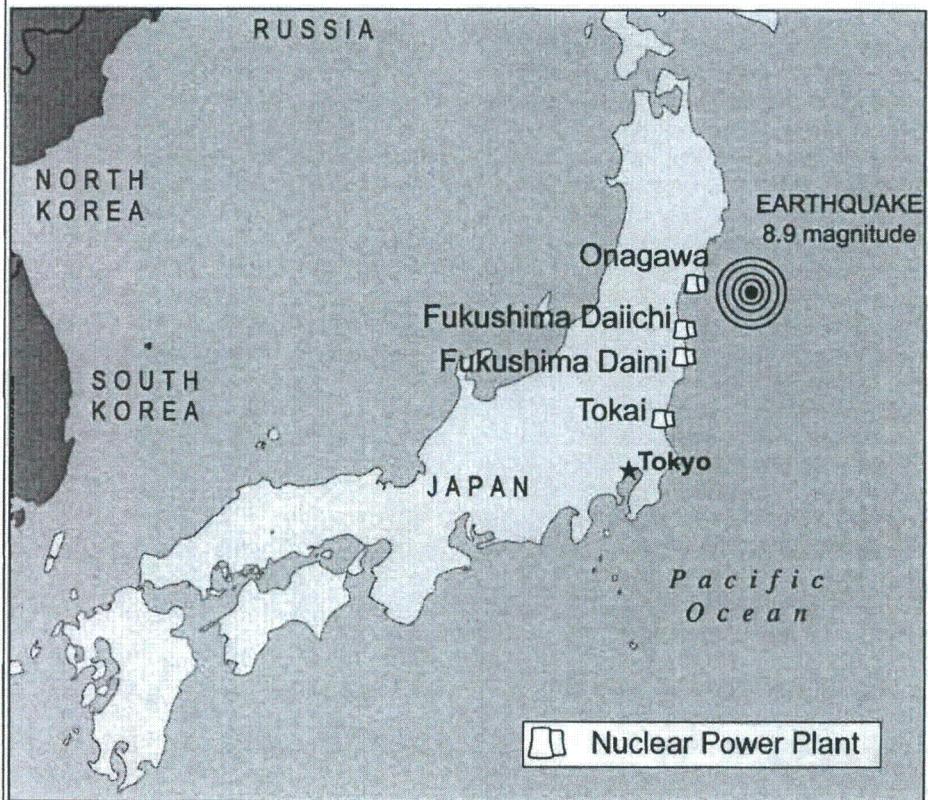
For a while, nothing much was heard about Unit 2, but it turned out to pose the most risk, with multiple reports from Japan suggesting its core had become partially or almost completely exposed.

"For all three units, as a result of that [lack of coolant], there are very clear signs that hydrogen gas ignited and did considerable damage to the reactor building. The primary concern is with Unit 2 reactor. All three reactors were dealing with inadequate cooling ... they were pumping seawater in to fill up the reactor and absorb the heat from the cores. On Units 1 and 3 those efforts were ultimately successful and they are trending toward a more stable condition," said David Lochbaum, director of the Union of Concerned Scientists' Nuclear Safety Program.

State of Emergency

On Friday the government in Tokyo — already dealing with the largest natural disaster in Japan's history, which had caused tens of thousands of casualties — declared a nuclear emergency. By Saturday morning it issued the first evacuation order. Meanwhile, the Japanese air force airlifted emergency generators to the site, but these were too small and unstable

Nuclear Plants Affected by Earthquake



and weren't able to restore the reactors' normal coolant system.

The explosion that afternoon tipped the scales once again and Tepco was faced with the certainty that it would lose Unit 1. "Tepco decided to fill the primary container vessel with seawater in order to prevent the rupture of the reactor vessel and/or the primary container vessel from causing a disaster of which we are afraid," Yukio Edano, the chief cabinet secretary of Japan and the government's chief spokesman on the nuclear crisis, said on Saturday. "Mr. Kaieda, Minister of Meti [the Ministry of Economy, Trade, and Industry, which has headed the government's response to the nuclear crisis], directed Tepco to do so."

As fire trucks pumped seawater into Daiichi-1, irradiated steam was vented in order to avoid a pressure buildup. This was the first reported release of radiation, but it has been followed by further releases at Daiichi-1, as well as the other two units. The seawater solution is only temporary and no one knows how well it's really working: at a press conference Monday Goto wondered aloud whether the gauges that are supposed to monitor water level in the core of any of the reactors are working, which means that operators may have no idea how much of the cores are exposed.

At 11:01 a.m. Monday, Daichi-3 witnessed another hydrogen explosion, this one even bigger than the Saturday explosion. Tepco said the reactor's containment vessel had resisted the impact and the reactor core remained intact, with the government insisting that radiation levels remained below legal limits.

Monday afternoon the Reactor Core Isolation Cooling System (RCIC) that had been cooling Unit 2 failed, intensifying fears of another explosion or a meltdown. Water levels around the core began to fall, and the company said it would inject seawater into the reactor to try to prevent overheating of the core, as it did with the other two units. However, initial reports are that it's been unable to do this. By Monday evening in Tokyo, Tepco announced that "it is presumed that some fuel rods are broken based on radiation detected in the environment," while some news reports claimed the reactor core has been completely exposed. And then came a report of an explosion. ☀

Phil Chaffee, London; Stephanie Cooke, Washington;

Yen Ling Song, Singapore; Todd Crowell, Tokyo

pchaffee@energyintel.com; scooke@energyintel.com; ylsong@energyintel.com

JAPAN

Spent Fuel Pools Also At Risk

While much of the focus over the past few days has been on the reactors at Fukushima Daiichi and the other earthquake-hit nuclear plants on Japan's eastern coast, the spent fuel pools next to those reactors may pose even greater risks. After all, a reactor contains just one core, while spent fuel pools can hold the equivalent of multiple cores.

"On average, spent fuel ponds hold five-to-10 times more long-lived radioactivity than a reactor core," according to Bob Alvarez of Washington's Institute for Policy Studies.

Just like the reactors, spent fuel pools have cooling systems that need electricity to keep running. And, just like at the reactors, those cooling systems are not working properly. A Tokyo Electric Power Co. (Tepco) statement Sunday said the the company was "coordinating with the relevant authorities and departments as to how to cool down water in the spent nuclear

fuel pool," at Fukushima Daiichi Unit 1.

The good news is that the inventories in the spent fuel pools at the worst-off reactors, Fukushima Daiichi Unit 1 and Unit 2, apparently are not full. Ed Lyman, a physicist at the Washington-based Union of Concerned Scientists, said Monday, "From the numbers I've seen, the inventories of these spent fuel pools were relatively small and well below capacity." Still, even partially full spent fuel pools can present major hazards if their cooling water drains or boils off.

Even just uncovering the fuel creates a radiation risk. "Once the water drops to around 5-6 feet above the assemblies, dose rates could be life-threatening near the reactor building," says Alvarez. And if the fuel is allowed to remain uncovered, things get worse. "If significant drainage occurs, after several hours the zirconium cladding around the irradiated uranium could ignite," Alvarez explains.

Thomas Popik, a US-based expert on spent fuel pools, says that by his calculations, based on when the Fukushima Daiichi lost off-site power, the water in the spent fuel pools there is probably already boiling. If it is not replenished, in 12-31 days the water will be gone, the fuel will overheat, and the zirconium cladding will spontaneously ignite. While the reactor core is inside a containment unit that keeps radiation from spreading, the spent fuel pool is not.

A 1997 report for the US Nuclear Regulatory Commission by Brookhaven National Laboratory found that a severe pool fire could render about 188 square miles uninhabitable, cause as many as 28,000 cancer fatalities, and cost \$59 billion in damage, according to Alvarez. ☀

Sam Tranum, Washington
stranum@energyintel.com

JAPAN

The Death of Nuclear?

On Feb. 7, Japan's Ministry of Economy, Trade and Industry (Meti) gave approval for Fukushima Daiichi Unit-1, the oldest commercial operating reactor in Japan, and the fifth-oldest in the world, to extend its lifetime beyond 40 years. Daiichi operator Tokyo Electric Power Co. (Tepco) had taken steps to prevent "age deterioration" such as preventing stress corrosion, cracking, thinning of piping and cracking from fatigue. Just over a month later, Meti ordered Tepco to fill the reactor with seawater in a desperate attempt to prevent a meltdown — a step that would also shutter the reactor permanently.

Although the current crisis at the Daiichi plant appears to have been entirely precipitated by a failure of the plant's backup diesel power supply, which in turn was caused by Friday's earthquake and tsunami — the timing could not be more ironic. Nor could it be more revealing: With hundreds of thousands of residents evacuated from Fukushima prefecture, it's almost inconceivable that Meti will proceed with further reactor lifetime extensions anytime soon. Daiichi-1 was only the third such extension it has granted.

Fukushima and Beyond

Even barring a meltdown at Daiichi, it's entirely possible that

in the absence of a ready and secure power supply, the makeshift process of cooling the Daiichi reactors with seawater and letting off radioactive steam will have to continue for some time. By Monday, Meti had ordered this to be done at all three of the Daiichi reactors that were in operation Friday morning. "The most ferocious heat has been shut off," said Walt Patterson, a nuclear expert with London's Chatham House, "but this is an old core with a lot of long-lived radioactivity in it."

Restoring the electricity grid in Fukushima could prove impossible while the area around the plant remains evacuated, and it could prove equally impossible to connect new emergency power generators as the existing malfunctioning generators are in the flooded basement of the plant. And there's also the question of how much radioactivity exists inside the plant as Tepco ponders its next steps. Nevertheless, some experts believe Tepco might be able to restart the cooling systems.

"If they do nothing else, do they have to vent forever? Yeah," US-based nuclear consultant Margaret Harding told NIW. "Months? No. Weeks? Maybe. But that assumes that they do nothing. As soon as Tepco gets the situation stable, they're going to go in and restart some of these cooling systems."

Even if the cooling systems are restarted and Tepco succeeds in bringing Daiichi Units 1-3 into cold shutdown (meaning that the temperature of the cooling water is brought down to atmospheric levels), those units are permanently out of commission. "Daiichi is closed forever," said Steven Thomas, a nuclear expert at the University of Greenwich. While Tepco will be reluctant to write off the entire 4,156 MWe plant, there will be significant radiation at the site, and it's hard to imagine the Fukushima prefecture signing off on reopening any of the plant. They may be equally reluctant to reopen the nearby four-unit Fukushima Daini plant, which has a capacity of 4,268 MWe.

"I wouldn't be surprised if they lost about 20 units in this," said Thomas, looking at the entire Japanese nuclear scene. Before Friday, there were 54 units in operation or waiting to be restarted. Only 11 reactors were forced to shut after Friday's earthquake, but Thomas predicts that the government could force utilities to shutter other reactors that show vulnerabilities similar to those at Daiichi. "It depends how much the problem was down to earthquake, and how much was down to the tsunami. If it was earthquake, clearly that has problems for all of Japan's reactors."

Shifting Policy?

Behind all these decisions, of course, will be the larger context of this disaster. Analysts are scrambling to count the cost of the disaster and its impact on the economy, but Japan's central bank said today that it would inject a record \$220 billion into money markets to allow short-term borrowing between institutions. The costs of the earthquake and the tsunami could be even greater than that number, and the losses from the nuclear crisis could be billions as well. Meanwhile, hundreds of thousands of people have been forced to leave their homes, and the entire country has been subjected to worries of nuclear meltdown.

Therefore, one scenario going forward, explained Philip White from the Tokyo-based antinuclear Citizens' Nuclear Information Center (CNIC), is that the Japanese public turns decisively against nuclear power. In this scenario, "public opinion will be so moved

by this that the government will be forced to change, and there will be sufficiently informed public opinion that they will not get away with cosmetic changes," said White. "That will depend on organizations like my own, and academics, experts and politicians with a conscience standing up. And that's ... not an unlikely scenario."

White noted that Hideyuki Ban, the secretary general of CNIC, is already taking part in a full governmental review of nuclear energy that started in December. Prior to Friday the review planned to have minimal changes to the long-standing policies. "Now [that] this has happened," said White, "the whole direction of that review has to be reconsidered." But the nuclear industry is a powerful force in Japan, which has long treasured the reduced resource dependence that nuclear provides, and some experts expect little change.

"Here's the reality," said Harding: "I think Japan has always been very cautious in operating their plants." The events that precipitated the current nuclear crisis were caused by "the complete perfect storm," and while there will be "some increased measures," Harding is skeptical of any full retreat from nuclear.

Tepco's Rocky Road

No matter what happens on the policy level, Tepco is in for a rough few years. First the good news: Tepco may not face enormous liabilities. There's an escape clause in Japan's 1961 law (which was revised in 2003), explained analyst Paul Scalise of the Economist Intelligence Unit, making Tepco and all nuclear power companies liable for reactor operations "except for events provoked by grave natural disasters like earthquakes and tsunamis. One could argue, not unreasonably, that Tepco is not liable for the events of March 2011."

But while Tepco might escape liability, noted Thomas, "they will have to pay for the cleanup," the cost of which "will be hideously large." The operator of Three Mile Island was bankrupted by the cleanup bill, said Thomas, and similar financial pressures are certainly in store for Tepco. Already this morning Moody's placed Tepco's Aa2 rating on review for possible downgrade.

"Moody's expects substantial costs such as capital expenditure related to replacing damaged units and costs for sourcing replacement power for customers in the interim," the ratings company said in a note by Tokyo-based senior analyst Kenji Okamoto. "This last challenge is exacerbated by current high oil prices, which will increase this cost. Some of this expense can be recovered from regulatory arrangements, but the timing and magnitude of such adjustments remain uncertain." Indeed, Tepco reported net losses in the two fiscal years following the smaller 2007 earthquake, and "Moody's therefore expects the impact on Tepco to be material and prolonged."

Could Tepco be pushed to file for bankruptcy? Most analysts see this as unlikely — Tepco is Japan's ninth-largest company in terms of capitalization, noted Scalise, and "I personally believe that it's unlikely that the government would let Tepco fail. Most likely after a while they'll reorganize."

Interestingly, Moody's continued in its note on Tepco that, "This latest incident and the previous Chuetsu-Oki earthquake indicate that the business risk of operating nuclear power plants in Japan is higher than previously contemplated." ☈

Phil Chaffee, London; Sam Tranum, Washington; Todd Crowell, Tokyo
pchaffee@energyintel.com; stranum@energyintel.com

NEWBUILD The World Pauses

As the crisis at Fukushima Daiichi continues to unfold, governments around the world are responding to the public concern over nuclear safety caused by images of exploding Japanese reactors on television mostly by promising to look more carefully at nuclear safety at home. Unless things take a severe turn for the worse in Japan, it's likely that a few skittish governments — probably in Europe — might step back from nuclear, while major reactor builders like China, Russia and India will forge ahead as planned.

The first to back away from nuclear was Germany, where Chancellor Angela Merkel today launched a three-month inquiry that she says could end a plan to extend the lives of the country's 17 nuclear reactors, or even result in the near-term closure of some units. "There are no taboos," she said, according to press reports. "Everything will be put under review." Late last year, Merkel's government struck a deal to extend the lifetimes of Germany's reactors by an average of 12 years, saving them from all shutting down by 2022 (NIW Sep. 7, 2010, p3).

Switzerland announced a stalling tactic of its own on Monday, suspending the approvals process for three planned nuclear power stations to review safety standards in light of the events in Japan. But exactly what lessons Switzerland can learn from Japan in this case are unclear. This decision invited ridicule from a nuclear fuel market participant Monday. "When was the last time there was an earthquake and a tsunami in Zurich?" he joked. It seems most likely that both the German and Swiss decisions are political gestures or stalling tactics, rather than serious moves to shut reactors soon, or scrap plans for building new units.

UK Energy Minister Chris Huhne has tapped the country's Chief Nuclear Inspector, Mike Weightman, to write a report on lessons learned from the Japan crisis, even while suggesting Britain could never face the same situation. "Of course there is a very big difference in that we are frankly amazingly lucky that we don't live in a seismically active earthquake zone like Japan," he said, according to press reports.

Aspiring nuclear powers Turkey and Thailand, in contrast, do face the threats of major earthquakes and tsunamis, respectively. Still, Turkish Energy Minister Taner Yildiz said Monday that events in Japan would not affect Turkey's plans to build nuclear power plants, according to press reports. Thai Prime Minister Abhisit Vejjajiva, on the other hand, said Sunday that his country might need to reassess its nuclear plans, in light of the events in Japan. But the Bangkok Post reported that Vejjajiva was considering ditching his country's nuclear program even before the earthquake hit Japan.

China Apparently Planning to Stand Firm

For the industry, though, Switzerland and Thailand, are not major concerns: Everyone's watching China. The situation in Japan is still in flux, and things could get much worse, but for now, it appears Beijing is unfazed and plans to move ahead

with its newbuild program, which forms the core of the global nuclear renaissance. On Saturday, Zhang Lijun, China's Vice Minister of Environmental Protection, said Beijing hopes to learn what it can from Japan's experience, but does not plan to alter its ambitious nuclear development plans.

Several sources in China have suggested that the reactors their country is building are safer than the ones that are in crisis in Japan. Lu Qizhou, president of nuclear developer China Power Investment Corporation, for example, pointed out that the Fukushima Daiichi reactors are what he described as second-generation designs, while China is focusing on third-generation designs. That's partially true: A handful of the 28 reactors China is now building are Gen III designs; but many more are CPR-1000s, which are technically a Gen II design, though they're modified and updated with some safety features the Fukushima Daiichi reactors don't have.

Still, despite this apparent confidence in its reactor designs, China — like the Europeans — will surely start reassessing its safety standards. "The way the Chinese handle public sentiment is very, very careful," said Peter Yao, a Hong Kong-based analyst at BOC International. "The rising safety concern among the public, and among academics, will obviously have an impact, and will trigger more debate." Indeed, on Sunday, Xie Zhenhua, vice chairman of China's National Development and Reform Commission, said China would strengthen its safety standards for building nuclear power plants and monitoring nuclear safety.

But neither the psychological impact of the Japanese situation nor the safety reassessment are likely to slow China's nuclear construction plans substantially, according to Steven Thomas, professor of energy policy at the Public Services International Research Unit of the University of Greenwich Business School in London. "There might be other things that will slow things down — they're going to run out of people to build them and operate them, for example — but I don't think that this [Japan] will stop them," he said.

India, too, appeared on Monday prepared to stay the course. In New Delhi, government officials said Monday that they would review the ability of each of their nuclear plants to withstand natural disasters, according to press reports. But Prime Minister Manmohan Singh said Indian reactors have already proven they can operate safely during an earthquake and a tsunami.

In 2001, a 7.7-magnitude earthquake struck the state of Gujarat, in northwestern India. At least 20,000 people were killed, 166,800 were injured, and 339,000 buildings destroyed. The Kakrapar nuclear plant, also in Gujarat, continued to operate safely. However, M.V. Ramana, associate research scholar at Princeton's Program on Science and Global Security, said events aren't analogous, since the Gujarat earthquake was smaller than the Japanese quake, and the epicenter was further from the plant. In 2004, a tsunami in the Indian Ocean flooded the Madras plant in Tamil Nadu, forcing it to shut down, but it restarted after a few days. ☀

Sam Tranum, Washington; Phil Chaffee, London; and Zhen Li, Chengdu
stranum@energyintel.com; pchaffee@energyintel.com

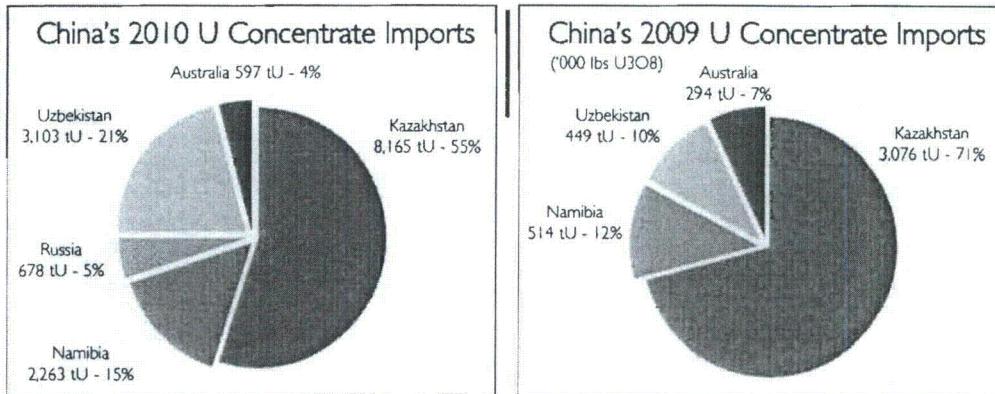
URANIUM

China's \$2 Billion Year of Imports

China spent just over \$2 billion importing over 38 million lbs of uranium concentrates last year, according to data released by the Chinese General Administration of Customs. This was more than three times the previous year's imports of approximately 14,806 tU (11 million lbs U3O8e).

While the data's particulars in some instances may be in question, in its broad outlines it reveals a number of dramatic trends in Chinese uranium procurement. Kazakhstan maintained its status as the largest source of China's imports, more than doubling its exports to China to roughly 8,165 tU (21 million lbs U3O8), but Beijing simultaneously succeeded in significantly diversifying its import portfolio. Most significantly, Kazakhstan's share of Chinese imports dropped to 55% last year from 71% in 2009, while imports from Uzbekistan more than doubled (10% to 21%), with a smaller increase in the percentage purchased from Namibia (12% to 15%).

Under closer scrutiny, the figures from Uzbekistan suggest a somewhat varied pattern of buying on China's part. China reported Uzbek imports of over 3,000 tU (or 8 million lbs U3O8 equivalent) in 2010, but most sources indicate that Uzbek production last year didn't stray much above 2009's



2,350 tU (6.1 million lbs U3O8e).

What is going on? Certainly a huge amount of Uzbek production is being sold to the Chinese, primarily via German-US trader Nukem (although Uzbek producer Navoi could potentially have sold some material with no intermediary). But Japan's Itochu also buys a significant portion of Uzbek production, and they're an unlikely candidate to sell into China.

EUP From Russia?

But China doesn't solely import yellowcake — it also has a contract with Tenex to import EUP. This could potentially explain the April 2010 import figure of 361 tU at \$87.50/lb U3O8 — well above both the spot and term indicators at the time. The discrepancy between that month's figure and most of the others would make sense if the import was the Russian EUP, with existing Kazakh-origin and Uzbek-origin uranium inventory, and Russian conversion and enrichment.

It's worth noting that the Customs Administration data includes U3O8, UO2, UO3, UF4, UF6 and various other potential uranium compounds under the broader heading of uranium concentrates. Given the much-noted lack of interest in buying conversion among China's two fuel importers, it's safe to say that the vast majority of the country's uranium imports are yellowcake, although not necessarily U3O8. (Much of what the uranium industry notionally terms U3O8 is actually some other similar uranium compound. Of the yellowcake uranium concentrates at Areva's Comhurex, for instance, less than half is actually U3O8.)

It's less clear what the February delivery of 785 tU of Namibian-origin material at \$85/lb U3O8 might be, given the unlikelihood of Namibian-

Chinese 2010 Uranium Concentrate Imports (tU)

| | Change '09-'10 | Total | | 2010 | | | | | | | | | | | | | |
|-------------|-------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| | | 2010 | 2009 | Dec. | Nov. | Oct. | Sep. | Aug. | Jul. | Jun. | May | Apr. | Mar. | Feb. | Jan. | | |
| Australia | 103% | 597 | 294 | 166 | 431 | | | | | | | | | | | | |
| millions \$ | 111 | 84 | 40 | 23 | 61 | | | | | | | | | | | | |
| \$/lb U3O8 | 4 | 54.00 | 51.90 | 54.00 | 54.00 | | | | | | | | | | | | |
| Kazakhstan | 166 | 8,166 | 3,075 | 1,568 | 1,039 | 718 | 718 | 1,067 | 633 | 452 | 209 | 64 | 72 | | | 1,625 | |
| millions \$ | 127 | 1,006 | 444 | 203 | 111 | 85 | 108 | 118 | 76 | 52 | 28 | 15 | 11 | | | 200 | |
| \$/lb U3O8 | -15 | 47.38 | 55.50 | 49.68 | 41.24 | 45.60 | 57.98 | 42.49 | 46.45 | 44.18 | 50.66 | 87.49 | 56.36 | | | 47.25 | |
| Namibia | 341 | 2,263 | 514 | 380 | 133 | | | | | | | | | | | 0 | |
| millions \$ | 352 | 320 | 71 | 48 | 15 | | | | | | | | | | | 427 | |
| \$/lb U3O8 | 3 | 54.40 | 52.99 | 49.00 | 42.26 | | | | | | | | | | | 57 | |
| Russia | - | 678 | | | | | | | | | | | | | | 85 | |
| millions \$ | - | 85 | | | | | | | | | | | | | | 48.01 | |
| \$/lb U3O8 | - | 48.01 | | | | | | | | | | | | | | | |
| Uzbekistan | 590 | 3,103 | 449 | 430 | 247 | 173 | 418 | 512 | 532 | | | | | | | 100 | |
| millions \$ | 625 | 521 | 72 | 56 | 30 | 21 | 60 | 94 | 102 | | | | | | | 14 | |
| \$/lb U3O8 | 5 | 64.53 | 61.46 | 49.97 | 46.38 | 45.95 | 73.45 | 70.87 | 73.54 | | | | | | | 55.08 | |
| Total | 242% | 14,806 | 4,333 | 2,543 | 1,849 | 891 | 1,136 | 1,578 | 1,665 | 974 | 209 | 361 | 467 | 302 | 2,830 | | |
| millions \$ | 222 | 2,015 | 626 | 330 | 216 | 106 | 188 | 212 | 239 | 124 | 28 | 82 | 67 | 67 | 356 | | |
| \$/lb U3O8 | -6% | 52.34 | 55.58 | 49.91 | 44.97 | 45.67 | 63.67 | 51.69 | 55.27 | 48.90 | 50.66 | 87.53 | 55.35 | 85.03 | 48.38 | | |

Source: Chinese General Administration of Customs. Data originally reported in grams of uranium, which could include U3O8, UO2, UO3, UF4, UF6, and other uranium compounds.

Chinese 2010 Uranium Concentrate Imports (tU)

| | Change '09-'10 | Total 2010 | Total 2009 |
|-----------------------|-------------------|---------------|---------------|
| Australia | | | |
| China Exports | 103% | 597 | 294 |
| Production | -19 | 6,394 | 7,919 |
| % to China | 151 | 9% | 4% |
| Kazakhstan | | | |
| China Exports | 165 | 8,165 | 3,076 |
| Production | 27 | 17,803 | 14,020 |
| % to China | 109 | 46% | 22% |
| Namibia | | | |
| China Exports | 340 | 2,263 | 514 |
| Production | -3 | 4,495 | 4,624 |
| % to China | 353 | 50% | 11% |
| Russia | | | |
| China Exports | - | 678 | 0 |
| Production | 0 | 3,562* | 3,564 |
| % to China | - | 19% | 0% |
| Uzbekistan | | | |
| China Exports | 590 | 3,103 | 449 |
| Production | -100% | N/A | 2,350 |
| % to China | - | - | 19% |
| Total Chinese Imports | 242% | 14,806 | 4,332 |

*Initial estimate from Armz. Source: Chinese General Administration of Customs, Company Filings. NIW.

came at the end of the year. Since BHP Billiton is operating with little spare production at Olympic Dam, the other Australian imports could actually have come from Heathgate's Beverley mine in South Australia. Heathgate is known for its spot sales, and particularly with its boosted production in the fourth quarter after bringing on a new field, it's possible that some of the output went to China.

Australian Limits

One side note on Australian exports to China is the significant governmental limitations on supply. Unlike Namibia or the Central Asian producers, Australia requires that all its yellowcake shipped to Shanghai end up in the heavy-water fabrication facility for the two 728 MWe Candus at Qinshan. This is a bit puzzling since the yellowcake must first go to Chinese conversion and enrichment facilities prior to arriving at Qinshan, but the Australian government has qualms about the safeguarded nonmilitary status of China's other fabrication facilities, and therefore Australian sales agreements to China must stipulate that the uranium will end up at the Qinshan fabrication plant. This creates difficulties, of course, as the Qinshan fuel plant has an annual capacity of only 200 tU (NTW Feb.28,p5).

Moscow has no such concerns, of course, and there was also a large 678 tU (1.8 million lbs U3O8) spot deal from Russia last January that accounted for 5% of China's 2010 imports. This almost certainly came from Rosatom subsidiary Atomredmetzoloto (Armz), which in December and January was actually looking to buy material on the spot market. Word on the market at the time was that a number of small purchases "may be in order to help fulfill yellowcake sales to China" (NIW Jan.4'10,p2). This appears to fit the evidence on hand: at that point in time the spot price was hovering around \$44/lb U3O8, and the price paid by the Chinese was \$48/lb, meaning that Armz could have made significant money flipping material. ☈

Phil Chaffee, London
pchaffee@energyintel.com

origin material ending up in Russia.

That's the only questionable delivery from Namibia. While total Chinese imports from Namibia represent almost half of Namibian production last year, Paladin has yet to deliver any quantities to China, meaning that all of the Namibian imports came from Rio Tinto's Rossing, and that a huge majority of Rossing's production was shipped to Shanghai.

Rio was most likely also responsible for some of the Australian pounds shipped to China, even if these were much less and

ENRICHMENT Kiryienko to Test Waters on US SWU Plant During Visit

Rosatom president Sergei Kiryienko is scheduled to arrive in the US Mar. 19 for a four-day visit during which he will hold talks in Washington and then visit a western state, most likely Nevada, a Rosatom official told NIW. Kiryienko will discuss future possibilities of US-Russia nuclear cooperation, recently unfettered by ratification of the 123 Agreement in January, in particular the possibility of building an enrichment facility that would be jointly owned and operated by one or two other investors (NIW Jan.18,p10).

"Our logic is to be closer to the customer," said Kiryienko's spokesman, Sergei Novikov. "That's why we are ready to discuss the creation of enrichment capacity, with Russian centrifuge technology, in the United States."

Russia already supplies nearly 50% of US nuclear operators' LEU needs, though this share will come to an end in 2013 when the Megatons to Megawatts deal expires. At that point Rosatom, which boasts some 45% of the world's nominal enrichment capacity, must make do with a 20% US market share between 2014 and 2020 through deliveries contracted directly with US operators, according to terms of the revised 2008 Russian Suspension Agreement (NIW Dec.3'07,p3). Russian-origin SWU sold to the US under the Megatons to Megawatts program is marketed by Usec.

However, if Russia were able to reach an agreement on building an enrichment facility in the US, the equation could change dramatically. But for that to happen, either the American Centrifuge Project or General Electric's laser-enrichment technology would have to fail, or both. This would free up a niche for the Russians despite Urenco's New Mexico facility (full capacity of 5.9 million SWU by 2015) and the Eagle Rock plant planned by Areva (3.3 million SWU by 2014) for the US market. Factoring in Russia's approximate 3 million SWU annual quota (2014-2020) under the suspension agreement (and broadly contained in the 123 deal), this would still leave more than 4 million SWU of unfilled annual domestic demand by 2020, forecast at 16.65 million SWU in the World Nuclear Association's latest market report.

Could Japan Be a Player?

But Areva and Urenco's ETC centrifuge plants are amazingly adaptable, and it would not be hard for either company to add capacity. Meanwhile Japan, which is also keen on increasing enrichment capacity beyond its borders, could easily become a player in this scenario.

"Japan is not ready to build [additional enrichment capacities] at home since there are concerns that it would be difficult to come to an agreement with the local population — it doesn't matter whether it's Russian or European technology," said Anton Khlopkov, director of the Center for Energy and Security Studies in Moscow. "My Japanese colleagues tell me there are problems with licensing any kind of new nuclear facilities, regardless what region they're in. That's why Japan is keen on seeing an enrichment facility in a third country."

Besides, he adds, the Japanese are trying to develop their own centrifuge technology and "there is a feeling that if a foreign enrichment plant is built in Japan — regardless whether it's Russian, European or American — then it'll kill the local project." He made his remarks prior to the recent earthquake, aftershocks and tsunami that have stricken Japan.

In this scenario, the Russians and Japanese — i.e., Toshiba — would team up with an American partner, most likely Usec, to construct an enrichment plant, with the US and Japanese sides providing finance and Russia the technology. Although there are significant obstacles to such a three-way marriage, it can't be ruled out.

Last year Toshiba, together with Babcock and Wilcox, pledged a \$200 million equity investment in Usec, while Rosatom hinted in its monthly journal, *Vestnik Atomproma*, that Usec would be its most logical partner in the US given nearly two decades of cooperation between the two organizations on HEU-LEU. Further, the Russians and Japanese in January signed a nuclear cooperation agreement, though it has yet to be ratified by either side. Last month Russian media reported that Tenex and Toshiba had begun talks on creating a joint venture and that a deal was expected soon.

Russian officials are quick to stress their experience so far in China, where Tenex is building centrifuge enrichment plants near the city of Lanzhou, in Gansu province, and the city of Hanzhong, in Shaanxi province. So far, Tenex has finished enrichment facilities with a combined capacity of 1.5 million SWU. A final 500,000 SWU of Tenex-built capacity is slated to go on line next year at Shaanxi (NIW Oct.25,p3). Granted, the project has not been without problems, and Moscow has come to understand that by building SWU plants in China it also created a competitor.

Russia's Learning Curve in China

Khlopkov, however, said that the kinks have been ironed out. "There were concerns with China, but they were of a slightly different character, particularly how China interpreted several of its obligations pursuant to the agreement with Russia. For example, according to nuclear industry sources, China tried to clone the centrifuges despite the fact that the agreement doesn't give them this right," he said. "What's more, it is well known that China offered enrichment services on the external market, even though, again, pursuant to the agreement, it can't do that."

Khlopkov said these problems arose from the original bilateral contract that was hastily negotiated in 1992. "A whole series of crucial regulations in the original document were omitted. Later these loopholes were filled with various additional amendments and agreements. At present the core problems have been resolved," he said. "You can't say the experience with China can be used as a model since building a factory in the US, after all, is a completely different situation ... But still, Russia obtained a great deal of experience building the factory in China."

Domestically, Russia will also be under pressure to sell its centrifuge technology abroad. The country has three plants that manufacture centrifuges — Tochmash in Vladimir, KMZ in Kovrov and the smaller UEKhK in the Ural Mountains region

— that together produce 500,000 SWU in total machine capacity annually, although the actual number could be considerably higher, according to Khlopkov. The plants are currently working near capacity for China and the domestic market (upgrading with 8th generation centrifuges), but much of this is expected to free up once the China order is completed.

But Rosatom understands that enrichment in America won't be easy. In its overview of the 123 Agreement, *Vestnik Atomproma* writes that any deal on an enrichment facility would require "unprecedented trust" between the two sides, in particular a separate agreement on the protection of technology transfer so that Russia's centrifuge know-how, which is considered a state secret, is tightly guarded.

Vestnik Atomproma says that other potential areas for future US-Russian cooperation include reprocessing spent fuel, breeder reactors, joint research on high-temperature gas-cooled reactor technology and joint construction of reactors in third countries. ☈

Gary Peach, Riga

URANIUM UI Production Doubles, Loss Quintuples

With its production and sales skyrocketing, Uranium One's revenues more than doubled between 2009 and 2010, but its net loss quintupled during the same period, reaching \$189.7 million in 2010 (see table). The company is predicting more production and sales growth in 2011, since it recently acquired two already-producing projects, and is expecting first output from two new projects this year.

Annual Production: Uranium One

| Project | Production (in million lbs U3O8) | 2011 | 2010 | 2009 | %Chg'09-10 |
|----------------|-------------------------------------|--------|---------|-------|------------|
| Akdala | Total (100%) | 2.600 | 2.686 | 2.700 | -1% |
| | Kazatomprom (30%) | 0.800 | 0.806 | 0.810 | -1 |
| | Uranium One (70%) | 1.800 | 1.880 | 1.890 | -1 |
| South Inkai | Total (100%) | 5.000 | 4.421 | 2.160 | 105 |
| | Kazatomprom (30%) | 1.600 | 1.326 | 0.648 | 105 |
| | Uranium One (70%) | 3.400 | 3.094 | 1.512 | 105 |
| Karatau | Total (100%) | 4.600 | 4.445 | 0.146 | 2945 |
| | Kazatomprom (50%) | 2.300 | 2.223 | 0.073 | 2945 |
| | Uranium One (50%) | 2.300 | 2.223 | 0.073 | 2945 |
| Kharasan | Total (100%) | 0.700 | 0.669 | 0.272 | 146 |
| | Energy Asia (40%) | 0.920 | 0.267 | 0.109 | 145 |
| | Kazatomprom (30%) | 0.210 | 0.201 | 0.082 | 145 |
| Akbastau | Uranium One (30%) | 0.200 | 0.201 | 0.082 | 146 |
| | Total (100%) | 2.400 | 2.000 | - | - |
| | Uranium One (50%) | 1.200 | 0.0167* | 0.000 | - |
| Zarechnoye | Kazatomprom (50%) | 1.200 | 1.000 | - | - |
| | Total (100%) | 2.000 | 2.100 | - | - |
| | Uranium One (49.67%) | 1.000 | 0.0163* | 0.000 | - |
| Honeymoon | Kazatomprom (49.67%) | 0.993 | 1.043 | - | - |
| | Kyrgyz Company (0.66%) | 0.013 | 0.014 | - | - |
| | Total (100%) | 0.400 | 0.000 | 0.000 | - |
| Willow Creek | Mitsui (49%) | 0.200 | 0.000 | 0.000 | - |
| | Uranium One (51%) | 0.200 | 0.000 | 0.000 | - |
| | Total (100% UI) | 0.300 | 0.000 | 0.000 | - |
| Total UI Prod. | | 10.500 | 7.431 | 3.556 | 109 |
| Total UI Sales | | 9.500 | 6.900 | 3.200 | 116% |

*Uranium One acquired its shares in Akbastau and Zarechnoye from ARMZ Dec.27. These figures for UI-attributable production are from that point to the end of 2010. Source: Uranium One filings, NIW calculations.

Increased output from existing assets in Kazakhstan — primarily Karatau and South Inkai — pushed the company's production up 109% between 2009 and 2010 (see table). The company is expecting an additional 41% increase in 2011: it gained stakes in the Akbastau and Zarechnoye ISR operations in Kazakhstan from Armz in December, and is expecting to get relatively small amounts of uranium out of projects in Australia and the US while commissioning them in 2011.

Uranium One's sales increased 116% from 2009 to 2010, pushing its revenues up to \$326.9 million. But the cost of operations, depreciation, depletion and administration topped revenues, resulting in a \$40.6 million operating loss. Still, that was a big improvement on 2009's \$272.9 million operating loss.

In 2010, in addition to its operating loss, though, Uranium One spent \$42.7 million paying interest on debentures, lost \$10.6 million on the sale of securities, booked an unrealized foreign exchange loss of \$9.7 million, reported a current income tax expense of \$49.3 million, and increased its assumed future income tax rate for Kazakhstan, resulting in a \$39 million charge. In contrast, in 2009 it reported a \$59 million foreign-exchange gain, and a more optimistic view of the future income tax rate led it to predict future income tax recovery of \$206.3 million.

Production Costs to Rise

While Uranium One is expecting substantial new production in 2011, much of it will be higher-cost than the Kazakh ISR operations the company relied on in 2010. The company's total cash cost per pound U3O8 fell from \$16 in 2009 to \$13 in 2010. But in 2011, it's expecting it to rise \$18. That's because it says that in 2011, Akbastau will produce at \$18/lb U3O8, Zarechnoye at \$21/lb, Willow Creek in the US at \$25/lb and Honeymoon in Australia at \$35/lb.

Willow Creek, which is in Wyoming, began commissioning Dec. 20 with the operation of its initial wellfield. In January and February, it turned out 5,800 lbs U3O8, and Uranium One is expecting it to produce a total of about 300,000 lbs this year. The company is in the midst of expanding that project's central processing plant to its NRC-licensed capacity of 2.5 million lbs per year.

Commissioning at Honeymoon, which Uranium One co-owns with Mitsui, also began in 2010. Production during commissioning is expected to begin in mid-2011. The project has a design capacity of 880,000 lbs per year, with a mine life of six years, including ramp-up.

Kharasan, in Kazakhstan, is also still in the commissioning stage. It officially opened in April 2009, and has a design capacity of 5.2 million lbs U3O8 per year, but it's been plagued by poor production (NIW Nov.16'09,p5). It turned out only 272,000 lbs in 2009, and 669,000 lbs in 2010; it's expected to produce about 700,000 lbs in 2011. "It is going to be a very gradual and slow ramp-up," Uranium One Chief Executive Chris Sattler said during last week's earnings call.

Mkuju River: Another Very Slow Ramp-up

After Armz bought Uranium One in 2010, the Rosatom sub-

Annual Reports: Uranium One

| (in million \$) | 2010 | 2009 | % Chg. |
|--|---------|---------|--------|
| Revenue | 326.9 | 152.0 | 115% |
| Expenses | (367.4) | (425.0) | - |
| Operating Expenses | (92.0) | (51.0) | - |
| Depreciation and Depletion | (97.4) | (46.4) | - |
| General and Administrative | (53.0) | (37.9) | - |
| Exploration Expense | (5.4) | (8.8) | - |
| Impairment of Mineral Interests, Plant, Equip. | (116.7) | (265.5) | - |
| Care and Maintenance | (2.9) | (15.4) | - |
| Operating Loss | (40.6) | (273.0) | - |
| Net Loss* | (189.7) | (36.1) | - |

*After taxes, interest, foreign exchange loss, income taxes, and other expenses.

sidiary then moved to buy Mantra Resources, owner of the Mkulu River project in Tanzania (NIW Dec.20,p3). If and when the Armz-Mantra deal closes, Uranium One is then planning to take over Mkulu from Armz.

"Mantra was looking for a cash bid, and Uranium One does not have \$1.2 billion in cash today," Sattler told NIW recently. "So Armz has stepped in and acted as our proxy and is acquiring Mantra ... it effectively gives us a call option to acquire Mantra in a rising uranium price environment, and 16 months to arrange financing."

The Mkulu River prefeasibility study shows about 100 million lbs in resources, and foresees production of about 3.7 million lbs a year, Sattler said on the earnings call. But he also said both those figures are likely to grow when Mantra turns in its definitive feasibility study, which is likely to be at the end of March or the beginning of April. Mantra shareholders are due to vote on the acquisition Apr. 28, and the deal is expected to close May 19.

Assuming everything goes as planned and Mkulu River ends up in Uranium One's hands, "I think you would be looking at a start-up probably by the end of 2013, beginning of '14," Sattler said in the earnings call. "I would allow for a very gradual ramp-up in production." ☈

Sam Tranum, Washington
stranum@energyintel.com

URANIUM Denison Losses Narrow on 62% Boost in Sales

Denison increased its uranium and vanadium sales last year, boosting its revenues 62% above their 2009 level, while expenses fell 41% over the same period. The result: a \$14 million net loss for 2010, compared to a \$147 million net loss for 2009 (see table).

Denison's production fell 23% year-on-year, from 1.9 million lbs in 2009 to 1.4 million lbs in 2010. But its sales shot up 63% over the same period, from 1.3 million lbs to 1.8 million lbs. In 2010, about 30% of the company's sales went into long-term contracts while the rest went to the spot market.

Selling more than it produced depleted Denison's stock-

Annual Reports: Denison

| (in million \$) | 2010 | 2009 | % Chg |
|----------------------------------|--------------|--------------|-------------|
| Revenues | | | |
| Uranium Sales | 1283 | 792 | 62% |
| Vanadium Sales | 880 | 59.9 | 47 |
| Environmental Services | 16.9 | 4.5 | 278 |
| Management Fees | 15.5 | 12.2 | 27 |
| Alternate Feed Processing | 2.6 | 2.5 | 2 |
| | 5.3 | 0.1 | 9975 |
| Expenses | 148.5 | 250.2 | -41 |
| Operating Expenses | 122.5 | 98.1 | 25 |
| General and Administrative | 14.3 | 13.9 | 3 |
| Mineral Property and Exploration | 7.5 | 10.1 | -26 |
| Mineral Prop. Impairment | - | 100.0 | -100 |
| Loss From Operations | 20.2 | 171.0 | -88 |
| Net Loss | 14.2 | 147.0 | -90% |

Annual Production: Denison

| (in millions of lbs U3O8) | 2010 | 2009 | % Chg |
|---|--------------|--------------|-------------|
| Total Production | 1,442 | 1,882 | -23% |
| McClean Lake (Denison's Share) | 0.389 | 0.812 | -52 |
| White Mesa Mill | 1,053 | 1,070 | -2 |
| Sales | 1,839 | 1,127 | 63 |
| Production Costs (per lb U3O8): | | | |
| McClean Lake (C\$) | 30.63 | 27.51 | 11 |
| White Mesa Mill (US\$) | 38.46 | 60.33 | -36 |
| Av. Price Per Pound U3O8 Sold (US\$) | 47.67 | 51.17 | -7% |

Source: Denison filings

piles. At the end of 2009, it had 342,000 lbs U3O8 of inventory from Canadian production and, at its White Mesa mill in Utah, 1.3 million lbs U3O8 contained in stockpiled ore and alternate feed material. At the end of 2010, it had 19,000 lbs U3O8 of Canadian inventory left, and 485,000 lbs U3O8 contained in stockpiled ore and alternate feed material.

In 2011, Denison is expecting to produce 1.2 million lbs U3O8 from ore stockpiled at its Beaver, Pandora, and Arizona 1 mines and production from the alternate feed circuit at White Mesa. It expects its cash cost of production to average \$43.50/lb U3O8, reflecting a 200% increase in the cost of sulfuric acid in 2011 compared to 2010. It expects to sell 1.3 million lbs U3O8 this year, of which about 800,000 will go to the spot market.

Meanwhile, Denison plans to spend \$10 million on continued exploration at its promising Wheeler River project in Saskatchewan. It will restart exploration and development of its Mutanga project in Zambia, where it last year won a 25-year mining license, and spend another \$6.2 million there. It will spend \$7.4 million on exploration and development in Mongolia. And it will spend \$6.4 million on development-stage projects in Canada and the US, including the Pinenut breccia pipe on the Arizona Strip, which Denison plans to bring into production in 2012. ☐

Sam Tranum, Washington
stranum@energyintel.com

CONVERSION Honeywell to Pay Nearly \$12 Million in Plea Deal

Honeywell pleaded guilty Friday in a federal court in Illinois to knowingly storing hazardous waste without a permit at its

Metropolis Works conversion plant, and was sentenced to pay a criminal fine of \$11.8 million. It also settled a parallel civil investigation with the state of Illinois and paid a fine of \$690,000, according to a company statement.

Honeywell says the Metropolis Works plant has lost \$100 million over the last 10 years (NIW Sep. 13,p5). These fines certainly won't help the plant's bottom line, but they shouldn't faze the massive conglomerate parent company: Honeywell reported \$2 billion in net income in 2010, up from \$1.5 billion in 2009.

The Metropolis plant is the only facility in the US — and one of a handful in the world — that converts uranium concentrates into UF6. Equipment at the plant scrubs the air emissions from the conversion process with potassium hydroxide (KOH). In the process, the KOH scrubbers and associated equipment accumulate uranium compounds that settle out of the liquid and are pumped as a slurry into 55-gallon drums.

The drummed material, called "KOH mud," is pretty hazardous stuff: Besides being radioactive, it has a pH of 12.5 or more, classifying it as a corrosive hazardous waste under the Resource Conservation and Recovery Act (RCRA). It's also potentially valuable, since it contains some uranium. But with uranium prices low, in November 2002, Honeywell shut down part of a system it used to reclaim the uranium from the KOH mud. That left it with no way to process the material, and it ended up storing the KOH mud for longer than the 90 days allowed by its permit.

By 2006, the company self-reported this "permitting issue to the appropriate regulatory agency," according to Honeywell's Friday statement. The Illinois Environmental Protection Agency (EPA) issued violation notices to the plant, and things escalated eventually into a years-long investigation by the US Environmental Protection Agency and Department of Justice (DOJ), a grand jury probe, and Friday's plea deal (NIW May 10,p5).

In addition to the fines, Honeywell will serve five years of probation. The terms commit it to a schedule for processing the KOH mud, which it says shouldn't be a problem: "The company has begun reprocessing the material and expects to have the work completed by 2013, three years ahead of the government's deadline," its Friday statement said.

The probation terms also commit Honeywell to running a household hazardous waste collection program in the Massac County community surrounding the plant, and arranging for the proper treatment, transportation and disposal of the waste collected, over two years, at a cost of about \$200,000.

Honeywell downplayed the seriousness of the KOH mud storage issue. "No one was injured as a result of exposure to the regulated material, and there was no environmental impact," according to its Friday statement. "Honeywell self-reported the permitting issue to the appropriate regulatory agency in 2006, and has since acquired the proper permit and constructed a new storage facility."

But the EPA and DOJ, which investigated the case and won the plea deal, painted a different picture in their joint statement. "Today, Honeywell must account for its knowing violation of a federal law that protects the public from exposure to

hazardous waste containing radioactive material," Ignacia S. Moreno, Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice, was quoted as saying.

"The defendant's illegal storage practices put employees at risk of exposure to radioactive and hazardous materials," Cynthia Giles, assistant administrator for EPA's Office of Enforcement and Compliance Assurance, was quoted as saying. "Today's plea agreement and sentencing shows that those who try to circumvent the law and place people's health and the environment at risk will be vigorously prosecuted." ☈

Sam Tranum, Washington
stranum@energyintel.com

NEWBUILD

Small Modular Reactors — Still the Fad in Washington?

The leadership of the Senate Energy and Natural Resources Committee has launched a second attempt at legislation that would promote the development of small modular reactors (SMRs) as an alternative to large-scale nuclear reactors that have faced capital constraints and long lead times in the US.

It appears that SMRs are more of a Washington fad than a strategy that is broadly endorsed by the private sector. Some experts have pointed out that the US is far behind other countries on SMR deployment and that SMRs would be less cost-effective for electricity generation than the larger-scale reactors that have become the industry standard.

But the senators sponsoring the so-called Nuclear Power 2021 Act nonetheless view the measure as an alternative to sluggish progress toward large reactor newbuild — and also feel that SMRs could have their own niche, perhaps in communities that are small but need better access to power (NIW Dec.21,'09,p5).

To date, commercial interest in SMRs in the US has centered on pilot projects. Various designs from Babcock and Wilcox, GE-Hitachi, Nuscale, and Hyperion are generating some attention from electrical providers such as the Tennessee Valley Authority.

In an attempt to jump-start even more interest, the Senate legislation would direct the Department of Energy to develop a standard design for two types of modular reactors in an effort to achieve a design certification from the Nuclear Regulatory Commission (NRC) for each by 2018, to be coupled with a combined operating license for each by 2021. The bill targets reactor designs with a generating capacity of less than 300 megawatts and specifies that at least one of the designs must be for a reactor with a capacity of 50 megawatts or less.

"The federal effort would be cost-shared with the private sector and selected under a competitive merit review process that emphasizes efficiency, cost, safety and proliferation resistance," said the legislation's sponsors, Sens. Jeff Bingaman (D-New Mexico), Lisa Murkowski (R-Alaska) and Mark Udall (D-Colorado). "Smaller reactors can be less capital-intensive

than the larger 100-megawatt reactors currently being licensed by the Nuclear Regulatory Commission. They also have the potential to be built in a modular and step-wise fashion."

Bingaman — who chairs the committee — argued that "modular reactors make sense because they do not require as large up-front capital investment as conventional reactors. They will keep construction costs down at a time when the expense of building a traditional plant has become so high." Bingaman had spearheaded a similar bill at the end of 2009 with the support of four co-sponsors that also sit on the energy panel.

Alex Flint, the senior vice president of government affairs at the industry-backed Nuclear Energy Institute, said the proposed cost-shared partnership approach of the Bingaman-Murkowski-Udall bill "has functioned effectively for the siting, design and licensing of larger advanced-design reactors."

He added: "Industry is confident it can help address the unique development needs associated with small reactor designs whose major components and systems can be built in a factory environment and shipped directly to a plant site."

The next question is whether Congress will buy that argument or give it full consideration within the packed legislative agenda. The Senate Energy panel is expected to schedule a hearing on the proposal sometime in the next few weeks. If the plan moves forward, it is likely to be considered as part of a broader, compromise energy bill since it would essentially amend the Energy Policy Act of 2005. ☈

Lauren O'Neil, Washington
loneil@energyintel.com

SAFETY

NRC Gives Six US Reactors Cs in 2010

The Nuclear Regulatory Commission (NRC) rated 89 of the 104 nuclear reactors operating in the US at the top of its five-level scale in 2010's year-end assessments, and nine more on the second level. But it also scored six plants on the third level. For comparison, in 2009, 84 plants made the top score, 19 were on the next level, and one plant was on the third level.

The reactors that scored lowest in the 2010 assessment were at Duke's Oconee station in South Carolina, Progress's HB Robinson station in South Carolina, Omaha Public Power District's Fort Calhoun station in Nebraska and Wolf Creek Nuclear Operating Company's Wolf Creek station in Kansas. All scored at the highest level in the NRC's 2009 assessment. But since they had problems in 2010, they'll get "more NRC inspections, senior management attention and oversight focused on the cause of the degraded performance," according to a statement from the NRC.

The NRC released the letters it sent to the plants, explaining each's mistakes. The NRC often communicates the plants' errors in jargon-laden, bureaucratic prose that can be all but impenetrable to outsiders. Some mistakes are related to specific incidents, like the two fires at the HB Robinson plant, while others are more nebulous "cross-cutting issues" like Wolf

Creek's problems with "thoroughness of evaluating problems such that resolutions address causes."

The main problem at Oconee was that in October 2009, an in-line screen filter in the standby shutdown facility (SSF) letdown line at Unit 1 was found to be gummed up with debris, which reduced the flow through that line to "a value significantly below the required minimum flow rate, rendering the Reactor Coolant Makeup (RCM) and letdown subsystem of the SSF inoperable," according to an NRC inspection report. Bottom line: The standby shutdown system might not have worked if needed.

If that wasn't bad enough, when NRC inspectors returned in February 2010, they found that plant management hadn't identified and corrected the same problem in the other two reactors at the site. Power was quickly reduced to 20% in Units 2 and 3 from Feb. 23-25 "to support building entry required to remove" the filters in the SSF letdown lines for those two reactors, according to the NRC.

At HB Robinson, the main problem was an excess of unplanned shutdowns, or "scrams." Or, as the NRC put it, "the Unplanned Scrams per 7,000 Critical Hours performance indicator passed the threshold from green to white in the third quarter." An electrical fire shut down the plant Mar. 28, and the staff's response to the fire started another fire. In September, a turbine problem caused another shutdown. In October,

Progress replaced the executive overseeing the plant, and in February, the NRC announced increased oversight of the plant (NIW Feb. 7, p9).

Wolf Creek's main problem was also too many unplanned shutdowns. On Apr. 28, the fuses for the main feedwater-regulating valve controller power supply failed, isolating flow to one of the steam generators and resulting in a reactor trip. On Aug. 21, operators using an intermittent method of feeding steam generators during shift turnover caused an unanticipated turbine trip signal and feedwater isolation. On Oct. 5, a leak in the essential service water system, which supplies cooling water, forced another shutdown.

The NRC also found several "cross-cutting issues" at Wolf Creek: the "deficiencies," already mentioned, in problem identification and resolution related to the thoroughness of evaluating problems such that resolutions address causes and extent of condition; a general problem with the appropriateness of timely corrective actions; and incompleteness in the accuracy of design documentation, procedures and work packages.

At Fort Calhoun, it appears the primary problem was fairly straightforward: The plant management failed to put adequate procedures in place to protect the reactor's intake structures and auxiliary building in the event of a flood. ☈

Sam Tranum, Washington
stranum@energyintel.com

BRIEFS

IRAN

Iran should export nuclear products and services to other countries to "help them access nuclear technology meant for peaceful purposes," Atomic Energy Organization of Iran Director Fereydoun Abbasi said during a speech Sunday in Tehran, according to the *Tehran Times* newspaper. He also said there should be "joint work with other world countries in the nuclear field," according to Iran's Islamic Republic News Agency. "All this requires that international standards be met and the products and facilities enjoy high durability," he was quoted as saying. An article in Iran's official Fars News Agency paraphrased comments from Abbasi, saying that "despite the propaganda campaign launched by the US-led West against the safety of Iran's nuclear facilities, the UN nuclear watchdog agency as the sole specialized world body has repeatedly approved the high quality of Iran's nuclear safety standards." This was an apparent reference to the widespread recent reports about technical and safety problems at Iran's Bushehr reactor (NIW Feb.28,p1).

NIGER

Nigerians have apparently elected opposition leader Mahamoud Issoufou as president. A mining engineer by trade, Issoufou in the 1980s served as Director of Mines in the Ministry of Mines and Industry. He then went on to hold several senior positions at Societe des Mines de l'Air (Somair), the uranium-mining concern now majority-owned by Areva, before serving as prime minister from 1993-1994. In 2009, he was jailed for protesting then-president Mamoud Tandja's efforts to continue to hold onto power after more than a decade. Assuming confirmation by run-off election results, Issoufou will take over power from the military junta that has been running the country since a coup in February 2010, when soldiers stormed the presidential palace and arrested Mamoud Tandja (NIW Feb.22'10,p5). Issoufou and his opponent, Seyni Oumarou, the leader of Tandja's party, have both said they would abide by the outcome of the election, which African Union observers called fair and transparent. Provisional run-off election results were due to be released Monday.

SOUTH AFRICA

First Uranium announced the death Mar. 12 of a miner at its Ezulwini gold and uranium mine. The company said the death resulted from "a fall of ground accident" that occurred underground on its "33 level." As a consequence, South Africa's Department of Mineral Resources issued a temporary work-stoppage order until a preliminary investigation is completed. First Uranium is working on expanding the operation both in the mine itself and through enlargement of plant capacity of the Mine Waste Solutions recovery facility.

SOUTH KOREA

After losing nuclear deals last year in both Turkey and Japan, Seoul is now plotting to bolster South Korea's ability to finance foreign nuclear projects, government sources told the *Korea Herald* last week. A new permanent task force led by the Ministry of Strategy and Finance, but including multiple other government industries as well as the Korean Export-Import Bank (Kexim), will take charge of leading the Korean export drive. "The latest scheme was devised as financing has emerged as a significant factor for plant exports to developing economy nations," ministry officials said. Indeed, talks with Ankara fell apart explicitly over Korea's inability or unwillingness to provide 100% financing for Turkey's second nuclear plant at Sinop. Kexim is poised to provide some \$10 billion in financing to the nuclear plant Korea Electric Power Co. (KEPCO) is building in the UAE, which nearly covers the entire amount sought by Abu Dhabi (NIW

Oct.18,p7). The new effort by the government to emphasize both financing and ministerial control makes the Korean model increasingly similar to the French nuclear model, where the Elysee Palace last month sought to put the government in charge of French nuclear export efforts (NIW Feb.22,p3).

UNITED KINGDOM

UK power systems company Rolls-Royce will help develop components for Areva's EPRs that EDF and partner Centrica hope to build in the UK over the next decade. In a collaboration announced last week, Rolls-Royce and Areva even hinted that their collaboration could extend to other countries, with Areva head Anne Lauvergeon saying that "We look forward to sharing processes, knowledge and skills with them to ensure that UK industry can perform a key role in manufacturing the new plants to be built in the UK and abroad." Rolls-Royce is best known in the nuclear sphere for powering Britain's fleet of nuclear submarines, but it's also active in the civilian nuclear sphere, most crucially through its provision of instrumentation and control systems to the entire French nuclear fleet, as well as some 50 other reactors abroad.

UNITED STATES

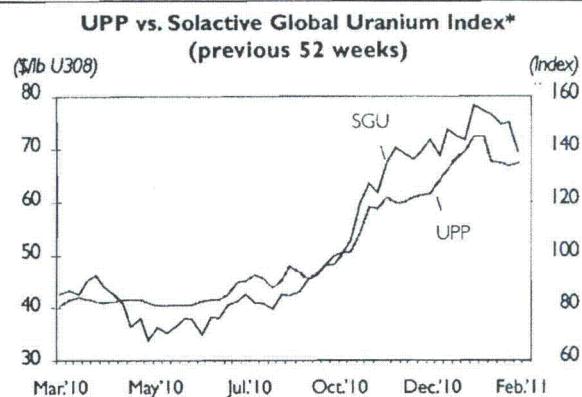
The Colorado Department of Health and Environment last week granted Toronto-based Energy Fuels a license to build its proposed Pinon Ridge uranium mill in Colorado's Paradox Valley. If the company manages to build the 500 ton/d capacity facility, it would be the first new uranium mill built in the US in decades, and only the second operating in the country (NIW Oct.12'09,p8). It's unclear yet how much the mill would cost, but it is clear that Energy Fuels doesn't have the cash. The company's annual report for 2010 said it "has limited financial resources," and "no operating cash flow." With about \$3.7 million on hand, it plans to spend \$3 million-\$3.5 million in 2011, and will have to raise capital to build the mill. Meanwhile, the project's construction timeline has been stretched out and its capacity scaled back: in 2007, plans called for a 1,000 ton/d mill operating by 2010. Now the company is saying it's hoping to start construction on a mill with half that capacity by the second quarter of 2011. Energy Fuels has already started its marketing effort, making the rounds to talk to potential customers, according to its annual report.

UNITED STATES

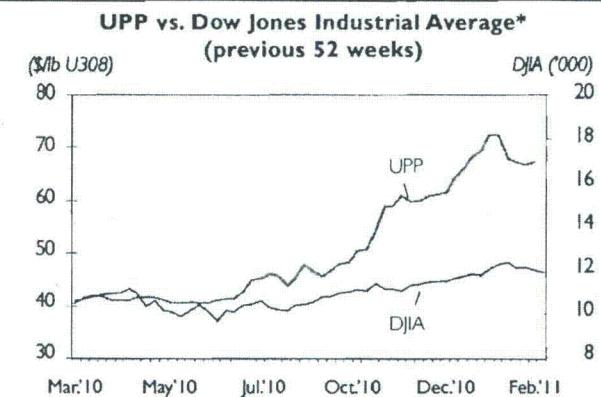
Iran's leaders are "feeling the pressure" from international sanctions, but this has not yet changed Tehran's "strategic thinking about its nuclear program," Robert Einhorn, Special Advisor for Nonproliferation and Arms Control in the US Department of State, said Mar. 9 at an Arms Control Association event at the Carnegie Endowment for International Peace in Washington. "So far, they seem only to have made a tactical adjustment. They may believe that by making superficial gestures, such as simply showing up at P5+1 meetings, they can reduce international support for sanctions," Einhorn said. He also said that the administration continues "to have concerns about the transfer of proliferation-sensitive equipment and materials to Iran by Chinese companies." A bipartisan group of 10 US Senators is also concerned about China's relationship with Iran, according to a Mar. 10 letter they sent to Secretary of State Hillary Clinton. "It appears that Chinese firms in the energy and banking sectors have conducted significant activity in violation of [US] law," they wrote. "We cannot afford to create the impression that China will be given free rein to conduct economic activity in Iran when more responsible nations have chosen to follow the course we have asked of them." ♦

ENERGY INTELLIGENCE URANIUM MARKET UPDATE

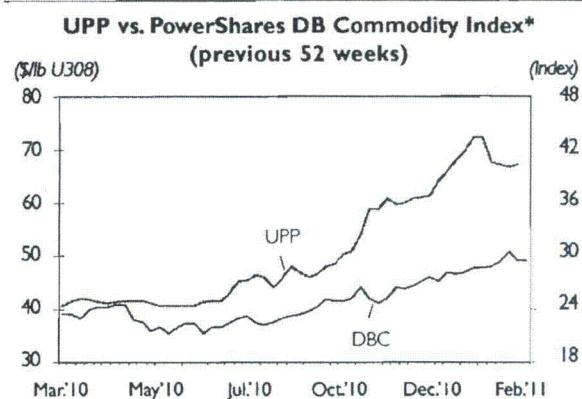
For the week ended March 11, 2011 (All figures as of Friday close unless otherwise indicated.)



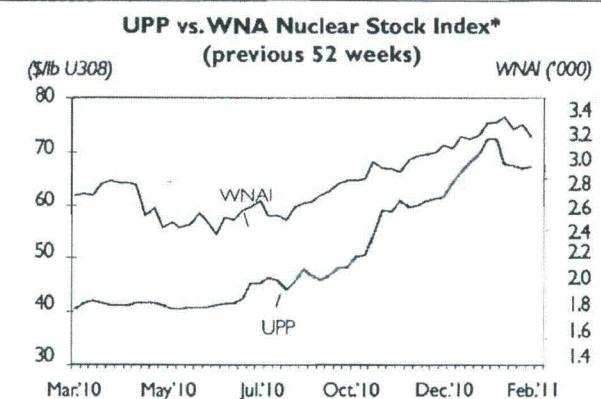
*Solactive Global Uranium Total Return Index, created by Structured Solutions AG, tracks the price movements in shares of companies active in the uranium mining industry. Calculated as a total return index and published in USD, its composition is ordinarily adjusted twice a year.



*Roughly two-thirds of the Dow Jones Industrial Average's 30 component companies are manufacturers of industrial and consumer goods. The others represent industries ranging from financial services to entertainment.



*The PowerShares DB Commodity Index Tracking Fund is designed to provide investors with a broadly diversified exposure to the returns on the commodities markets. It is based on the Deutsche Bank Liquid Commodity Index, which is composed of futures contracts on 14 of the most heavily traded and important physical commodities.



*Maintained by the World Nuclear Association, the World Nuclear Association Nuclear Energy Index includes companies engaged in primary building nuclear power facilities, design and service reactors, operate nuclear reactors, supply nuclear components, technology, and fuel.

Monthly Spot Market Prices

| Change | 2011 | | | 2010 | | | | | |
|----------------------|-------|---------|---------|---------|---------|--------|--------|--------|--------|
| | Feb. | Jan. | Dec. | Nov. | Oct. | Sep. | Aug. | Jul. | Jun. |
| Uranium (\$/lb U3O8) | | | | | | | | | |
| Low | +5.50 | +67.00 | +61.50 | +59.50 | +54.00 | 46.00 | 45.00 | 44.00 | 41.50 |
| High | +3.00 | +72.50 | +69.50 | +61.50 | +60.50 | 50.50 | 47.00 | 46.25 | 43.00 |
| Conversion (\$/kgU) | | | | | | | | | |
| Low | +1.00 | +12.00 | +11.00 | +11.00 | +11.00 | 11.00 | 9.00 | 10.00 | 6.00 |
| High | +0.50 | +13.00 | +12.50 | +12.50 | +13.00 | 13.00 | 13.00 | 12.50 | 11.00 |
| Enrichment (\$/SWU) | | | | | | | | | |
| Low | - | +154.00 | +154.00 | +153.00 | +153.00 | 153.00 | 153.00 | 153.00 | 153.00 |
| High | - | +155.00 | +155.00 | +155.00 | +155.00 | 154.00 | 154.00 | 155.00 | 158.00 |

NIW monthly UF6, SWU and U3O8 prices rely on the general consensus of direct market participants and is informed by actual market transactions. This section was previously known as the Nukem Weekly Report and the Nukem Price Bulletin. The methodology for NIW's weekly UPP price is different – more information about the methodology behind that price is available on page two.

CHAIRMAN: Raja W. Sidawi. **VICE CHAIRMAN:** Marcel van Poecke. **PRESIDENT:** Thomas Wallin. **EDITOR:** Stephanie Cooke. **ASSISTANT EDITOR:** Philip Chaffee. **WASHINGTON Correspondent:** Sam Tranum. **REPORTERS:** James Batty, Jay Eden, Bill Murray, Lauren O'Neill, Alex Schindler, Nelli Sharshikina, Yen-Ling Song, Clara Tan. **MAIN OFFICES:** 5 East 37th Street, NY, NY 10016 USA. Tel: 1-212-532-1112. Fax: 1-212-532-4838. E-mail: niw@energyintel.com. Website: www.energyintel.com. **BUREAUS:** Dubai: 971-4-3642607. Houston: 1-713-222-9700. London: +44 (0)20-7518-2201. Moscow: 7-955-721-1611/2. Singapore: 65-6538-0363. Washington: 1-202-662-0700. **OTHER PUBLICATIONS:** Energy Compass, Energy Intelligence Briefing, Gas Market Reconnaissance, International Oil Daily, Jet Fuel Intelligence, LNG Intelligence, Natural Gas Week, Neftic Compass, Nuclear Intelligence Weekly, Oil Daily, Oil Market Intelligence, Petroleum Intelligence Weekly, and World Gas Intelligence. Copyright © 2011 by Energy Intelligence Group, Inc. ('EIG') ISSN 1940-574X. Nuclear Intelligence Weekly is a trademark of EIG. All rights reserved. Access, distribution, reproduction or electronic forwarding not specifically defined and authorized in a valid subscription agreement or license with EIG is wilful copyright infringement. Additional copies of individual articles may be obtained using the pay-per-article feature offered at www.energyintel.com.

Seymour, Deborah

From: Moorman, James
Sent: Tuesday, March 15, 2011 7:28 AM
To: Haag, Robert; Seymour, Deborah; Blamey, Alan; Ayres, David
Subject: Fw: 0600 EDT (March 15 2011) USNRC Earthquake/Tsunami SitRep
Attachments: NRC Status Update 3-15.11--0600am.pdf

This email is being sent from an NRC Blackberry device.

From: McCree, Victor
To: R2SR_MANAGERS
Sent: Tue Mar 15 06:34:33 2011
Subject: Fw: 0600 EDT (March 15 2011) USNRC Earthquake/Tsunami SitRep

See attached. Note worsening condition of Fukushima Daiichi Unit 2, and Unit 4 SFP fire.

Vic

This email is being sent from an NRC Blackberry device.

From: LIA07 Hoc

To: [REDACTED] (b)(6)

(b)(6)

Sent: Tue Mar 15 06:01:58 2011
Subject: 0600 EDT (March 15 2011) USNRC Earthquake/Tsunami SitRep

Attached, please find a March 15, 2011, 0600 EDT situation report from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami. 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.

-Rebecca

Rebecca Stone
Office of Nuclear Security & Incident Response
US Nuclear Regulatory Commission
Lia07.HOC@nrc.gov (Operations Center)
Rebecca.Stone@nrc.gov

Seymour, Deborah

From: Burin, Julia F [julia.f.burin@lmco.com]
Sent: Tuesday, March 15, 2011 8:17 AM
To: Seymour, Deborah; Monahan, William J; Ernie Seymour; lynnsoltys
Cc: Jerry Gosline [jeb.napier@fundtech.com]; Jennifer.Napier@kimley-horn.com
Subject: Crisis at Japanese Nuclear Plant Upgraded on Gravity Scale

Click here mom to see updates (video) from Fox News.

Have a good day!

<http://www.foxnewsinsider.com/>

- **Crisis at Japanese Nuclear Plant Upgraded on Gravity Scale**

Fox and Friends 8:07 am on March 15, 2011 Tagged with: Nuclear Meltdown Threat

[Email](#)

Steve Doocy reported that the situation at the Fukushima nuclear plant in Japan has been upgraded to a six on a seven-point scale of gravity.



Woodruff, Gena

From: McNamara, Nancy
Sent: Tuesday, March 15, 2011 9:01 AM
To: LIA04 Hoc; Tifft, Doug; Maier, Bill; Barker, Allan; Trojanowski, Robert; Logaras, Harral; Woodruff, Gena
Cc: Turtl, Richard; Virgilio, Rosetta; Ryan, Michelle; Easson, Stuart; Rivera, Alison; Piccone, Josephine; Johnson, Deborah; Brown, Carrie; Flannery, Cindy; McGrady-Finneran, Patricia
Subject: RE: RSLOs: PLEASE CONFIRM RECEIPT AND YOUR ABILITY TO PARTICIPATE IN TODAY'S RESCHEDULED 3pm TELECON
Attachments: image001.gif

Doug and I can participate

From: LIA04 Hoc
Sent: Tuesday, March 15, 2011 9:00 AM
To: McNamara, Nancy; Tifft, Doug; Maier, Bill; Barker, Allan; Trojanowski, Robert; Logaras, Harral; Woodruff, Gena
Cc: Turtl, Richard; Virgilio, Rosetta; Ryan, Michelle; Easson, Stuart; Rivera, Alison; Piccone, Josephine; Johnson, Deborah; Brown, Carrie; Flannery, Cindy; McGrady-Finneran, Patricia
Subject: RSLOs: PLEASE CONFIRM RECEIPT AND YOUR ABILITY TO PARTICIPATE IN TODAY'S RESCHEDULED 3pm TELECON
Importance: High

RSLOs: PLEASE CONFIRM RECEIPT AND YOUR ABILITY TO PARTICIPATE IN TODAY'S RESCHEDULED

Rosetta
NRC Ops Center

From: McGrady-Finneran, Patricia
Sent: Tuesday, March 15, 2011 8:34 AM
To: McNamara, Nancy; Tifft, Doug; Maier, Bill; Barker, Allan; Trojanowski, Robert; Logaras, Harral
Cc: Turtl, Richard; Virgilio, Rosetta; Ryan, Michelle; Easson, Stuart; LIA04 Hoc; Rivera, Alison; Piccone, Josephine; Johnson, Deborah; Brown, Carrie; Flannery, Cindy
Subject: Changes to Tuesday, March 15, 2011 RSLO Teleconference

Good Morning Everyone!

There has been a change to the scheduled RSLO teleconference that was originally scheduled for 2:00pm this afternoon. Due to circumstances beyond anyone's control, the RSLO call will have to be pushed forward to 3:00pm (EDST). The call number is (888)390-0787, passcode is (b)(6) #. The meeting will still be held in T8C5.

My apologies to all for any inconvenience this change may cause.



Patricia McGrady-Finneran

Program Manager, USNRC
Division of Intergovernmental Liaison and Rulemaking (DILR)
Intergovernmental Liaison Branch (ILB)
Patricia.McGrady-Finneran@nrc.gov
Phone: (301) 415-2326
Fax: (301) 415-3502

Woodruff, Gena

From: Barker, Allan
Sent: Tuesday, March 15, 2011 9:07 AM
To: LIA04 Hoc; McNamara, Nancy; Tifft, Doug; Maier, Bill; Trojanowski, Robert; Logaras, Harral; Woodruff, Gena
Cc: Tutil, Richard; Virgilio, Rosetta; Ryan, Michelle; Easson, Stuart; Rivera, Alison; Piccone, Josephine; Johnson, Deborah; Brown, Carrie; Flannery, Cindy; McGrady-Finneran, Patricia
Subject: RE: RSLOs: PLEASE CONFIRM RECEIPT AND YOUR ABILITY TO PARTICIPATE IN TODAY'S RESCHEDULED 3pm TELECON
Attachments: image001.gif

Harral and I are available to participate.....Allan

From: LIA04 Hoc
Sent: Tuesday, March 15, 2011 8:00 AM
To: McNamara, Nancy; Tifft, Doug; Maier, Bill; Barker, Allan; Trojanowski, Robert; Logaras, Harral; Woodruff, Gena
Cc: Tutil, Richard; Virgilio, Rosetta; Ryan, Michelle; Easson, Stuart; Rivera, Alison; Piccone, Josephine; Johnson, Deborah; Brown, Carrie; Flannery, Cindy; McGrady-Finneran, Patricia
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Importance: High

RSLOs: PLEASE CONFIRM RECEIPT AND YOUR ABILITY TO PARTICIPATE IN TODAY'S RESCHEDULED

Rosetta
NRC Ops Center

From: McGrady-Finneran, Patricia
Sent: Tuesday, March 15, 2011 8:34 AM
To: McNamara, Nancy; Tifft, Doug; Maier, Bill; Barker, Allan; Trojanowski, Robert; Logaras, Harral
Cc: Tutil, Richard; Virgilio, Rosetta; Ryan, Michelle; Easson, Stuart; LIA04 Hoc; Rivera, Alison; Piccone, Josephine; Johnson, Deborah; Brown, Carrie; Flannery, Cindy
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Intergovernmental Liaison Branch (ILB)

Patricia.McGrady-Finneran@nrc.gov

Phone: (301) 415-2326

Fax: (301) 415-3502

Woodruff, Gena

From: LIA04 Hoc
Sent: Tuesday, March 15, 2011 9:13 AM
To: Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena
Cc: Flannery, Cindy; Lukes, Kim; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtl, Richard; Virgilio, Rosetta
Subject: RE: press releases

Yep – OPA doesn't hold onto them once they get them approved by the Chairman, so I think 15 mins in advance is best we can do

From: Tifft, Doug
Sent: Tuesday, March 15, 2011 9:09 AM
To: LIA04 Hoc; McNamara, Nancy
Cc: Flannery, Cindy; Lukes, Kim; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtl, Richard; Virgilio, Rosetta
Subject: RE: press releases

That would be great. If 15 mins is all we can do, we'll work with that.
-Doug

From: LIA04 Hoc
Sent: Tuesday, March 15, 2011 9:08 AM
To: Tifft, Doug; McNamara, Nancy
Cc: Flannery, Cindy; Lukes, Kim; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtl, Richard; Virgilio, Rosetta
Subject: RE: press releases

Just talked with Scott Burnell, OPA; he said he'll check, but believes we may be able to get releases 15 mins B4 they are posted on NRC website – he's going to check on that. I'll be sure to pop any that come my way to all the RLSOs.

From: Tifft, Doug
Sent: Tuesday, March 15, 2011 9:03 AM
To: LIA04 Hoc
Cc: McNamara, Nancy
Subject: press releases

Rosetta,

Could we get a heads up copy of press release to distribute to our states? Even if we can only give them a half hour heads up, I think it would be appreciated. (One of the comments from the call is that the states would like to hear info before they hear it on CNN.) I think giving them heads up Press Releases is probably the only thing we can control.

-Doug

Doug Tifft
Regional State Liaison Officer
Office: 610-337-6918
Cell: (b)(6)

Woodruff, Gena

From: Trojanowski, Robert
Sent: Tuesday, March 15, 2011 9:13 AM
To: LIA04 Hoc; McNamara, Nancy; Tifft, Doug; Maier, Bill; Barker, Allan; Logaras, Harral; Woodruff, Gena
Cc: Turtl, Richard; Virgilio, Rosetta; Ryan, Michelle; Easson, Stuart; Rivera, Alison; Piccone, Josephine; Johnson, Deborah; Brown, Carrie; Flannery, Cindy; McGrady-Finneran, Patricia
Subject: RE: RSLOs: PLEASE CONFIRM RECEIPT AND YOUR ABILITY TO PARTICIPATE IN TODAY'S RESCHEDULED 3pm TELECON
Attachments: image001.gif

Gena and I plan on participating, she may have to opt out early to tend to a previously scheduled commitment.

From: LIA04 Hoc
Sent: Tuesday, March 15, 2011 9:00 AM
To: McNamara, Nancy; Tifft, Doug; Maier, Bill; Barker, Allan; Trojanowski, Robert; Logaras, Harral; Woodruff, Gena
Cc: Turtl, Richard; Virgilio, Rosetta; Ryan, Michelle; Easson, Stuart; Rivera, Alison; Piccone, Josephine; Johnson, Deborah; Brown, Carrie; Flannery, Cindy; McGrady-Finneran, Patricia
Subject: RSLOs: PLEASE CONFIRM RECEIPT AND YOUR ABILITY TO PARTICIPATE IN TODAY'S RESCHEDULED 3pm TELECON
Importance: High

RSLOs: PLEASE CONFIRM RECEIPT AND YOUR ABILITY TO PARTICIPATE IN TODAY'S RESCHEDULED

Rosetta
NRC Ops Center

From: McGrady-Finneran, Patricia
Sent: Tuesday, March 15, 2011 8:34 AM
To: McNamara, Nancy; Tifft, Doug; Maier, Bill; Barker, Allan; Trojanowski, Robert; Logaras, Harral
Cc: Turtl, Richard; Virgilio, Rosetta; Ryan, Michelle; Easson, Stuart; LIA04 Hoc; Rivera, Alison; Piccone, Josephine; Johnson, Deborah; Brown, Carrie; Flannery, Cindy
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Phone: (301) 415-2326

Fax: (301) 415-3502

Michel, Eric

From: Heisserer, Jamie
Sent: Tuesday, March 15, 2011 9:23 AM
To: Freeman, Scott; Harmon, David; Failla, David; Artayet, Alain; Blake, Jerome; Michel, Eric; Steadham, Timothy; Bartleman, John
Subject: Before and after pictures from tsunami

<http://www.cnn.com/2011/WORLD/asiapcf/03/12/japan.before.after/index.html?iref=obinsite>

This gives an idea of what structures/tanks were taken out by the tsunami

Jamie M. Heisserer
Construction Inspector
Region II - Division of Construction Inspection
U.S. Nuclear Regulatory Commission
(404) 997-4451 (ph)
(404) 997-4902 (fax)

Hamilton, Ruben

From: Hamilton, Ruben
Sent: Tuesday, March 15, 2011 9:45 AM
To: Bonser, Brian
Subject: RE: Emailing: ENGNEWS01_1300189582P.pdf

I picked it off by accident while refreshing a link on ANS.org but could not do it again.

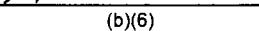
From: Bonser, Brian
Sent: Tuesday, March 15, 2011 7:48 AM
To: Hamilton, Ruben
Subject: RE: Emailing: ENGNEWS01_1300189582P.pdf

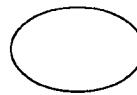
Ruben,

What's the source of this information? I assume it's reliable. Very interesting!

Brian R. Bonser

Chief, Plant Support Branch 1
Division of Reactor Safety, Region II
U.S. Nuclear Regulatory Commission
404-997-4653

From: Hamilton, Ruben
Sent: Tuesday, March 15, 2011 8:16 AM
To: Hamilton, Ruben;  (b)(6) Bonser, Brian
Subject: Emailing: ENGNEWS01_1300189582P.pdf



Travick, Vanette

From: McCree, Victor
Sent: Tuesday, March 15, 2011 10:13 AM
To: Freeman, Scott
Subject: RE: Fwd:

Got it, thanks.

From: Freeman, Scott
Sent: Tuesday, March 15, 2011 10:06 AM
To: McCree, Victor; Ogle, Chuck; Casto, Chuck
Subject: FW: Fwd:

The info below is from the interpreter that supported the vendor inspection last summer. He is passing information from Japanese news sources.

From: Heisserer, Jamie
Sent: Tuesday, March 15, 2011 8:26 AM
To: Freeman, Scott
Subject: FW: Fwd:

FYI

From: Jamie Heisserer [mailto: (b)(6)]
Sent: Tuesday, March 15, 2011 8:20 AM
To: Heisserer, Jamie
Subject: Fwd:

----- Forwarded message -----

From: Jamie Heisserer <(b)(6)>
Date: Tue, Mar 15, 2011 at 6:22 AM
Subject:
To: Jamie Heisserer <(b)(6)>

Below from Andy Tabiraki:

"According to what has been reported by Japanese TV, below is the status of Fukushima NPP.

Units 1 and 3: Low reactor water level. some partial fuel damage. Hydrogen generation. Explosion of outside buildings. The containment is still intact. Fire engines are trying to charge sea water to both reactor vessels.

Unit 2: The fire engine ran out of fuel (gasoline or diesel) and stopped pumping sea water. Workers did not realise this. The reactor water level was nearly zero for several hours, caused elevated fuel rod temperatures, possibly partial melting, generated hydrogen, caused an explosion in the containment, and damaged the suppression chamber. The containment is no longer intact and releasing radioactivities continuously. The area monitor is reported to indicate as high as 400 milli Sv. All plant personnel, except 50 fire engine operators, have been evacuated.

Unit 4: This unit was not operating when the quake hit. All fuels are in the pool. The spent fuel pool water temperature increased to 85 degree C. Due to evaporation, the water level became too low in the pool, exposed the spent fuels, heated, generated hydrogen, and caused an explosion and fire. The fire has been extinguished.

My observation:

Unit 2 is in an uncontrolled situation. The containment has been damaged. Hope fire engines can charge sea water into the cores till the decay heat comes down to a safe level."

Gloersen, William

From: Gloersen, William
Sent: Tuesday, March 15, 2011 11:21 AM
To: Kuzo, George
Subject: FW: Re the ongoing Japanese event - please read the latest EDO note

This info was from the NRC website.

From: Seymour, Deborah
Sent: Tuesday, March 15, 2011 11:19 AM
To: Gloersen, William; Edwards, Denise; Shannon, Mel; Adkins, Brannen
Subject: Re the ongoing Japanese event - please read the latest EDO note

Please remember:

It is possible that some of you 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. If you receive such a request, contact the NRC Operations Officer (301-816-5100 or via the NRC Operator) immediately. All media calls should be forwarded to the Office of Public Affairs (301-415-8200).

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.

Deb, x-4476

From: Reece, James
To: "Renae Reece"
Subject: FW: <http://www.washingtonpost.com/wp-srv/special/world/japan-nuclear-reactors-and-seismic-activity/>
Date: Tuesday, March 15, 2011 11:25:00 AM

From: Sanders, Carleen
Sent: Tuesday, March 15, 2011 10:58 AM
To: Reece, James
Subject: <http://www.washingtonpost.com/wp-srv/special/world/japan-nuclear-reactors-and-seismic-activity/>

Nielsen, Adam

From: Nielsen, Adam
Sent: Tuesday, March 15, 2011 11:37 AM
To: [REDACTED] (b)(6)
Subject: dave.nielsen@agcocorp.com
Japan nuclear links

<http://ansnuclearcafe.org/>

and the one below

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

From: Hamilton, Ruben
Sent: Tuesday, March 15, 2011 8:50 AM
To: Bonser, Brian; Nielsen, Adam; Dykes, Carmen
Subject: [JAIF] Japan Atomic Industrial Forum, Inc.

<http://www.jaif.or.jp/english/>

Romano, Michelle

From: Vias, Steven
Sent: Tuesday, March 15, 2011 12:09 PM
To: Romano, Michelle
Subject: Re: ISIS Statement on Events at Fukushima Daiichi Nuclear Site in Japan

Thanks. See you tonight

From: Romano, Michelle
To: Vias, Steven
Sent: Tue Mar 15 12:05:30 2011
Subject: FW: ISIS Statement on Events at Fukushima Daiichi Nuclear Site in Japan

From: ISIS [mailto:isis@isis-online.org]
Sent: Tuesday, March 15, 2011 11:59 AM
To: Romano, Michelle
Subject: ISIS Statement on Events at Fukushima Daiichi Nuclear Site in Japan

Institute for Science and International Security

ISIS REPORT

ISIS Statement on Events at Fukushima Daiichi Nuclear Site in Japan

March 15, 2011

ISIS assesses that the situation at the Fukushima Daiichi nuclear plant has worsened considerably. The explosion in the Unit 2 reactor, the third so far, and the fire in the spent fuel pond in the reactor building for Unit 4 means that this accident can no longer be viewed as a level 4 on the International Nuclear and Radiological Events (INES) scale that ranks events from 1 to 7. A level 4 incident involves only local radiological consequences. This event is now closer to a level 6, and it may unfortunately reach a level 7. A level 6 event means that consequences are broader and countermeasures are needed to deal with the radioactive contamination. A level 7 event would constitute a larger release of radioactive material, and would require further extended countermeasures. The international community should increase assistance to Japan to both contain the emergency at the reactors and to address the wider contamination. We need to find a solution together.

Visit the Japan country page on the ISIS website [here](#).

Institute for Science and International Security (ISIS)

236 Massachusetts Ave. NE
Suite 305
Phone: 202 547 3633
Email: ISIS@ISIS-Online.org
Washington, DC 20002

Romano, Michelle

From: Christine Hearn [REDACTED] (b)(6)
Sent: Tuesday, March 15, 2011 12:37 PM
To: Romano, Michelle
Cc: Brian Kaznova; Joyce Kaznova; HEARN, ANDY W (ATTCINW)
Subject: Re: for perspective

This is so tragic....

On Mar 15, 2011, at 12:12 PM, Romano, Michelle wrote:

It's pretty bad for them. Thought you guys may be having questions about everything you're hearing. Here's a little perspective.

Chernobyl was a 7 I think.

From: ISIS [<mailto:isis@isis-online.org>]
Sent: Tuesday, March 15, 2011 11:59 AM
To: Romano, Michelle
Subject: ISIS Statement on Events at Fukushima Daiichi Nuclear Site in Japan

Institute for Science and International Security

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Institute for Science and International Security (ISIS)
236 Massachusetts Ave. NE
Suite 305
Phone: 202 547 3633
Email: ISIS@ISIS-Online.org
Washington, DC 20002

Cozens, Ian

From: Cozens, Ian
Sent: Tuesday, March 15, 2011 12:57 PM
To: Kent, Jonathan; Artayet, Alain; Harmon, David; Gomez, Lola; Karlovich, Nicholas
Subject: The radiation spiked up to 30 bananas a day (2 days ago) and then fell back down to 1 to 2 bananas per day.

This website explains the rad dose in japan in bananas among other items.

http://nextbigfuture.com/2011/03/banana-dose-equivalents-of-radiation.html?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+blogspot%2Fadvancednano+28nextbigfuture%29&utm_content=Google+Reader

*Ian Cozens
Construction Inspector
(404)997-4526
U.S. Nuclear Regulatory Commission
Region II-Office 811*



Coverage of Science and Technology having high potential for disruption & Analysis of plans, policies and technology to enable radical improvements.

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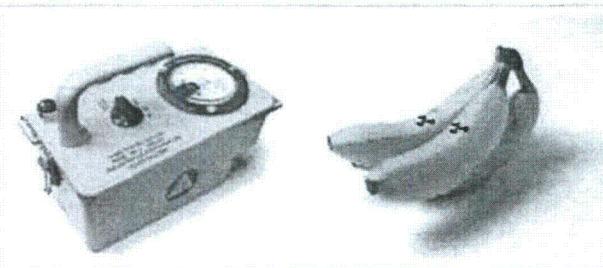


[Radon Mitigation Firm](#) Area's Oldest & Only Remediation Firm Comprised of PhD Scie
[Detox Radiation Naturally](#) Fulvic Ionic Minerals will help the body Detox Radiation & All Toxions
[The Diabetes Lies](#) Learn About The 7 Deadly Diabetes Lies from Dr.

[Search](#)

MARCH 14, 2011

Banana dose equivalents of radiation



Watt's up with that - The average radiologic profile of bananas is 3520 picocuries per kg, or roughly 520 picocuries per 150g banana.

The equivalent dose for 365 bananas (one per day for a year) is 3.6 millirems ($36 \mu\text{Sv}$).

Another way to consider the concept is by comparing the risk from radiation-induced cancer to that from cancer from other sources. For instance, a radiation exposure of 10 mrems (10,000,000,000 picorems) increases your risk of death by about one in one million—the same risk as eating 40 tablespoons of peanut butter, or of smoking 1.4 cigarettes.

Japanese radiation readings:

Monitoring of radiation levels on the spot is ongoing. At point MP4, where a reading of $1,015 \mu\text{Sv}$ was detected yesterday, a radiation level of $44.6 \mu\text{Sv}$ was recorded at 00:30 this morning, and a level of

SUBSCRIPTION OPTIONS

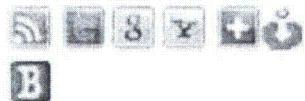
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NEXT BIG FUTURE

36.7 μ Sv at 6:00am. After the start of venting around 9:20, a reading of 76.9 μ Sv was recorded at 9:20 and of 70.3 μ Sv at 9:30.

The radiation spiked up to 30 bananas a day (2 days ago) and then fell back down to 1 to 2 bananas per day.

UPDATE: Unit 2 has had serious damage and radiation levels on the edge of the plant compound briefly spiked at 8217 microsieverts per hour but later fell to about a third that. Normal annual doses for a year will occur in one day.

After the Three Mile Island nuclear accident, the NRC detected radioactive iodine in local milk at levels of 20 picocuries/liter, a dose much less than one would receive from ingesting a single banana. Thus a 12 fl oz glass of the slightly radioactive milk would have about 1/75th BED (banana equivalent dose).

Further Reading

Radiation and Risks - Various amounts of normal radiation

1400 millirem for a gastrointestinal examination series (14,000 microSv)
200 millirem for one year in an average house from Radon (2,000 microSv)

360 millirem average annual dose for someone in the USA (3600 microSv)

660 millirem per year for your whole career might have a life expectancy loss of 15 days

1360 millirem per year for your entire working career might have an expected loss of 51 days

A manufacturing career reduces life expectancy by 40 days
100 rem definitely causes damage (10000000 microSv, 1 Sv)

Note: This is not a "nuclear accident". It is damage from an earthquake and tsunami. The reported sweeping away of four entire trains, including a bullet train which apparently disappeared without a trace, was not labeled "the third worst train accident ever".

If you liked this article, please give it a quick review on ycombinator or StumbleUpon. Thanks

 BOOKMARK    

POSTED BY BW AT 3/14/2011 

LABELS: ENERGY, JAPAN, NUCLEAR, RISKS

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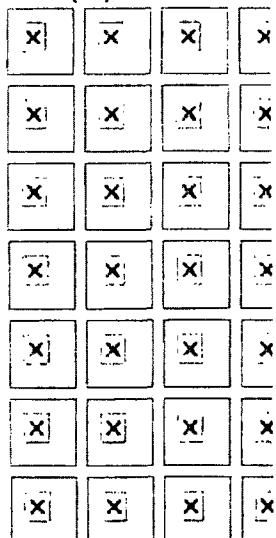
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Editor/Authors are :

Brian Wang, Director of
Research.

Sander Olson, Interviews
and other articles

Phil Wolff,
Communications and social
technologist.

Alvin Wang. Computer,
technology, social
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Contact: brian dot wang at
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Woodruff, Gena

From: opa administrators [opa@nrc.gov]
Sent: Tuesday, March 15, 2011 1:00 PM
To: Woodruff, Gena
Subject: (Revised) NRC Sends Additional Experts to Assist Japan
Attachments: 11-048R.pdf

Nielsen, Adam

From: Bonser, Brian
Sent: Tuesday, March 15, 2011 1:07 PM
To: Dykes, Carmen; Hamilton, Ruben; Kellner, Robert; Kuzo, George; Loo, Wade; Nielsen, Adam; Pursley, William; Rivera, Jonathan
Subject: Rad. Level Info. - Japan
Attachments: Update to Information Sheet 11 03 15 (2).docx

radiation level and other information

Brian R. Bonser

Chief, Plant Support Branch 1
Division of Reactor Safety, Region II
U.S. Nuclear Regulatory Commission
404-997-4653

Woodruff, Gena

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Subject: Desperate recovery efforts

This story in this morning's Washington Post tells of a new elements in the nuclear power plant situation in Japan—a fire in a spent fuel pool and a third explosion in four days. The fact that somewhat elevated radiation levels are being picked up in the capital city of Tokyo, 150 miles from the plant site, no doubt if fueling public anxiety even higher about the crisis. The Post has a helpful graphic showing the different phases of the accident that can be accessed by clicking on the link below, and it also has an Associated Press video. I'm sending a separate piece about questions being raised about the GE design of its BWRs.

joe

Joe T. Gilliland

[REDACTED]
(b)(6)

http://www.washingtonpost.com/business/economy/nuclear-crisis-deepens-as-third-reactor-loses-cooling-capacity/2011/03/14/ABk6rQV_singlePage.html

The Washington Post
March 15, 2011

Japan works to contain nuclear fires, radiation leaks

By Steven Mufson and Chico Harlan, Tuesday, March 15, 12:00 PM

Japan worked desperately to contain explosions and fires at a damaged nuclear power facility on Tuesday, evacuating all but a few dozen workers, forbidding planes from flying overhead and searching for ways to keep spent fuel rods submerged in water so they would not emit potentially dangerous radiation.

Radiation levels shot up early Tuesday after the third explosion in four days rocked the seaside Fukushima Daiichi complex and fire briefly raged in a storage facility.

Three hours after the explosion, the radiation level at the plant measured 11,930 micro sieverts per hour — several times the amount a person can safely be exposed to in one year.

Radiation levels shrank dramatically within the next six hours, to 496 micro sieverts per hour, which government spokesman Yukio Edano called “much higher than the normal level . . . but one that causes no harm to human health.”

The levels detected earlier, however, “would certainly have negative effects on the human body,” Edano told the Japanese news service Kyodo.

Toyko Electric Power Co., which owns the facility, said it was considering using a helicopter to douse a storage pond with cold water, an effort to bring down the temperature of the pool, which reportedly has been heated to the boiling point by the spent, radioactive rods.

Hundreds of workers were sent away from the power facility, though about 50 stayed on to fight fires and try to stabilize the plant. Prime Minister Naoto Kan hailed those workers who remained at the plant, who, he said, “are putting themselves in a very dangerous situation.”

Officials from Tokyo Electric said radioactive substances were emitted after an explosion in the unit 2 reactor at 6:14 a.m. (5:14 p.m. Monday in Washington). The blast took place near or in the suppression pool, which traps and cools radioactive elements from the containment vessel, officials said. The explosion appeared to have damaged valves and pipes, possibly creating a path for radioactive materials to escape.

While the fire at the fourth reactor had been extinguished, Japanese officials told the International Atomic Energy Agency that because of the blaze “radioactivity is being released directly into the atmosphere,” the agency said.

Kan, looking grave, told the nation that radiation already had spread from the reactors and there was “still a very high risk of further radioactive material escaping.” He urged people within 12.5 miles to evacuate the area, and said those within 19 miles of the plant should remain indoors.

Higher-than-normal radiation levels were detected in Tokyo, roughly 150 miles from Fukushima. Kanagawa, a prefecture south of Tokyo, recorded radiation at nine times the usual level. In Ibaraki, roughly 70 miles from Tokyo, levels were briefly 100 times the normal measure, according to the Kyodo news agency.

In each case, officials said that exposure to those levels of radiation would not pose an immediate danger to human health.

But many residents said they were deeply worried, and scores of foreign residents of Japan made plans to leave the country as soon as possible.

A no-fly zone was declared covering a 19-mile radius around the Fukushima Daiichi facility. For most of the day, winds blew in a southeasterly direction, pushing the plume of radioactivity toward the Pacific Ocean.

Late Tuesday afternoon, Japanese authorities said the situation at Fukushima Daiichi had marginally improved — though it remains dangerous. In addition to putting out the fire at unit 4, workers were closer to stabilizing units 1 and 3, keeping the fuel rods under the necessary cooling water. Edano said that it was too early to tell if workers' emergency cooling efforts are working for unit 2.

"There is no manual to this kind of incident. I believe on the ground things are chaotic," Takayuki Terai, professor of nuclear engineering at the University of Tokyo. "But in essence, they just have to put water into the reactors continuously and cool them down and contain them."

Amid the four-day-long emergency at the Fukushima Daiichi plant, Japan's public has grown skeptical about the reliability of official information, criticizing Tokyo Electric officials in particular for their vague answers during news conferences.

Kan himself was not briefed on the Tuesday morning explosion until after it had been reported on television. According to a Kyodo reporter who overheard the conversation, Kan later grilled the company representatives, asking, "What the hell is going on?"

During a midmorning news conference, four Tokyo Electric officials revealed almost no information about the blast.

Japan's usually deferential news media turned vicious, asking, "What does this mean?"

"We want answers, not apologies," one reporter said.

Tuesday began with the fire that broke out in a pool storing spent fuel rods at the base of unit 4, which had been shut down for inspection before last Friday's earthquake. Experts said the fire most likely broke out because the pool water had run low or dry, allowing the rods to overheat. Radioactive substances spewed outside from the fire, officials said, because the structure housing the pool was damaged by Monday's explosion at unit 3.

Half an hour later, the explosion at unit 2 took place. Experts said that, unlike the two previous explosions that destroyed outer buildings, this explosion might have damaged portions of the containment vessel designed to bottle up radioactive materials in the event of an emergency.

The explosion was followed by a brief drop in pressure in the vessel and a spike in radioactivity outside the reactor to levels more than eight times the recommended limit for what people should receive in a year, the company said. Japanese government officials later said it was unclear whether the spent fuel fire or the explosion had caused the spike in radiation.

The new setbacks came on the heels of a difficult Monday at Fukushima Daiichi unit 2, one of six reactors at the site. Utility officials there reported that four out of five water pumps being used to flood the reactor had failed and that the other pump had briefly stopped working. As a result, the company said, the fuel rods, normally covered by water, were completely exposed for 140 minutes.

That could have grave consequences, worsening the partial meltdown that most experts think is underway. By comparison, in the 1979 Three Mile Island nuclear plant accident in Pennsylvania, it took two hours for half the plant's nuclear fuel to melt.

According to a report by the Kyodo news agency, the fifth pump was later restarted, and seawater mixed with boron was again injected in a desperate bid to cool the reactor, but the fuel rods remained partially exposed and ultra-hot. On Tuesday morning, Tokyo Electric said that 2.7 meters (3 yards), or less than half, of the rods were still exposed.

The other four pumps were thought to have been damaged by a blast Monday that destroyed a building at the nearby unit 3 reactor, Kyodo reported. That blast, like one on Saturday at unit 1, was caused by a buildup in hydrogen generated by a reaction that took place when the zirconium alloy wrapped around the fuel rods was exposed to steam at 2,200 degrees Fahrenheit.

The International Atomic Energy Agency reported that injections of seawater into units 1 and 3 had been interrupted because of a low level in a seawater supply reservoir, but the seawater injections were later restored.

A commercial satellite photo of the complex showed piles of debris on top of units 1 and 3, which raised new fears about the condition of the pools where spent fuel is stored, especially at unit 1, where a design by General Electric placed the pool on top of the reactor but below the outer structure that was destroyed. In the satellite photo, there was no sign of a large crane that had been sitting on the roof before the blast. The ability of workers to assess the damage was hindered by fears that another explosion might occur.

In March 2010, 1,760 tons of spent fuel was stored in the six pools — 84 percent of capacity, according to Tokyo Electric.

After Monday's explosion at unit 3, Japanese government officials were quick to assert that it did not damage the core containment structure, and they said there would be little increase in radiation levels around the plant. But the explosion prompted Japan's nuclear agency to warn those within 12 miles to stay indoors. The blast also injured 11 people, one seriously.

The string of earthquake- and tsunami-triggered troubles at the Fukushima Daiichi plant began Friday, when a loss of grid power (caused by the earthquake) followed by a loss of backup diesel generators (caused by the tsunami) led to the failure of cooling systems needed to keep reactor cores from overheating.

The IAEA reported that Japan has evacuated 185,000 people from towns near the nuclear complex. The agency said Japan has distributed 230,000 units of stable iodine to evacuation centers from the area around the Fukushima Daiichi and Fukushima Daini nuclear power plants. The iodine has not been administered to residents; the distribution is a precautionary measure. The ingestion of stable iodine can help to prevent the accumulation of radioactive iodine in the thyroid.

The U.S. 7th Fleet said Monday that some of its personnel, who are stationed 100 miles offshore from the Fukushima Daiichi plant, had come into contact with radioactive contamination. The airborne radioactivity prompted the fleet to reposition its ships and aircraft.

Using sensitive instruments, precautionary measurements were conducted on three helicopter aircrews returning to the USS Ronald Reagan after conducting disaster relief missions near Sendai. Those measurements identified low levels of radioactivity on 17 crew members.

The low-level radioactivity was easily removed from affected personnel by washing with soap and water, and later tests detected no further contamination.

The political fallout spread all the way to the United States and Europe. German Chancellor Angel Merkel said Monday that she was suspending a deal that would have extended permits for 17 aging nuclear plants.

Many nuclear experts also called for a tougher scrutiny of U.S. plants, noting that the Japanese nuclear crisis exposed the limits of human ingenuity and imagination and pointed to the possible failure of the best-laid backup plans.

David Lochbaum, a nuclear engineer and director of the Nuclear Safety Program of the Union of Concerned Scientists, said in a conference call that in certain respects, the U.S. nuclear plants are not as prepared as the Japanese ones for a catastrophic power outage. After the earthquake and tsunami knocked out the electrical grid and backup generators, the Japanese engineers switched to batteries that could last for eight hours, he said.

“In this country, most of our reactors are only designed with battery capacity for four hours,” Lochbaum said. “Many of our reactors are in situation where earthquakes, or hurricanes in the gulf, or ice storms in the northeast, or a tree in Cleveland, can cause an extensive blackout,” he said.

The August 2003 blackout in North America that affected 52 million people across the upper Midwest, New York and parts of Canada was triggered when overheated wires sagged into trees in northeastern Ohio. Nine nuclear units switched to diesel backup generators, which are the size of locomotives without wheels.

Despite the cascade of equipment failures at the Fukushima Daiichi complex, some nuclear experts noted on Monday that the fuel rods there, whose temperature could have risen to as high as 4,000 degrees Fahrenheit, would lose some of their heat over the next few days and would

probably remain encased, even in the worst-case scenario, in a secondary containment structure with several feet of steel and concrete walls.

But the new explosion raises new questions. With it impossible to see into the reactor vessels, officials were in large part speculating about what is happening inside by using a variety of gauges and indicators.

"Let's hope they can get these reactors under control," said Richard Lester, head of the department of nuclear science and engineering at the Massachusetts Institute of Technology. "They're not there yet."

Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Tuesday, March 15, 2011 1:52 PM
To: Bob Newlin; Charles and Barbara Hackney; Mitch & Carol Carnell; ' Hunt (?)'; 'Al Belisle
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'; 'Nick Economos'; 'Phil Stohr'; 'Taylor'; 'Uryc
'; Woodruff, Gena
Subject: Questions about GE design

This is a sidebar in today's Washington Post about the ability of GE's containment design for BWR plants. It quotes Paul Gunter, who has been around a long time in the Washington anti-nuclear community, and whom I would hesitate to classify as an expert. But the 1986 quote by Harold Denton reflecting doubt about the robustness of Mark I containments has a lot more credibility. I'm a little surprised that The Post evidently made no effort to get in touch with Harold to see if he still holds that opinion.

joe

Joe T. Gilliland

(b)(6)

*

Nuclear experts weigh in on GE containment system

By Jia Lynn Yang, Monday, March 14, 9:39 PM

Since General Electric supplied the design four decades ago for all six nuclear reactors at the Fukushima Daiichi power plant in northeastern Japan, some regulators and critics have questioned whether the system — which was supposed to be smaller and less expensive than others — can withstand a nightmare scenario.

Their concerns focused on the reactor's containment system that is the final line of defense against a wide release of radiation. Now GE's technology is facing the ultimate test: Can the structure enclosing the reactor keep the hot, radioactive stew bottled up inside? And can the spent fuel pools withstand a combination of explosions and equipment failure?

There is no sign so far that GE's design is to blame for any of the plant's problems, which mainly have been the result of power failures after the massive earthquake and tsunami that slammed the area Friday. The containment structure is holding up.

Some experts said that if the situation deteriorates at the nuclear plant, GE's design — known as the Boiling Water Reactor Mark 1 — may not withstand the massive amount of hydrogen gas that could be released.

"We're not at that point yet," said Paul Gunter, director of the Reactor Oversight Project at Beyond Nuclear. "But these vessels are brittle. They were going to retire Fukushima Daiichi in just a few more months, and so this particular Mark 1 with its substandard design was reaching its endlife, and so it raises a lot of concerns."

GE defended its technology on Monday while it offered engineers to help Japanese officials contain the crisis.

"The BWR Mark 1 reactor is the industry's workhorse with a proven track record of safety and reliability for more than 40 years," GE said in a statement. "Today, there are 32 BWR Mark 1 reactors operating as designed worldwide. There has never been a breach of a Mark 1 containment system."

GE's design is unique. The company specializes in boiling water reactor systems — in contrast to the pressurized water technology produced by rivals such as Westinghouse and Ariva. Two-thirds of the nuclear plants in the United States rely on pressurized water technology, according to Edward Blandford, a researcher who focuses on nuclear reactor design at Stanford's Center for International Security and Cooperation.

In 1986, a top official at the Nuclear Regulatory Commission raised concerns about the GE containment system's design.

"I don't have the same warm feeling about GE containment that I do about the larger dry containments," said Harold Denton, director of NRC's Office of Nuclear Reactor Regulation during an industry conference, according to a report at the time by the publication, Inside N.R.C. "There has been a lot of work done on those containments, but Mark I containments . . . you'll find something like a 90 percent probability of that containment failing."

"There is a wide spectrum of ability to cope with severe accidents at GE plants," Denton said. "And I urge you to think seriously about the ability to cope with such an event if it occurred at your plant."

GE's Mark 1 containment system was designed to withstand discrete problems known as design basis accidents, such as a broken pipe releasing hot steam, said Ken Bergeron, a physicist and former scientist with the Sandia National Laboratories, where he worked on nuclear reactor accident simulation.

"Unfortunately, some of the shortcuts that were taken to accommodate the design basis accident at a fairly low cost results in containment that does not do well for severe accidents," Bergeron said.

There are also fresh concerns about the fuel rods, which are above the reactors. Since the Sept. 11 terrorist attacks, some nuclear experts have said that the rods should be closer to the ground to avoid exposure to terrorist attacks.

Officials are concerned that structural damage to the plant may have exposed some of the rods to the air, which would spread radiation.

Woodruff, Gena

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'; [REDACTED] (b)(6); 'Ken Clark'; 'Kerry Landis'; 'Milt Hunt (?)
'; 'Nick Economos'; 'Phil Stohr'; 'Taylor'; 'Uryc
'; Woodruff, Geha
Subject: FW: Fukushima Picture

Thanks to Milt Shymlock for sending along this link to a dramatic aerial photo of the damaged Fukushima reactors. Apologies if he sent it to everybody earlier.

Joe G.

From: Milton Shymlock [mailto:[REDACTED] (b)(6)]
Sent: Tuesday, March 15, 2011 1:23 PM
To: Joe Gilliland
Subject: FW: Fukushima Picture

Subject: Fukushima Picture

Pictures of the units after the second explosion:
<http://www.flickr.com/photos/digitalglobe-imagery/5525887859/sizes/o/>
Not good.

Sabisch, Andrew

From: Sabisch, Andrew
Sent: Tuesday, March 15, 2011 3:21 PM
To: 'Anna Simon'
Subject: RE: Some additional links for your reference

Unfortunately some of the interpreting to English leaves a little to be desired . . . when they say there is no refrigerant leaking in the containment they mean coolant . . . things like that make us scratch our head ☺

From: Anna Simon [mailto:] (b)(6)
Sent: Tuesday, March 15, 2011 3:00 PM
To: Sabisch, Andrew
Subject: RE: Some additional links for your reference

Thank you, Andy.

From: Andrew.Sabisch@nrc.gov
To: (b)(6)
Date: Tue, 15 Mar 2011 14:46:40 -0400
Subject: Some additional links for your reference

Anna,

This is the IAEA site: <http://www.iaea.org/>

This is the Japanese equivalent to the NRC's site: <http://www.nisa.meti.go.jp/english/index.html>

Hope this helps as things unfold

Andy

Andrew T. Sabisch
U.S. Nuclear Regulatory Commission
Senior Resident Inspector
Oconee Nuclear Station
Seneca, SC 29678
(O) 864-882-6927/6928
(F) 864-882-0189
(C) (b)(6)

Bartleman, John

From: Masters, Anthony
Sent: Tuesday, March 15, 2011 3:39 PM
To: Karlovich, Nicholas; Heher, Patrick; Steadham, Timothy; Bartleman, John
Subject: FW: NEI's update on Japanese reactors

From: Davis, Bradley
Sent: Tuesday, March 15, 2011 3:27 PM
To: Masters, Anthony
Subject: FW: NEI's update on Japanese reactors

From: Don A. Johnson [mailto:dajohnson@nefnm.com]
Sent: Tuesday, March 15, 2011 2:35 PM
Subject: NEI's update on Japanese reactors

Earlier today NEI distributed an update on Japanese reactors' status as affected by the earthquake and tsunami.

It is hard to overstate how badly the situation has deteriorated in the last 24 hours at Fukushima Daiichi, although Units 1 and 3 are now at 'cold' conditions, i.e. temperatures below 200 degrees Fahrenheit. Radiation levels have forced abandonment of Unit 1, 2 and 3 control rooms (10-20 R/hr in the control rooms) and a general site evacuation, leaving only 50 people being rotated onto the site to operate the firetrucks that are pumping seawater directly from the bay into the reactor vessels of Units 1, 2 and 3.

Information from Tepco is even less frequent and more confused than over previous days. There has been a breach of primary containment at Unit 2, probably due to a hydrogen explosion in containment, and pressure in that Unit's suppression pool is only slightly above atmospheric. Unit 4 was refueling when the earthquake struck and GE, who was running that outage for Tepco, reported that all the fuel inventory was in the spent fuel pool. The Unit 4 fuel in the spent fuel pool has apparently overheated and started a fire. Cooling to the pool is believed to be unavailable. Water level/temperatures of spent fuel pools at the other units is not known.

Only DC power to instruments is available. No on or off-site AC power is available although portable generators are on-site now.

Westinghouse reported elevated radiation levels at their Tokai fuel facility approximately 70 km away from the Fukushima Daiichi site. The team of 9 US NRC experts requested by Japanese government is in Tokyo and frustrated by lack of information from Tepco.

The Administration has asserted through NRC Chairman Jackzo that US power operations are safe and secure, and any lessons learned will be incorporated into future regulations. INPO has issued 4 recommendations to members today that will require their responses on disaster planning and response.

PG&E reports that its design-basis ground acceleration for accidents at their California Diablo Canyon plant on the Pacific coast south of San Francisco is 0.75g; Southern California Edison, operators of the 2-unit San Onofre PWR station on the Pacific coast north of San Diego, had reported that its design-basis ground acceleration is 0.67g. The similar design basis for Fukushima Daiichi was 0.18g, and the actual acceleration experienced at the quake's epicenter was 0.35g.

Don A. Johnson
Communications Manager

URENCO USA
PO Box 1789
Eunice, NM 88231

Tel: +1 575-394-6099
Mobile: (b)(6)
Email: dajohnson@nefnm.com
Web: www.nefnm.com



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Heisserer, Jamie

From: Heisserer, Jamie
Sent: Tuesday, March 15, 2011 3:35 PM
To: HOO Hoc
Subject: Info received from friend in Japan

Good afternoon,

Per the NRC guidance that was issued earlier today to provide information to the Ops Center, I'm passing on the following info that I received from a friend who is a nuclear engineer and lives in Japan...this is his summary of what Japanese media is reporting, and note that the last paragraph is a statement of his opinion.

Thanks,

Jamie Heisserer

Below from Andy Tabiraki:

"According to what has been reported by Japanese TV, below is the status of Fukushima NPP.

Units 1 and 3: Low reactor water level. some partial fuel damage. Hydrogen generation. Explosion of outside buildings. The containment is still intact. Fire engines are trying to charge sea water to both reactor vessels.

Unit 2: The fire engine ran out of fuel (gasoline or diesel) and stopped pumping sea water. Workers did not realise this. The reactor water level was nearly zero for several hours, caused elevated fuel rod temperatures, possibly partial melting, generated hydrogen, caused an explosion in the containment, and damaged the suppression chamber. The containment is no longer intact and releasing radioactivites continuously. The area monitor is reported to indicate as high as 400 milli Sv. All plant personnel, except 50 fire engine operators, have been evacuated.

Unit 4: Thie unit was not operating when the quake hit. All fuels are in the pool. The spent fuel pool water temperature increaed to 85 degree C. Deu to evaporation, the water level became too low in the pool, exposed the spent fuels, heated, generated hydrogen, and caused an explosion and fire. The fire has been extinguished.

My observation:

Unit 2 is in an uncontrolled situation. The containment has been damaged. Hope fire engines can charge sea water into the cores till the decay heat comes down to a safe level."

Woodruff, Gena

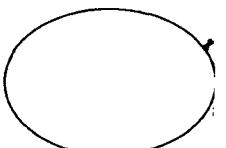
From: Maier, Bill
Sent: Tuesday, March 15, 2011 5:19 PM
To: Collins, Elmo; McCree, Victor; Dean, Bill; Satorius, Mark
Cc: Howell, Art; Lew, David; Pederson, Cynthia; Wert, Leonard; Trojanowski, Robert; Woodruff, Gena; McNamara, Nancy; Tift, Doug
Subject: RE: Proposed Outreach activities

Thank you for conveying the States' viewpoints Elmo.

FYI, we conducted a regularly scheduled RSLO counterpart call today and Region I suggested, and I seconded, conduct as Bill Dean suggests below of periodic calls with the SLOs to provide information that can be shared and to field questions that can be answered. Given the intense sensitivity of control of information related to this event, we suggested that the call be conducted by NRC HQs and conducted nationally so that appropriate controls could be applied and all states were getting the same information. FSME agreed to raise the suggestion again with the Executive Team.

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

From: Collins, Elmo
Sent: Tuesday, March 15, 2011 2:04 PM
To: McCree, Victor; Dean, Bill; Satorius, Mark
Cc: Howell, Art; Lew, David; Pederson, Cynthia; Wert, Leonard; Trojanowski, Robert; Woodruff, Gena; Maier, Bill
Subject: RE: Proposed Outreach activities



Thanks Bill and Victor -

Region IV looks a lot like Region II on these fronts. While we are getting a large number of inquiries, press and public, there is not a ground swell from the states.

That said, it is apparent that States are looking to be treated as a governmental partner, not as press or members of the public and thus, expect more information from NRC than they are getting about the status of the reactors in Japan.

Elmo

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

From: McCree, Victor
Sent: Tuesday, March 15, 2011 1:52 PM
To: Dean, Bill; Collins, Elmo; Satorius, Mark
Cc: Howell, Art; Lew, David; Pederson, Cynthia; Wert, Leonard; Trojanowski, Robert; Woodruff, Gena
Subject: RE: Proposed Outreach activities

Bill,

I apologize for not responding to your email sooner.... Although our SLOs have received a couple of inquiries from state points-of-contact, we have not received the groundswell of inquiries that you have experienced. As a result, our SLO's will stay current on the events in Japan through the regular email updates and respond to any questions from their counterparts.

Also, although we routinely inform FEMA Region IV of our EOC meeting schedule and invite them to participate, they rarely do so. Based on the small number of inquiries we've received from states, EMDs, etc., thus far regarding the Japan event, I do not plan to extend them an additional invitation.

Vic

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

From: Dean, Bill

Sent: Monday, March 14, 2011 6:00 PM

To: Collins, Elmo; Satorius, Mark; McCree, Victor

Cc: Howell, Art; Lew, David; Pederson, Cynthia; Wert, Leonard

Subject: Proposed Outreach activities

I am not sure what you have experienced thus far relative to the events unfolding in Japan, but I have had dialog today with State Liaison officers and emergency management directors, congressional staffers, and FEMA administrators all looking for the same thing: information they can use to address the groundswell of inquiries they are receiving. What do you think about:

1. Periodic calls with SLOs (maybe even daily right now) to update them on current information and receive, and where possible, answer questions; and
2. Inviting FEMA to EOC meetings to discuss emergency preparedness questions emanating from the Japanese situation?

Bill Dean

Regional Administrator

Region I, USNRC

Sent from NRC BlackBerry

Sabisch, Andrew

From: Meixell, Bob [Bob.Meixell@duke-energy.com]
Sent: Tuesday, March 15, 2011 4:41 PM
To: Sabisch, Andrew
Subject: FW: Japanese Unit Status

FYI...

Bob Meixell
Regulatory Compliance
Oconee Nuclear Station
(864) 873-3279

From: Newman, Stephen
Sent: Tuesday, March 15, 2011 3:03 PM
To: ONS RCG
Subject: Japanese Unit Status

If you believe what the utility is saying, here's the latest on the Japanese stations:

Press Releases

Press Release (Mar 15,2011)
Plant Status of Fukushima Daini Nuclear Power Station (as of 13:00 pm March 15th)

No Latest Developments since 12:00

| Unit | Status |
|------|---|
| 1 | <ul style="list-style-type: none">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. |
| 2 | <ul style="list-style-type: none">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. |
| 3 | <ul style="list-style-type: none">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. |
| 4 | <ul style="list-style-type: none">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. |

 [back to page top](#)

Steve
ONS Regulatory Compliance
864.873.4388



Wert, Leonard

From: Nease, Rebecca
Sent: Tuesday, March 15, 2011 9:12 PM
To: Wert, Leonard
Subject: Cmr assistants brfg

Approx 20 on the call – Jack Grobe gave the brfg

Apparently some on the call got a brfg document. I called the HOO after the call and they sent it to me. I will forward to you. We were advised that the info could be dated.

Dose rate at the site boundary is 60 mR/hr, which is much better than reported last night.

Non-essential personnel evacuated – approx 50 staff remain onsite (we do not know if on a rotating basis)

Unconfirmed report of 5 staff who received lethal doses of radiation

(b)(5)

Units 1, 2, and 3 have primary containments intact and seawater injection is continuing

Contrary to what we thought earlier, Unit 2 containment is intact (based on retaining psr), but is considered to be the least stable of the 3 units. Noise and psr drop attributed to vacuum bkr(?)

Unit 4 SFP level is low, but exact level is unknown.

Unit 4 experienced a lube oil fire in the SFP area, last night, which was extinguished (we had earlier speculated that it might be a zirc fire)

Another fire was report 3 ½ hrs ago which was started from H2 gas due to low water in SFP. We do not know what's burning, but no indication that it involves zirc.

The utility is taking no action to extinguish the fire due to very high dose rates in the area as a result of low water in SFP.

Units 5 and 6 – SFPs are heating up – approx 80 degrees C now

Other sites stable.

Most of the team is arriving about 10pm tonight – Casto approx midnight – last person approx 3am (EDT)
Establishing communications and improving the data stream will be priorities.

Japan is accepting assistance – specific equipment requests (military will provide) – DOE monitoring (land and sea) – request for Ki

INPO has sent out requests for information from its members: assessment/evaluation of B.5.b, severe accidents, fire events that could be similar to what's happening in Japan

Woodruff, Gena

From: McNamara, Nancy
Sent: Tuesday, March 15, 2011 10:12 PM
To: Piccone, Josephine; Virgilio, Rosetta; Turtl, Richard; Maier, Bill; Barker, Allan; Logaras, Harral; Trojanowski, Robert; Woodruff, Gena
Cc: Tifft, Doug
Subject: FW: Congressional Hearing on Japan Access Infor

As promised. Hearing begins at 9:30 a.m.

HTTP://ENERGYCOMMERCE.HOUSE.GOV, THEN CLICK ON COMMITTEE ACTIONS, THEN HEARINGS, THEN WATCH HEARINGS LIVE.

Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Tuesday, March 15, 2011 10:30 PM
To: Charles and Barbara Hackney; Bob Newlin; Mitch & Carol Carnell; ' Hunt (?); 'Al Belisle
'; 'Al Gibson ; 'Al Herdt ; 'Al Ignatonis ; 'Bill
Kleinsorge'; Bill Miller ; 'Bill Tobin ; [REDACTED] (b)(6) 'Bob
Wright ; 'Bob/Angie Martin ; 'Ed Girard ; 'Hellen Kreeger
'Hugh Dance ; [REDACTED] (b)(6) 'Jim Coley ; 'Jim Hufham
'; [REDACTED] (b)(6) ; 'Ken Clark'; 'Kerry Landis ; 'Milt Hunt (?)
'; Milt Shymlock; Nancy Sanford; 'Nick Economos ; 'Phil Stohr
'Taylor ; 'Uryc ; Woodruff, Gena
Subject: Interview on PBS News Hour

Below is the transcript of an interview that aired on the PBS News Hour Tuesday evening.

joe

Joe T. Gilliland

[REDACTED]
(b)(6)

JEFFREY BROWN: And now to a closer look at the dangerous situation at those nuclear power plants.

Olli Heinonen is a former lead inspector and top official with the International Atomic Energy Agency. He's visited the facilities in Japan and is now a senior fellow at Harvard's Kennedy School. Stephanie Cooke is editor of "Nuclear Intelligence Weekly," a trade publication that focuses on nuclear energy. She's also the author of "In Mortal Hands: A Cautionary History of the Nuclear Age."

Jeffrey Brown: Olli Heinonen, I will start with you.

We seem to have had modest progress yesterday, and then today some serious problems. What's your assessment of where things stand tonight?

OLLI HEINONEN, former International Atomic Energy Agency inspector: I think we are still having serious troubles.

But I think, at the same time, there has been progress in the last two days. But most of the serious problems are still in front of us, like stabilization of the unit number two of the Daiichi nuclear power plant, and then the new worry about the drying up of the spent fuel ponds at -- probably at several reactors.

JEFFREY BROWN: Well, Stephanie Cooke, even as we're sitting here, we're handed some -- a note about a new fire at that -- at one of the -- at one of the reactors.

Explain what's going on inside those reactors? As much as anybody knows, what's going on with the fires and the explosions?

STEPHANIE COOKE, "Nuclear Intelligence Weekly": Well, this latest news is -- is worrying. It's a fire in reactor four, which had been shut down when the earthquake hit. So, I'm not clear what caused that fire and what the implications of it are, but it's -- it's not a good sign.

Earlier, there was a fire at the spent fuel pool at reactor four. Most people don't realize that the -- when a reactor -- that sitting next to these reactors are big pools full of water which -- into which are placed used fuel from the reactors periodically, say, every 12 to 18 months.

And these pools contain irradiated fuel, with radioactive products on the average, say, five to 10 times what is inside a reactor core. So, if they become uncovered, there's a risk of a fire from the zirconium cladding on the fuel rods.

JEFFREY BROWN: And this was a new -- this wasn't something that we talked about yesterday. This was...

STEPHANIE COOKE: No, no. We knew this...

JEFFREY BROWN: ... a new danger that people suddenly realized.

STEPHANIE COOKE: Right. We knew this danger was on the horizon. And, clearly, the authorities knew it was on the horizon.

I'm a little worried, because we don't know why -- whether this was -- I'm not quite clear whether this was because of loss of power, because they need power to run the cooling systems in these spent fuel pools, or whether there was structural integrity from the earthquake damage that caused a rupture in the pool, or a combination of both.

But the water seems to have come out somehow.

JEFFREY BROWN: Well, so, Olli Heinonen, explain the radiation danger as it stands right now. It's not -- it's not a leak in the way we normally think of things. What -- what is going on, and who is at risk?

OLLI HEINONEN: I think that it's -- the biggest risk for the moment is certainly for the people who operate there.

And you have seen in the last 24 hours that they took a lot of people away and keep only the minimum people who do the job at the site. And I think this is a very good

practice. And then when they need additional people, they can send them in without emitting the -- any high radiation doses.

But yes, the nuclear material is there. Radioactivity is there. And we need to get these reactors cooled down, the cores cooled down, so that the worst doesn't happen. And the biggest risk is at this point of time is this unit two, which has had a long time the fuel exposed to air without any cooling.

I understood from Japanese TV a few hours ago that it was as long as six hours, which means that, as the Japanese operators said yesterday, that the fuel is quite damaged. And if this leads to the meltdown, then the consequences will be serious, because in an extreme case, it leads to what is called a steam explosion, which releases a lot of radioactive gases in atmosphere. And then it moves with the winds away -- we don't know which direction.

But this will be the worst-case scenario. At this point of time, I don't think we can say that this is going to happen -- hopefully not.

JEFFREY BROWN: Now, Stephanie Cooke, in the meantime, first, we had the thousands of people ordered to leave, and then today many more thousands told to stay indoors. Now, does that sound like the right advice? Is that enough? What is the thinking there?

STEPHANIE COOKE: Well, the area of the people told to stay indoors was -- I think it was 20 to 30 miles outside the reactor zone.

JEFFREY BROWN: I think it was actually up to 20, up to 20 miles. Twelve to 20? We will get that -- we will get...

STEPHANIE COOKE: Well, yes. It was sort of a 10 -- it was sort of -- I think it's up to 20 that are evacuated, and maybe 20 -- maybe -- maybe you're right.

JEFFREY BROWN: OK.

STEPHANIE COOKE: But anyway, there was an extra sort of 10 miles added on for people to stay indoors.

I would be a little bit frightened if I were those people, because it's -- these houses are not going to -- no house is airtight. These particles are invisible. They could -- you know, you're -- I think the danger or the fear that these people will always live with if they stay indoors, even if they stay indoors, is have I breathed in some awful particle that is lodging in my cell tissue and going to destroy, damage and -- and if you're a child-bearing age, is it going to destroy my -- you know, the genetic structure?

So, there are -- but it's a scary thing for people like that. I wouldn't want to be told that.

JEFFREY BROWN: Well, what would you add to that, Mr. Heinonen?

And, of course, we're also hearing people are worried about the -- or wary, I guess, of the government's credibility at this point in terms of how safe things are. So, what do you think?

OLLI HEINONEN: Well, first of all, I think that the government has tremendous troubles here because they have actually several firefights at the same time. All these four or five units have some trouble.

So -- and, certainly, all the technical people are now focusing to solve those problems, rather than spend time for communication. So, as a result of that, we have communication gaps. We don't have the details. So, it's very difficult to assess from outside.

So, I think this is perhaps the biggest problem at this point of time. But we are not alone. We have to remember that there are also a lot of other rescue teams around already by this point of time. We see what kind of radiation doses they receive and measure.

And also, as you know, the U.S. military is around, Air Force, Navy. So, I think that the numbers which we will see will be fairly reliable.

JEFFREY BROWN: So, just to stay with you, what should happen next, and how hard is this to either bring in water? They were talking about bringing in water with helicopters. What -- what do you want to see happen? What should happen next?

OLLI HEINONEN: I think we have here two cases to battle.

The first is to bring this core down. And the helicopters have nothing -- nothing to do with. This is when they are pumping seawater and try to increase the water level in this damaged unit number two reactor, so that the heat can be removed.

We don't know at this point of time how successful they are, because they have not released any number. But at least the -- it seems at this point of time that the temperature is not at least increasing. There has been no additional release of radioactive.

Then it's this other battle with the spent fuel ponds, which probably is somewhat easier. But the important -- is, as Stephanie said, to keep the water levels high up, so that the cooling is there, that we don't get these additional explosions.

And if these things dry up, then it's very difficult to go to the reactor cores because of the high radiation. And this may have an impact to the other operations to bring the temperatures down. So, it's vitally important get additional water there. Pump it. Bring it with helicopter, depending on the case.

Some of them, you cannot bring from helicopter because the roof will block it. So, they have still a few things to solve. It's also important to get additional pumping capacity, additional electricity. And there we have seen in last couple of days quite a lot of progress. So, tomorrow will be better, but is the -- time is of essence here. So, I hope that we have enough time to rectify the situation.

JEFFREY BROWN: And, Stephanie Cooke, briefly, in the meantime, several countries, people around the world are watching this, of course.

STEPHANIE COOKE: Yes.

JEFFREY BROWN: Several countries have already taken some plants offline. Is there a review under way worldwide, including the U.S., for similarities and differences?

STEPHANIE COOKE: No, there is not. No. In fact, the Obama administration today was basically declaring the safety of all nuclear power plants in the United States.

And Germany has decided to basically review all their plants and I think take seven offline, if that number is correct. Russia has made noises about it, but meanwhile, signed a deal to build a new reactor in Belarus, so I think that's basically lip service.

But no, it's not like a worldwide effort. The thing about accidents to remember is that they all have different sequence of events which cause them. So, to completely obsess about earthquakes causing the next accident isn't necessarily the way to do -- the key thing is, is to try to review safety again at all levels.

What caused the problem here was that they put diesel generators in the basement of the reactors, and a tsunami came in and wiped them out. So, they had a total failure of backup power. And who would have thought? So, that -- these are the things that -- you can't think of every eventuality. But those are the kinds of things that will be challenging the nuclear industry in the days ahead.

JEFFREY BROWN: All right, Stephanie Cooke, Olli Heinonen, thank you both very much.

STEPHANIE COOKE: Thank you.

OLLI HEINONEN: Thank you.

Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Tuesday, March 15, 2011 10:48 PM
To: Bob Newlin; Charles and Barbara Hackney; Mitch & Carol Carnell; ' Hunt (?); 'Al Belisle
'; 'Al Gibson ; 'Al Herdt ; 'Al Ignatonis ; 'Bill
Kleinsorge'; Bill Miller ; 'Bill Tobin ; [REDACTED] (b)(6) 'Bob
Wright ; 'Bob/Angie Martin ; 'Ed Girard ; 'Hellen Kreeger ;
'Hugh Dance ; [REDACTED] (b)(6) 'Jim Coley ; 'Jim Hufham
; [REDACTED] (b)(6) 'Ken Clark'; 'Kerry Landis ; 'Milt Hunt (?)
; Milt Shymlock; Nancy Sanford; 'Nick Economos ; 'Phil Stohr
'Taylor ; 'Uryc ; Woodruff, Gena
'The faceless 50'

Subject:

This is a pretty sobering story.

joe

Joe T. Gilliland

[REDACTED]
(b)(6)

The New York Times
March 15, 2011

Last Defense at Troubled Reactors: 50 Japanese Workers

By **KEITH BRADSHER** and **HIROKO TABUCHI**

A small crew of technicians, braving radiation and fire, became the only people remaining at the Fukushima Daiichi Nuclear Power Station on Tuesday — and perhaps Japan's last chance of preventing a broader nuclear catastrophe.

They crawl through labyrinths of equipment in utter darkness pierced only by their flashlights, listening for periodic explosions as hydrogen gas escaping from crippled reactors ignites on contact with air.

They breathe through uncomfortable respirators or carry heavy oxygen tanks on their backs. They wear white, full-body jumpsuits with snug-fitting hoods that provide scant protection from the invisible radiation sleetting through their bodies.

They are the faceless 50, the unnamed operators who stayed behind. They have volunteered, or been assigned, to pump seawater on dangerously exposed nuclear fuel, already thought to be partly melting and spewing radioactive material, to prevent full meltdowns that could throw thousands of tons of radioactive dust high into the air and imperil millions of their compatriots.

They struggled on Tuesday and Wednesday to keep hundreds of gallons of seawater a minute flowing through temporary fire pumps into the three stricken reactors, Nos. 1, 2 and 3. Among the many problems they faced was what appeared to be yet another fire at the plant.

The workers are being asked to make escalating — and perhaps existential — sacrifices that so far are being only implicitly acknowledged: Japan's Health Ministry said Tuesday it was raising the legal limit on the amount of radiation to which each worker could be exposed, to 250 millisieverts from 100 millisieverts, five times the maximum exposure permitted for American nuclear plant workers.

The change means that workers can now remain on site longer, the ministry said. "It would be unthinkable to raise it further than that, considering the health of the workers," the health minister, Yoko Komiya, said at a news conference.

Tokyo Electric Power, the plant's operator, has said almost nothing at all about the workers, including how long a worker is expected to endure exposure.

The few details Tokyo Electric has made available paint a dire picture: Five workers have died since the quake and 22 more have been injured for various reasons, while two are missing. One worker was hospitalized after suddenly grasping his chest and finding himself unable to stand, and another needed treatment after receiving a blast of radiation near a damaged reactor. Eleven workers were injured in a hydrogen explosion at reactor No. 3.

Nuclear reactor operators say that their profession is typified by the same kind of esprit de corps found among firefighters and elite military units. Lunchroom conversations at reactors frequently turn to what operators would do in a severe emergency.

The consensus is always that they would warn their families to flee before staying at their posts to the end, said Michael Friedlander, a former senior operator at three American power plants for a total of 13 years.

"You're certainly worried about the health and safety of your family, but you have an obligation to stay at the facility," he said. "There is a sense of loyalty and camaraderie when you've trained with guys, you've done shifts with them for years."

Adding to this natural bonding, jobs in Japan confer identity, command loyalty and inspire a particularly fervent kind of dedication. Economic straits have chipped away at the hallowed idea of lifetime employment for many Japanese, but the workplace remains a potent source of community. Mr. Friedlander said that he had no doubt that in an identical accident in the United States, 50 volunteers could be found to stay behind after everyone else evacuated from an extremely hazardous environment. But Japanese are raised to believe that individuals sacrifice for the good of the group.

The reactor operators face extraordinary risks. Tokyo Electric evacuated 750 emergency staff members from the stricken plant on Tuesday, leaving only about 50, when radiation levels soared. By comparison, standard staffing levels at the three active General Electric reactors on the site would be 10 to 12 people apiece including supervisors — an indication that the small crew left behind is barely larger than the contingent on duty on a quiet day.

Daiichi is not synonymous with Chernobyl in terms of the severity of contamination. The Ukrainian reactor blew up and spewed huge amounts of radiation for 10 days in 1986. But workers at the plants have a bond.

Among plant employees and firefighters at Chernobyl, many volunteered to try to tame, and then entomb, the burning reactor — although it is not clear that all were told the truth about the risks. Within three months, 28 of them died from radiation exposure. At least 19 of them were killed by infections that resulted from having large areas of their skin burned off by radiation, according to a recent report by a United Nations scientific committee. And 106 others developed radiation sickness, with nausea, vomiting, diarrhea and dropping blood counts that left them highly vulnerable to infections.

The people who had suffered radiation sickness developed other problems later, according to the report: cataracts, severe scarring from the radiation burns to their skin and an increased number of deaths from leukemia and other blood cancers.

Some of those Chernobyl workers were exposed to levels of radiation far beyond what has been measured to date at Daiichi — especially helicopter pilots who flew through radiation-laden smoke spewing from the reactor to drop fire-extinguishing chemicals on it.

Radiation close to the reactors was reported to reach 400 millisieverts per hour on Tuesday after a blast inside reactor No. 2 and fire at reactor No. 4, but has since dropped back to as low as 0.6 millisieverts at the plant gate. Tokyo Electric and Japanese regulators have not released any statistics on radiation levels inside the

containment buildings where engineers are desperately trying to fix electrical systems, pumps and other gear wrecked by Friday's earthquake and tsunami.

But nuclear experts said that indoor radiation levels were likely to be higher because the containment buildings were probably still preventing most radiation from leaving the plant.

The site is now so contaminated with radiation, experts say, that it has become difficult for employees to work near the reactors for extended periods of time. According to one expert's account of nuclear emergency procedures, workers would be cycled in and out of the worst-hit parts of the plant.

In some cases, when dealing with a task in a highly radioactive area of the plant, workers might line up and handle the task only for minutes at a time before passing off to the next worker, said Katsuhiko Ishibashi, a former professor in the Research Center for Urban Safety and Security at Kobe University.

Tokyo Electric has refused to release the names or any other information about the 50 workers who stayed behind, nor have utility executives said anything about how they are being relieved as they become tired or ill.

Some of those battling flames and spraying water at reactors at Daiichi are members of Japan's Self-Defense Force, police officers or firefighters. Others are contractors sent to the plant.

Defense Minister Toshimi Kitazawa said Tuesday that Self-Defense Force soldiers might be called on to fly the helicopters that Tokyo Electric may use to spray water onto the overheating used fuel storage pool at reactor No. 4. The same day, however, members of Japan's nuclear watchdog group, who had been stationed about three miles from the plant, were moved to a site 18 miles away. (The authorities later said that using helicopters to put spray water on reactor No. 4 might not be feasible.) If the plant operator is strictly limiting the exposure of each worker at Daiichi — and thus calling on hundreds of volunteers to make up the 50 on site at any given time — then Chernobyl may offer some consolation.

To clean up the Chernobyl site after the accident, the Soviet Union conscripted workers in proportion to the size of each of its republics, and developed a system to limit their exposure.

"They sent up to 600,000 people in to clean up the radioactive debris around the plant and build a sarcophagus," said Dr. John Boice, an author of the study, a professor of

medicine at Vanderbilt and the scientific director of the International Epidemiology Institute in Rockville, Md.

The workers, known as “liquidators,” were sent into contaminated zones for limited periods. “To date there’s very little evidence for adverse effects,” Dr. Boice said. “It was pretty smart. A large number of people got a relatively small dose. There may be a small risk of leukemia, but that’s not conclusive.”

Keith Bradsher reported from Hong Kong, and Hiroko Tabuchi from Tokyo. Denise Grady contributed reporting from New York, and Matthew L. Wald from Washington.

Woodruff, Gena

From: LIA04 Hoc
Sent: Wednesday, March 16, 2011 6:58 AM
To: Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena
Subject: State Liaison Signing on in Op Center

Good morning everyone, I the State Liaison desk is now staff in the Operations Center.

Is everyone doing okay this morning? Any issues?

Amanda Noonan
State Liaison – Liaison Team
Incident Response Center

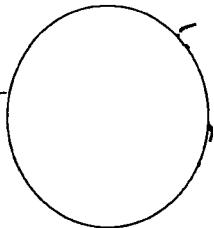
Croteau, Rick

From: Croteau, Rick
Sent: Thursday, March 17, 2011 7:07 AM
To: McCree, Victor; Wert, Leonard
Cc: Jones, William
Subject: FW: Information regarding a device that could assist recovering Spent Fuel Pool cooling and inventory at the Japanese Plants
Attachments: Spent Fuel Pool Spray Nozzle Overview.docx
Importance: High

Vic/Len,

We sent this info to the HOO yesterday. The HOO called Andy Sabisch last night requesting Duke box up the equipment to send to Japan and that is taking place. Duke has spares.

Rick



From: Bartley, Jonathan
Sent: Wednesday, March 16, 2011 2:28 PM
To: HOO Hoc; OPA Resource
Cc: Sabisch, Andrew; Croteau, Rick; Jones, William
Subject: Information regarding a device that could assist recovering Spent Fuel Pool cooling and inventory at the Japanese Plants
Importance: High

Attached is a document that describes a device that Duke developed as a B.5.b strategy for providing cooling to the spent fuel pools after a catastrophic event. Please contact Andy Sabisch, Oconee SRI, if you have any questions or need a POC at Duke to discuss the device.

From: Sabisch, Andrew
Sent: Wednesday, March 16, 2011 1:40 PM
To: Bartley, Jonathan
Subject: Information regarding a device that could assist recovering Spent Fuel Pool cooling and inventory

Please review this

=====

Andrew T. Sabisch
U.S. Nuclear Regulatory Commission
Senior Resident Inspector
Oconee Nuclear Station
Seneca, SC 29678
(O) 864-882-6927/6928
(F) 864-882-0189
(C) [REDACTED] (b)(6)

DUKE ENERGY

DEVICE USED TO PROVIDE COOLING TO SPENT FUEL AND ADD INVENTORY TO THE POOL FOLLOWING AN EVENT SUCH AS A B.5.b SITUATION

Duke Energy has designed and constructed a device to allow for the spent fuel pool to be sprayed in the event makeup capability is lost following an event such as a B.5.b event or breach in the pool itself. This device was developed following the requirement to address post 9-11 events. Testing at all three sites showed that it effectively provided spray coverage for the entire area of the spent fuel pools at Oconee, Catawba and McGuire. The unique function and performance of the device was recognized during B.5.b inspections conducted in the 2005-2006 time frame at all three sites by NRC inspectors from HQ.

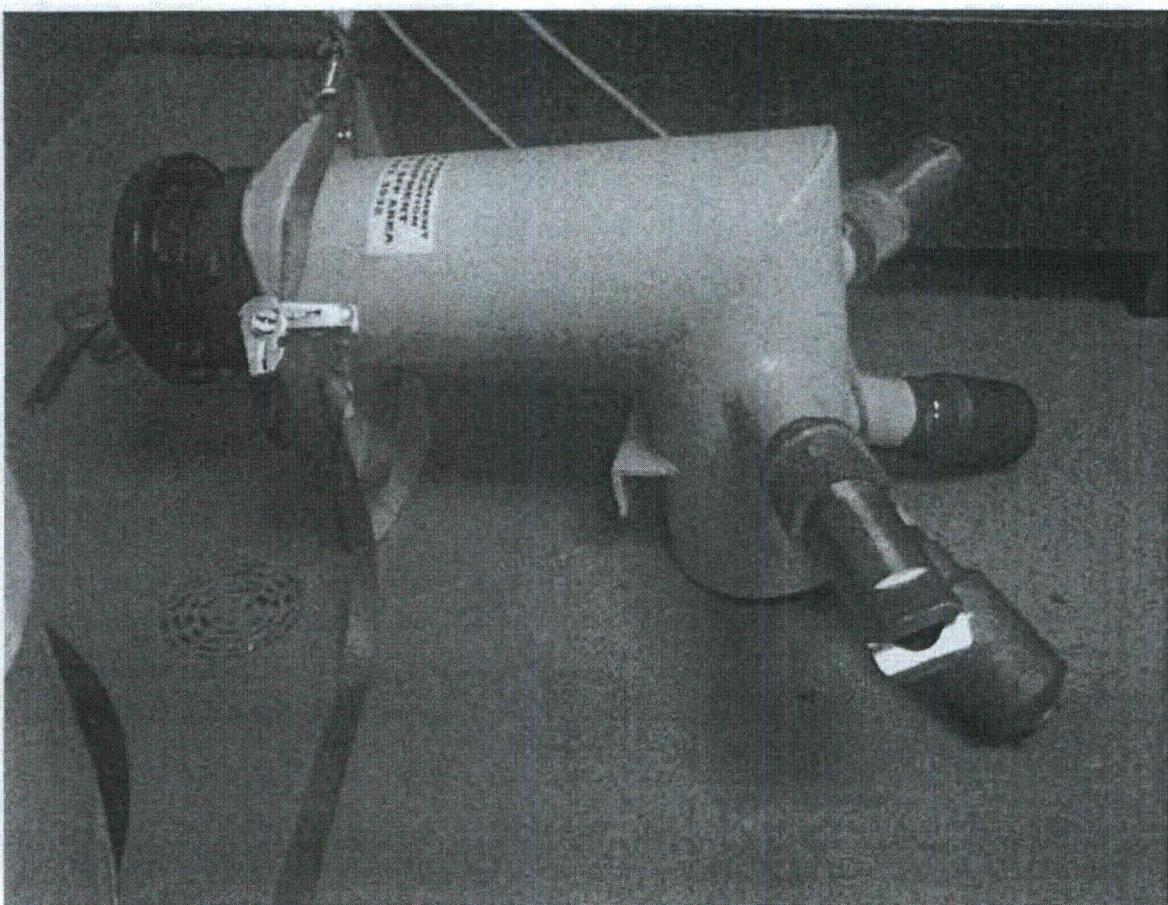
The benefits that this device offers include:

- Providing cooling and makeup the spent fuel pools
- Being able to provide this via a single 5 inch fire hose with pumps located a considerable distance from the nozzle (which can be operated unmanned)
- A scrubbing affect to reduce any airborne activity from the spent fuel due to the spray pattern
- A single, light weight piece of equipment that is portable and simple to operate
- No moving parts ensures durability in use and operation

The device is designed to be supplied with a large diameter fire hose via a(5 Inch Storz Connection and will deliver up to 500 GPM to the spent fuel pool area. The device weighs approximately 20 lbs, is very portable and is constructed of ordinary steel. It is designed to be put in place at the spent fuel pool and left unmanned to maintain coverage of the spent fuel pool. The large diameter supply line allows water to be supplied from large distances with friction loss at a minimum. It can be supplied by existing plant equipment, external pumps or fire apparatus at pressures up to 300 psi. The nozzles can be adjusted to ensure complete spent fuel pool coverage. As an added benefit the nozzle spray can be utilized to scrub the air as it maintains level keeping airborne contamination levels at a minimum and can be used to extinguish fires that may occur in the spent fuel pool. The device can supply water as long as water can be pumped to it.

The device used at Oconee covers the full surface area of the spent fuel pool which measures approximately 85' x 25' in size. It can easily be modified to cover a pool of any size.

PHOTOS OF THE DEVICE

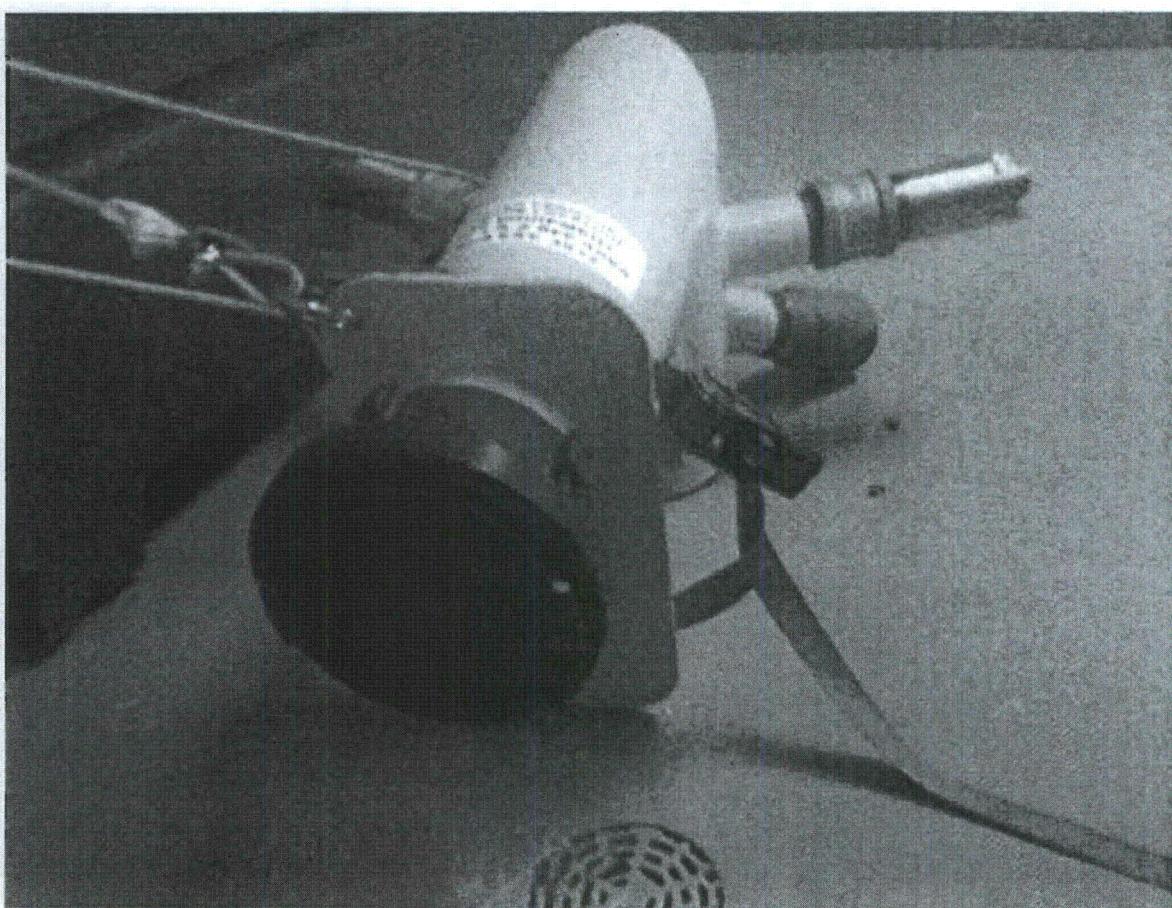


The construction of the nozzle is very straight forward. Two pieces of pipe are welded in a 90-degree bend. The hose fitting in the rear is threaded to the pipe connection and uses a 5-inch hose connection. The connection allows for a rapid connection to be made when setting it up. The spray nozzles are designed to provide a full spray pattern that covers the entire pool area.

The device is intended to be placed on the edge of the spent fuel pool and when charged, water pressure holds it in place. It can also be attached using tie-down straps as seen in the photo above.

NOTE: With the dimensions of the Fukushima Daiichi spent fuel pool being provided, the appropriate nozzle size and number could be easily calculated to ensure coverage was provided.

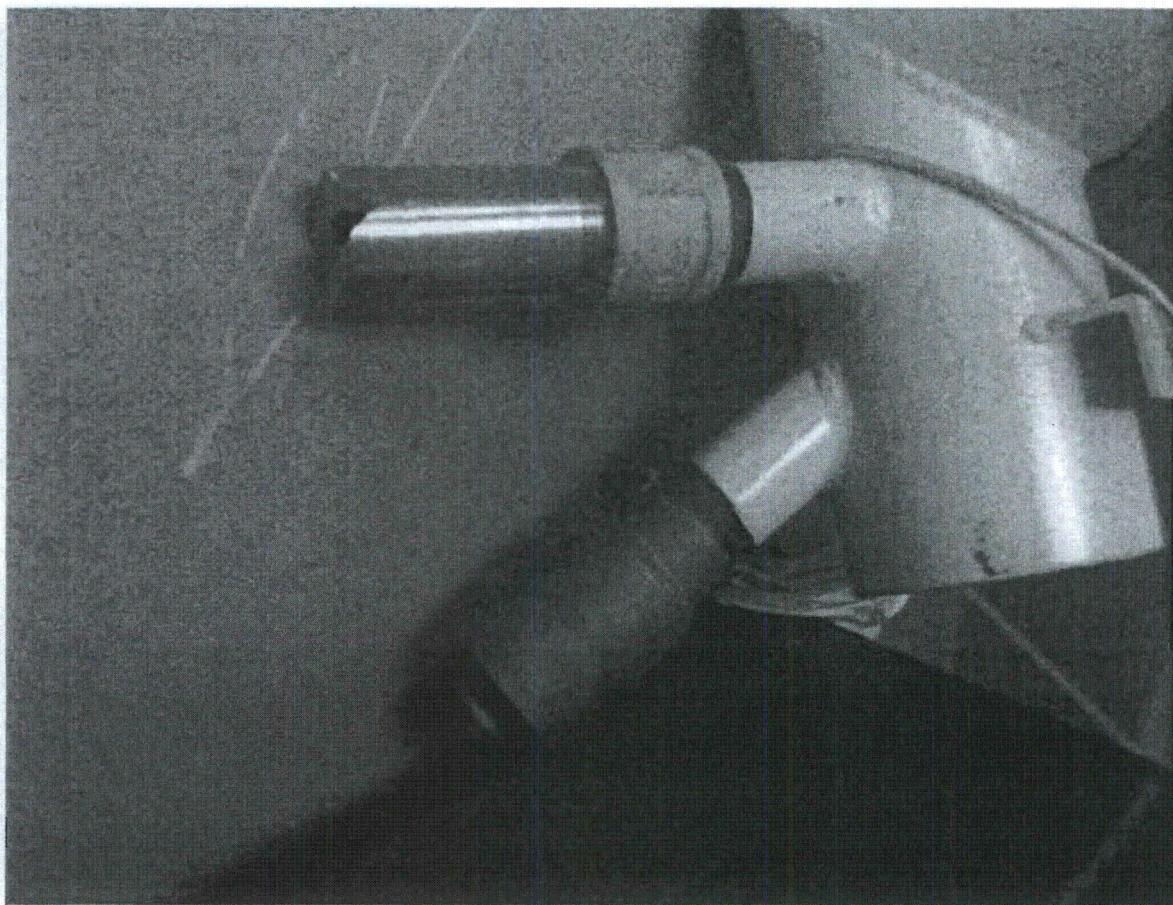
The Back of the Device Showing the Hose Connection



The device as used at the Duke Energy stations features a threaded hose connection. Any connection to a water supply can be used to serve the same function.

The tie-downs can be seen in this photo as well.

Close-up of the Nozzles on the Device



The number and specific pattern of the nozzles can be easily tailored to meet the demands of the specific pool size. Once the size is defined, the nozzles can be fabricated and installed.

Overview of the Device
(see spray can for relative size)



Wert, Leonard

From: Croteau, Rick
Sent: Wednesday, March 16, 2011 7:40 AM
To: McCree, Victor; Wert, Leonard
Subject: FW: Events in Japan
Attachments: ~~OUO~~_USNRC Earthquake-Tsunami Update 031411 0430EDT.docx; ANS Talking Points - 2011-03-13 R1_2.pdf

FYI,
This is what I sent out to DRP Monday.
Rick

From: Croteau, Rick
Sent: Monday, March 14, 2011 7:24 AM
To: Croteau, Rick; Davenport, Patricia; Jones, William; Bartley, Jonathan; Guthrie, Eugene; Hopper, George; McCoy, Gerald; Musser, Randy; Rich, Daniel; Shaeffer, Scott; Bartley, Jonathan; Brady, Joseph; Cureton, Ronald; Davis, Angel; Ellis, Kevin; Hamman, Joyce; Harmon, Lee; Heath, Jermaine; Hutto, Andy; Ottenberg, Geoffrey; Rapp, Curtis; Sabisch, Andrew; Stamm, Eric; Barrett, Amy; Cain, Loyd; Chandler, Timothy; Crowe, Eddy; Davis, Angel; Dyal, Edna; Evans(R2), Marilyn; Hickey, James; Lighty, Tonya; Morris, Eddie; Niebaum, Phillip; Pressley, Lundy; Rose, Steven; Shaeffer, Scott; Sowa, Jeffrey; Barillas, Martha; Childs, Natasha; Higgins, Patrick; Hoeg, Tim; Maldonado, Militza; Morrison, Catherine; Morrissey, Thomas; Ninh, Son; Orr, Laura; Reyes, Rogerio; Rich, Daniel; Sanchez, Steven; Schroer, Suzanne; Sonneville, Gail; Stewart, Scott; Andrews, Susan; Austin, Joseph; Ellis, Kevin; Hitchuk, Betty; Kolcum, Gregory; Kroeger, Ann; Lessard, Patrick; Morrison, Catherine; Musser, Randy; OBryan, Phil; Wilson, Gerald; Worosilo, Jannette; Arnett, Daniel; Bush, Pamela; Clagg, Rodney; Coffman, Ellery; Dodson, Jim; Lippard, Katherine; Longley, Barbara; Mills, Daniel; Nadel, Jared; Reece, James; Schwieg, Mark; Zeiler, John; Chattin, Linda; Deschaine, Wesley; Guthrie, Eugene; Hamman, Jeffrey; Kontz, Craig; Monk, Robert; Niebaum, Phillip; Pressley, Lundy; Ross, Thierry; Scott, Christian; Speck, Mark; Stancil, Charles; White, Charlotte; Young, Cale; Hopper, George; King, Michael; Quinones-Navarro, Joylynn; Rivera-Ortiz, Joel; Taylor, Ryan
Cc: Munday, Joel
Subject: Events in Japan

I'm sure we all have been closely following the ongoing events in Japan on the news this weekend. Attached is some info on the events. Please note the first is ~~OUO~~. The second is an ANS document FYI. There have been several press releases from the NRC on the NRC web site at www.nrc.gov and you may want to mention that to any members of the media/public that may contact you (as you direct them to OPA.) From the previous Op Center Bulletins please note:

- Employees contacted by the media are asked to refer the calls to the Office of Public Affairs at 301-415-8200.
- 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.

Not that we need any reminder, but preventing these types of events and mitigating the consequences to protect public health and safety is what we are all about.

Rick

Woodruff, Gena

From: LIA04 Hoc
Sent: Wednesday, March 16, 2011 8:44 AM
To: Tifft, Doug; Nguyen, Quynh
Cc: Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara, Nancy; Trojanowski, Robert; Woodruff, Gena; Flannery, Cindy; Lukes, Kim; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtur, Richard; Virgilio, Rosetta; Dean, Bill; Lew, David
Subject: RE: Question

Doug, as long as the message is the same... I would suggest [REDACTED] (b)(5)

[REDACTED]
(b)(5)

Quinn, has been put on the team by NRR to try to answer the questions from the States. [REDACTED] (b)(5)

[REDACTED]

From: Tifft, Doug
Sent: Wednesday, March 16, 2011 8:34 AM
To: LIA04 Hoc; Nguyen, Quynh
Cc: Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara, Nancy; Trojanowski, Robert; Woodruff, Gena; Flannery, Cindy; Lukes, Kim; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtur, Richard; Virgilio, Rosetta; Dean, Bill; Lew, David
Subject: RE: Question

My understanding is that the direction we have been given is that we are only permitted to respond to the states questions regarding the Japanese events with OPA approved responses and nothing else. Is the statement in the below email the OPA approved response we are supposed to send to the state? [REDACTED] (b)(5)

[REDACTED]
(b)(5)

[REDACTED]
(b)(5)

Can I use the answer above, [REDACTED] (b)(5)

[REDACTED]
(b)(5)

-Doug

From: LIA04 Hoc
Sent: Tuesday, March 15, 2011 4:26 PM

To: Nguyen, Quynh
Cc: 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; Turtur, Richard; Virgilio, Rosetta
Subject: RE: Question

Quynh, for the SharePoint site.

Doug, as our press releases say, we are not commenting on the event so no, we can't say anything on the magnitude of the release.

From: Tifft, Doug
Sent: Tuesday, March 15, 2011 2:44 PM
To: LIA04 Hoc
Cc: McNamara, Nancy
Subject: FW: Question

Getting this question again. Can we say anything on this?

-Doug

From: Giarrusso, John (CDA) [<mailto:John.Giarrusso@state.ma.us>]
Sent: Tuesday, March 15, 2011 2:00 PM
To: McNamara, Nancy; Tifft, Doug
Subject: Question

Nancy and Doug

Continue to hear and see a wide range of information regarding the magnitude of the release in Japan. Can you clarify what Japan is seeing around the reactor, 10miles out and others?

Thanks

John

John Giarrusso, Jr.
Planning and Preparedness Division Manager
MEMA
508-820-2040 (w)
[redacted] (b)(5) [redacted] (c)

Travick, Vanette

From: McCree, Victor
Sent: Wednesday, March 16, 2011 9:43 AM
To: Nicholson, Larry; Dean, Bill; Satorius, Mark
Cc: Nazar, Mano; Wells, Peter; Wert, Leonard
Subject: RE: NextEra Activities re Japan

Got it, thanks Larry.

Victor M. McCree

Regional Administrator
U.S. Nuclear Regulatory Commission
Region II
245 Peachtree Center Ave., NE
Suite 1200
Atlanta, GA 30303
404-997-4411
victor.mccree@nrc.gov

From: Nicholson, Larry [<mailto:Larry.Nicholson@fpl.com>]
Sent: Wednesday, March 16, 2011 9:27 AM
To: McCree, Victor; Dean, Bill; Satorius, Mark
Cc: Nazar, Mano; Wells, Peter
Subject: NextEra Activities re Japan

Gentlemen,

FYI, we have had our fleet Juno Beach Command Center staffed since Saturday to execute our reaction and response. This center is staffed with appropriate folks from corporate communications, engineering, licensing, EP, etc. Monitoring of the event and all communications are being coordinated using this command center, as well as our effort associated with INPO Event Report 11-1.

Please call me anytime you need any information about our fleet or if we can assist you in anyway.

Thanks

Larry

Larry Nicholson
Director of Licensing
NextEra/FPL
700 Universe Blvd
Juno Beach, FL 33408
(561) 691-2798 office
[redacted] cell

6

Even, Christopher

From: Ashlee Miller [REDACTED] (b)(6)
Sent: Wednesday, March 16, 2011 9:43 AM
To: [REDACTED] (b)(6)
Cc: Even, Christopher
Subject: Re: Japan

[REDACTED]
(b)(6)

(b)(6)

On Tue, Mar 15, 2011 at 9:49 PM, Mallory Even [REDACTED] (b)(6) wrote:
Hey Ash! Thanks for the article - yes, it is so crazy and sad what's going on over there! Chris read the article at home, but I wanted to give you his newer work email address: christopher.even@nrc.gov

[REDACTED]
(b)(6)

Sent via BlackBerry from T-Mobile

From: Ashlee Miller [REDACTED] (b)(6)
Date: Sun, 13 Mar 2011 08:25:28 -0500
To: Chris Even<cje@nrc.gov>
Cc: Mallory Even [REDACTED] (b)(6)
Subject: Japan

Hey [REDACTED] Chris... how are ya? Ready for two babies?

Seems serious, huh? http://www.nytimes.com/2011/03/14/world/asia/14nuclear.html?pagewanted=1&_r=1&hp

[REDACTED]
(b)(6)

[REDACTED]
(b)(6)

--
Ashlee Miller

[REDACTED]
(b)(6)

--
Ashlee Miller

[REDACTED]
(b)(6)

Travick, Vanette

From: McCree, Victor
Sent: Wednesday, March 16, 2011 9:44 AM
To: Croteau, Rick; Jones, William; Munday, Joel; Christensen, Harold
Cc: Rich, Daniel
Subject: FW: NextEra Activities re Japan

FYI

From: Nicholson, Larry [<mailto:Larry.Nicholson@fpl.com>]
Sent: Wednesday, March 16, 2011 9:27 AM
To: McCree, Victor; Dean, Bill; Satorius, Mark
Cc: Nazar, Mano; Wells, Peter
Subject: NextEra Activities re Japan

Gentlemen,

FYI, we have had our fleet Juno Beach Command Center staffed since Saturday to execute our reaction and response. This center is staffed with appropriate folks from corporate communications, engineering, licensing, EP, etc. Monitoring of the event and all communications are being coordinated using this command center, as well as our effort associated with INPO Event Report 11-1.

Please call me anytime you need any information about our fleet or if we can assist you in anyway.

Thanks

Larry

Larry Nicholson
Director of Licensing
NextEra/FPL
700 Universe Blvd
Juno Beach, FL 33408
(561) 691-2798 office
[redacted] (b)(6) [redacted] cell

Travick, Vanette

From: McCree, Victor
Sent: Wednesday, March 16, 2011 9:49 AM
To: R2SR_MANAGER
Cc: Hannah, Roger; Ledford, Joey
Subject: FW: Additional Staff requirements outside Ops Center Long Term Staffing

Importance: High

See below.

FYI, Roger Hannah has offered to support OPA on a "not to interfere with ROP EOC public meeting" basis—and I will second his offer. Also, if you know of any persons with "desk officer or other OIP or international experience", please let me know ASAP.

Thanks, Vic

From: Muessle, Mary
Sent: Wednesday, March 16, 2011 9:32 AM
To: Evans, Michele; Hackett, Edwin; Brenner, Eliot; Schmidt, Rebecca; Powell, Amy; Droggitis, Spiros; Doane, Margaret; Mamish, Nader; Dyer, Jim; Brown, Milton; Greene, Kathryn; Stewart, Sharon; Howard, Patrick; Miller, Charles; Moore, Scott; Cohen, Miriam; Tracy, Glenn; Haney, Catherine; Dorman, Dan; Johnson, Michael; Holahan, Gary; Leeds, Eric; Boger, Bruce; Grobe, Jack; Zimmerman, Roy; Campbell, Andy; Sheron, Brian; Uhle, Jennifer; Dean, Bill; Lew, David; McCree, Victor; Wert, Leonard; Casto, Chuck; Satorius, Mark; Pederson, Cynthia; Collins, Elmo; Howell, Art; Andersen, James; Akstulewicz, Brenda; Belmore, Nancy; Quesenberry, Jeannette; Kreuter, Jane; Armstrong, Janine; Hudson, Sharon; Ellis, Marv; Hasan, Nasreen; Ronewicz, Lynn; Schumann, Stacy; Daniels, Stanley; Casby, Marcia; Thomas, Loretta; Walker, Dwight; Sprogeris, Patricia; Schwarz, Sherry; Ross, Robin; Cohen, Shari; Riddick, Nicole; Flory, Shirley; Veltri, Debra; Matakas, Gina; ODaniell, Cynthia; Miles, Patricia; Lee, Pamela; Dubose, Sheila; Buckley, Patricia; Tomczak, Tammy; Owen, Lucy; Tannenbaum, Anita; Gusack, Barbara; Harrington, Holly; Ricketts, Paul; Howell, Linda; Higginbotham, Tina; Ross, Brenda; Boyce, Thomas (OIS); Schaeffer, James; Jackson, Donald
Cc: Williams, Shawn; Andersen, James; Ramsey, Jack
Subject: Additional Staff requirements outside Ops Center Long Term Staffing
Importance: High

OPA and OIP expect large call volumes today and in the next few weeks given expected news from Japan. OIP is looking for names of people who have desk officer or other OIP or international experience to assist them in the event that current staff cannot meet the work demands for call inquiries as well as ongoing international work. Please provide Shawn Williams and I a list of names that could serve to help OIP in this capacity and their general availability over the next week and month. It is difficult to determine the need level at this time, but as in the Op Center, it is anticipated OIP will have for an additional month. We would like the list of names by COB today.

Thanks

Mary

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

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

Gloersen, William

From: Campbell, Larry
Sent: Wednesday, March 16, 2011 9:51 AM
To: Kotzalas, Margie
Subject: FW: "Official Use Only" : 0630 EDT (March 16, 2011) USNRC Earthquake/Tsunami SitRep
Attachments: NRC Status Update 3-16.11-0630am.pdf

Importance: High

FYI – see attached

From: Tschiltz, Michael
Sent: Wednesday, March 16, 2011 9:39 AM
To: Smith, Brian; Habighorst, Peter; Hiltz, Thomas; Campbell, Larry; Silva, Patricia; Johnson, Robert
Cc: Kinneman, John; Bailey, Marissa
Subject: "Official Use Only" : 0630 EDT (March 16, 2011) USNRC Earthquake/Tsunami SitRep
Importance: High

Branch Chiefs, please share this with your staff with the appropriate caution that this information is "Official Use Only" and is only being shared within the federal family:

Attached, please find a 0630 EDT situation report from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami on March 16, 2011. This Update includes information on dose rates near Fukushima Daiichi, Fukushima Daiichi plant parameters, and NRC PMT hypothetical Worst Case Analyses.

In the event that a member of the staff receives a call from a member of the public concerning the event please refer them to the Office of Public Affairs. This actually happened yesterday with a call that Lorena received.

Thanks,
Mike

Travick, Vanette

From: McCree, Victor
Sent: Wednesday, March 16, 2011 10:01 AM
To: Miles, Patricia; Lee, Pamela
Subject: FW: 11:00 a.m. (EST) Telcon w/ Regions Re:Japan (phone: 888-469-2155/Passcode: (b)(6))

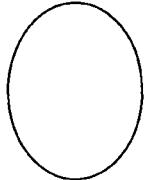
FYI

From: Cohen, Shari
Sent: Wednesday, March 16, 2011 9:55 AM
To: Schwarz, Sherry; Dean, Bill; Lew, David; Roberts, Darrell; Wilson, Peter; McCree, Victor; Wert, Leonard; Casto, Chuck; Croteau, Rick; Munday, Joel; Satorius, Mark; Pederson, Cynthia; West, Steven; Reynolds, Steven; Collins, Elmo; Howell, Art; Kennedy, Kriss; Vegel, Anton
Cc: Leeds, Eric
Subject: 11:00 a.m. (EST) Telcon w/ Regions Re:Japan (phone: 888-469-2155/Passcode: (b)(6))

Mr. Eric Leeds has requested a teleconference with the regions. He wants to update you and ask for your support – teleconference information below:

Phone: 888-469-2155

Pass code: (b)(6)



Headquarters:

Eric Leeds

Please forward to appropriate AA and DAAs(actors or delegation of authority):

Region 1: Bill Dean, David Lew, Darrell Roberts, Peter Wilson

Region 2: Victor McCree, Len Wert, Chuck Casto, Richard Croteau, Joel Munday

Region 3: Mark Satorius, Cindy Pederson, Steve West, Steve Reynolds

Region 4: Elmo Collins, Art Howell, Kriss Kennedy, Anton Vegel

Shari Cohen, Contract Secretary
Office of Nuclear Reactor Regulation, USNRC
Room – O-13H18 / Mail Stop - O13H16M
Phone – 301-415-1270
Fax - 301 - 415-8333
Email - shari.cohen@nrc.gov

Woodruff, Gena

From: Barker, Allan
Sent: Wednesday, March 16, 2011 10:16 AM
To: LIA04 Hoc; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena
Cc: Heck, Jared; Pederson, Cynthia; Lynch, James
Subject: RE: State Liaison Signing on in Op Center

Amanda,

Good Morning, I have had two inquiries on the same issue, from State government contacts in Wisconsin and Ohio, asking if folks arriving from Japan are going through a screening process, actually getting measured for radiation, and if contaminated, what is the follow-up process. Also, what organization is conducting the screening?

Thanks.....Allan

From: LIA04 Hoc
Sent: Wednesday, March 16, 2011 5:58 AM
To: Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena
Subject: State Liasion Signing on in Op Center

Good morning everyone, I the State Liaison desk is now staff in the Operations Center.

Is everyone doing okay this morning? Any issues?

Amanda Noonan
State Liaison – Liaison Team
Incident Response Center

Gloersen, William

From: Seymour, Deborah
Sent: Wednesday, March 16, 2011 10:38 AM
To: Gloersen, William; Adkins, Brannen; Shannon, Mel; Edwards, Denise
Subject: An interesting twist to the Japan Events.

Japanese MOX Fuel Poses Extra Risk. The Augusta (GA) Chronicle (3/16, Pavey) reports, "Scientists warned this week of yet another wrinkle to Japan's evolving nuclear crisis: one of the doomed reactors is loaded with mixed-oxide fuel that contains plutonium." Arjun Makhijani, a nuclear scientist and president of the Institute for Energy and Environmental Research, explained, "This sort of plutonium fuel is more difficult to control than uranium fuel." The article explains that the fuel in question was made by AREVA, which is "also part of Shaw AREVA MOX Services-the group building the National Nuclear Security Administration's \$4.86 billion MOX plant at Savannah River Site." However, "the facility at Savannah River Site is designed to use weapons grade plutonium from dismantled nuclear warheads to make fuels usable in commercial nuclear power reactors," compared with a mix of uranium and plutonium reprocessed from spent uranium used by Japanese reactors.

Deb, x-4476

Woodruff, Gena

From: OST05 Hoc
Sent: Wednesday, March 16, 2011 12:43 PM
To: LIA04 Hoc; Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena
Subject: NRC Press Release to come out shortly

Keep a heads up

From: McCoy, Gerald
To: Bruce, James; Clegg, Rodney; Hiles, Daniel; Zeller, John; Gaffman, Ellyn; Arnett, Daniel; Carlson, Jim; Schwien, Mark
Subject: Fw: Launch of FAQ Related to Events Occuring in Japan
Date: Wednesday, March 16, 2011 12:51:27 PM
Importance: High

This is the Q&A Vic talked about.

Gerry
Gerald McCoy
Branch Chief, R-II/DRP/RPB5
Office - (404) 997-4551
Mobile (b)(6)

This email is being sent from an NRC mobile device.

From: Croteau, Rick
To: R2DRP_BRANCHCHIEF
Cc: Jones, William
Sent: Wed Mar 16 10:34:04 2011
Subject: FW: Launch of FAQ Related to Events Occuring in Japan

From: McCree, Victor
Sent: Wednesday, March 16, 2011 10:00 AM
To: Gody, Tony; Croteau, Rick; Munday, Joel
Cc: Hannah, Roger; Ledford, Joey; Wert, Leonard; Jones, William; Cobey, Eugene; Ogle, Chuck; Moorman, James
Subject: AFW: Launch of FAQ Related to Events Occuring in Japan
Importance: High

Shown below is a link to a (sensitive) Sharepoint site that contains Q&A's associated with the events occurring in Japan [in particular, see the file "**Chairman JaczkoQA7_031511.docx**". I believe these Q&As, which are being updated regularly, will be very useful to the Branch Chiefs and Division Directors who will participate in the upcoming ROP EOC public meetings and Fuel Cycle Facility LPRs.

Please note that the document includes 2 types of answers (a "Public Answer" and "Additional technical, non-public information") and use the information accordingly.:.

Thanks, Vic
From: Trojanowski, Robert
Sent: Wednesday, March 16, 2011 8:07 AM
To: McCree, Victor; Wert, Leonard
Subject: FW: Launch of FAQ Related to Events Occuring in Japan
Importance: High

Vic-----FYI-----As we discussed-----Bob

From: Nguyen, Quynh
Sent: Tuesday, March 15, 2011 1:16 PM
To: Thomas, Eric; Sigmon, Rebecca; Powell, Amy; Riley (OCA), Timothy; Browder, Rachel; Erickson, Randy; Tift, Doug; McNamara, Nancy; Trojanowski, Robert; Woodruff, Gena; Barker, Allan; Logaras, Harral; Maher, Bill
Cc: Stone, Rebecca; Westreich, Barry; Scales, Kerby; Leeds, Eric; Boger, Bruce; Grobe, Jack; Diec, David; Deegan, George; Williams, Donna; Rini, Brett; Wittick, Brian; Andersen, James; Brenner, Eliot; Courte, Ivonne; Burnell, Scott; Harrington, Holly; Azeem, Almas; Cartwright, William; Cusumano, Victor; Heida, Bruce; Mahoney, Michael; Meighan, Sean; Nguyen, Quynh; Roquecruz, Carla; Susco, Jeremy; Titus, Brett; Valentine, Nicholee; Wert, Trent; Bahadur, Sher; Blount, Tom; Brown, Frederick; Cheok, Michael; Evans, Michele; Galloway, Melanie; Gitter, Joseph; Givvines, Mary; Hiland, Patrick; Hollan, Brian; Howe, Allen; Lee, Samson; Lubinski, John; Lund, Louise; McGinty, Tim; Nelson, Robert; Quay, Theodore; Ruland, William; Skeen, David
Subject: Launch of FAQ Related to Events Occuring in Japan
Importance: High

All,

Per Eric Leeds' request and working closely with NSIR and OPA...

The below SharePoint link is the location of our INTERNAL USE ONLY activities regarding the Japan Events and the effects on their nuclear operations. Again, NO PUBLIC RELEASE of any documents.

Given lessons learned from 9-11, we want to **ensure clear, concise messages in alignment with the Chairman and focus of our safety mission in the United States.** To this end, we established this SharePoint as a centralized location to collect our questions from stakeholders and our draft responses. These draft responses will be vetted by OPA and once approved by OPA – it is OK for use by the staff to answer questions from stakeholders.



As such, please understand that, while we are doing our best to be timely with the most up-to-date information, it is more important to ensure accurate information is being posted.

<http://portal.nrc.gov/edo/nrr/NRR%20TA/FAQ%20Related%20to%20Events%20Occuring%20in%20Japan/Forms/AllItems.aspx>

Note: "Chairman JaczkoQA7_031511" contains parts that are PUBLIC and additional information for NRC staff.

All correspondence to the public should be directed to our Office of Public Affairs (OPA)!

Additionally, if questions arise out of the Region, please let us know. We'll do our best to coordinate the answer and ensure that we get OPA's blessing.

Thank you for all your support during this time and understanding!

POC:

Quynh Nguyen (301) 415-5844; BlackBerry [REDACTED] (b)(6)
Sean Meighan (301) 415-1020

Woodruff, Gena

From: OST05 Hoc
Sent: Wednesday, March 16, 2011 1:54 PM
To: Browder, Rachel; Maier, Bill
Cc: Whitten, Jack; LIA04 Hoc; Virgilio, Rosetta; Barker, Allan; Erickson, Randy; Logaras, Harral; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena; Flannery, Cindy; Lukes, Kim; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michael; Turtur, Richard
Subject: RE: Air Forces in Japan

Direction here is to refer this Q back to their United command structure. You can provide NRC's press release, which I understand should come out soon: Will plan to get it to you as soon as it does.

From: Browder, Rachel
Sent: Wednesday, March 16, 2011 1:12 PM
To: OST05 Hoc; LIA04 Hoc; Maier, Bill; Virgilio, Rosetta
Cc: Whitten, Jack
Subject: Air Forces in Japan

I received a request from the Air Force MML regarding the event in Japan. They were wondering if they could get more specific information to provide to their responders and Base Personnel in Japan. Can this be coordinated with Chuck Casto et.al?

Please see the email link below that is for classified email only - if that would help.

I appreciate it,
Rachel Browder
817-313-4261

From: Dowell, Laurie E CTR USAF AFMSA/SG3PB [REDACTED] (b)(6)
Sent: Wednesday, March 16, 2011 1:05 PM
To: Browder, Rachel
Subject: Classified email

Rachael,

Lt Col Smith's SIPR email address is below. It is for classified email only. If the NRC can access the email address, perhaps they can send information not available to the public.

[REDACTED] (b)(6)

Thank you for your help, Rachael

Elisa
Elisa Dowell, CHP
Health Physicist, Contracted to
AF Radioisotope Committee Secretariat
AF Medical Support Agency
Office of the Surgeon General
1500 Wilson Blvd, Suite 1600
Arlington, VA 22209
703-588-6303

DSN 425-6303

Bartley, Jonathan

From: Bartley, Jonathan
Sent: Wednesday, March 16, 2011 2:24 PM
To: Croteau, Rick
Subject: RE: Information regarding a device that could assist recovering Spent Fuel Pool cooling and inventory

Roger

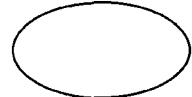
From: Croteau, Rick
Sent: Wednesday, March 16, 2011 2:23 PM
To: Bartley, Jonathan; Jones, William
Subject: RE: Information regarding a device that could assist recovering Spent Fuel Pool cooling and inventory

Go ahead and send it on.

Thanks,
Rick

From: Bartley, Jonathan
Sent: Wednesday, March 16, 2011 2:21 PM
To: Croteau, Rick; Jones, William
Subject: FW: Information regarding a device that could assist recovering Spent Fuel Pool cooling and inventory

From: Sabisch, Andrew
Sent: Wednesday, March 16, 2011 1:40 PM
To: Bartley, Jonathan
Subject: Information regarding a device that could assist recovering Spent Fuel Pool cooling and inventory



Please review this

=====

Andrew T. Sabisch
U.S. Nuclear Regulatory Commission
Senior Resident Inspector
Oconee Nuclear Station
Seneca, SC 29678
(O) 864-882-6927/6928
(F) 864-882-0189
(C) [REDACTED] (b)(6)

Woodruff, Gena

From: McCree, Victor
Sent: Wednesday, March 16, 2011 2:26 PM
To: Trojanowski, Robert; Wert, Leonard
Cc: Woodruff, Gena
Subject: RE: * * * STATUS OF KI; Re: REGION II STATES * * *

Got it – thanks Bob.

From: Trojanowski, Robert
Sent: Wednesday, March 16, 2011 2:22 PM
To: McCree, Victor; Wert, Leonard
Cc: Woodruff, Gena
Subject: * * * STATUS OF KI; Re: REGION II STATES * * *

Vic & Len, per our discussion this morning on Potassium Iodide (KI)-----Bob

Potassium Iodide (KI)

Current Status of Region II States

- Federal Government Policy: establishes belief that there is merit to administering KI
- KI: non-prescriptive thyroid (Iodine) blocking agent, generally having no ill health effects
- State option, Federal Policy cannot dictate, or require that States adopt a KI Policy
- States must consider and develop a policy accordingly
- NRC Policy is that KI should be made available at no cost to the States
- Initially, there was concern as to whether FEMA or NRC would fund KI to the States
- NRC agreed to fund the initial stockpile, as well as future replenishment supplies
- NOTE: NRC does not fund KI in liquid form, which is prescribed for children/infants
- U. S. Food and Drug Administration developed technical Guidance on KI administration
- If the States opt to obtain KI from the Federal Government, they need to formalize a Policy, and incorporate it into the FEMA Approved Site Specific Radiological Emergency Response Plan for each NRC licensed fixed nuclear reactor facility. This Policy must address stockpiling, distribution, authority to authorize administration, etc., etc.
- All of the Region II States have opted for receipt of KI from the NRC, with the one exception which is the State of Georgia, and have FEMA approved KI plans incorporated into their Emergency Plans
- With respect to Georgia, Sheltering is not a recognized Protective Action measure; in the event of a significant radiological event in the State (Vogtle, Hatch & Farley), Evacuation would be immediately ordered by the Governor.
- Additional, detailed information with respect to the administration, stockpiling, distribution of KI can be found on GOOGLE
- The following is a brief summary of the status of KI Policy in each of the Region II States. The numbers shown for replenishment are based on current population statistics for the respective 10-Mile EPZs, and are subject to change, up or down

Alabama:

Authorized by the State Health Officer. He has pre-delegated this authority to the Office of Radiation Control in the event of an emergency.

Stored at county health departments (which are State Health Department facilities).

There is no pre-distribution to the public

Tablets stockpiled: 270,000, replenishment scheduled for CY 2014

Florida:

Authorized by county emergency management directors after recommendation from the Bureau of Radiation Control.

Stored at County Health Departments.

There is no pre-distribution to the public

Tablets stockpiled: 1,920,000, scheduled for replenishment in 2014 (620,000) & 2015 (1,300,000)

Georgia:

There is no distribution of KI to the public; sheltering is not an option, Evacuation is the only Protective Action ordered

Kentucky:

There is no distribution of KI to the public since none of the counties are located within the 10-Mile EPZ of an NRC licensed fixed nuclear reactor facility

Mississippi:

Authorized by the Division of Radiological Health.

Stored at County Health Departments.

There is no pre-distribution to the public

Tablets stockpiled: 4,600, scheduled for replenishment in 2013 (5,000) & 2014 (4,100)

North Carolina:

Authorized by the State or County Health Director.

Stored at County Health Departments.

The public is occasionally offered times when KI can be picked up.

Tablets stockpiled: 1,200,000, scheduled for replenishment in 2014

South Carolina:

Authorized by the Department of Health and Environmental Control

Stored at County Health Departments.

The public is occasionally offered times when KI can be picked up.

Tablets stockpiled: 2,400,000, scheduled for replenishment in 2012 (1,300,000)/2013 (1,100,000)

Tennessee:

Authorized by the State Medical Officer

Stored at County Health Departments.

There is no pre-distribution to the public

Tablets stockpiled: 4,700, scheduled for replenishment in 2014 (6,000) & 2015 (441,000)

Virginia:

Authorized by the State Medical Officer

Stored at County Health Departments

There is no pre-distribution to the public

Tablets stockpiles 1,500,000, scheduled for replenishment in 2014

West Virginia:

Authorized by the State Health Officer via the EAS (Emergency Alert System) during the event

Pre-distributed to local citizens within the Ten-Mile EPZ

Tablets stockpiled: 16,000, scheduled for replenishment in 2012

Total tablets currently stockpiled by Region II States: 7,799,000

#

March 16, 2011

Travick, Vanette

From: McCree, Victor
Sent: Wednesday, March 16, 2011 2:38 PM
To: Croteau, Rick
Subject: RE: NRC Support of Japan - Volunteers

I understand completely...

From: Croteau, Rick
Sent: Wednesday, March 16, 2011 2:38 PM
To: McCree, Victor
Subject: RE: NRC Support of Japan - Volunteers

Vic,

I'm sure you are well aware that we are relying on Thierry with regard to the LPCI valve issue.
Rick

From: McCree, Victor
Sent: Wednesday, March 16, 2011 2:37 PM
To: Ross, Thierry
Cc: Guthrie, Eugene; Croteau, Rick
Subject: RE: NRC Support of Japan - Volunteers

Got it, thanks Thierry.

From: Ross, Thierry
Sent: Wednesday, March 16, 2011 2:34 PM
To: McCree, Victor
Cc: Guthrie, Eugene; Croteau, Rick
Subject: NRC Support of Japan - Volunteers

Vic,

I understand the NRC may need additional volunteers to support our efforts in Japan. I would be available to support NRC as needed.

Thierry

Travick, Vanette

From: McCree, Victor
Sent: Wednesday, March 16, 2011 2:58 PM
To: Sabisch, Andrew
Subject: RE: Putting my name out for Japanese assistance

Thanks Andy

From: Sabisch, Andrew
Sent: Wednesday, March 16, 2011 2:53 PM
To: McCree, Victor
Subject: Putting my name out for Japanese assistance

Vic,

I would like to be considered for an assistance role in the response to the Japanese nuclear event. I have BWR experience and have been two plants in Japan while at WANO / INPO.

Thanks for your consideration in what I can only assume is a challenging time in your new role

Andy

Andrew T. Sabisch
U.S. Nuclear Regulatory Commission
Senior Resident Inspector
Oconee Nuclear Station
Seneca, SC 29678
(O) 864-882-6927/6928
(F) 864-882-0189
(C) (b)(6)

Bartley, Jonathan

From: Bartley, Jonathan
Sent: Wednesday, March 16, 2011 3:03 PM
To: Bernhard, Rudolph
Subject: RE: Information regarding a device that could assist recovering Spent Fuel Pool cooling and inventory

Thanks Rudy.

From: Bernhard, Rudolph
Sent: Wednesday, March 16, 2011 3:02 PM
To: Bartley, Jonathan
Cc: Sabisch, Andrew
Subject: RE: Information regarding a device that could assist recovering Spent Fuel Pool cooling and inventory

Any ideas should be welcome.

(b)(5)

(b)(5)

From: Bartley, Jonathan
Sent: Wednesday, March 16, 2011 1:44 PM
To: Bernhard, Rudolph
Cc: Sabisch, Andrew
Subject: FW: Information regarding a device that could assist recovering Spent Fuel Pool cooling and inventory

Rudy, based on your knowledge of GE fuels, please take a look at the attached and let us know if we should bother sending this to Casto to consider.

Jonathan

From: Sabisch, Andrew
Sent: Wednesday, March 16, 2011 1:40 PM
To: Bartley, Jonathan
Subject: Information regarding a device that could assist recovering Spent Fuel Pool cooling and inventory

Please review this

=====

Andrew T. Sabisch
U.S. Nuclear Regulatory Commission
Senior Resident Inspector
Oconee Nuclear Station
Seneca, SC 29678
(O) 864-882-6927/6928
(F) 864-882-0189
(C) (b)(6)

Travick, Vanette

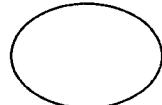
From: McCree, Victor
Sent: Wednesday, March 16, 2011 3:08 PM
To: Rudisail, Steven
Cc: Wert, Leonard; Munday, Joel; Christensen, Harold
Subject: RE: Info: Possible request wrt KI

Ok, great

From: Rudisail, Steven
Sent: Wednesday, March 16, 2011 3:07 PM
To: McCree, Victor
Subject: RE: Info: Possible request wrt KI

I will contact RIV. I will communicate with you and Len before I ship any of our KI.

From: McCree, Victor
Sent: Wednesday, March 16, 2011 2:35 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

Woodruff, Gena

From: opa administrators [opa@nrc.gov]
Sent: Wednesday, March 16, 2011 3:10 PM
To: Woodruff, Gena
Subject: NRC Provides Protective Action Recommendations Based on U.S. Guidelines
Attachments: 11-050.pdf

Travick, Vanette

From: McCree, Victor
Sent: Wednesday, March 16, 2011 3:31 PM
To: Rich, Daniel
Subject: RE: Japan

Ok, thanks Dan

From: Rich, Daniel
Sent: Wednesday, March 16, 2011 3:15 PM
To: McCree, Victor
Cc: Croteau, Rick; Jones, William
Subject: Japan

Vic:

I would be happy to assist with the NRC efforts in Japan.
I only have one personal issue on my calendar, [redacted]

(b)(6)

Dan

Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Wednesday, March 16, 2011 3:42 PM
To: Charles and Barbara Hackney; Bob Newlin; Mitch & Carol Carnell; ' Hunt (?)'; 'Al Belisle
'; 'Al Gibson'; 'Al Herdt'; 'Al Ignatonis'; 'Bill Kleinsorge'; 'Bill Miller'; 'Bill Tobin'; [REDACTED] (b)(6); 'Bob Wright'; 'Bob/Angie Martin'; 'Ed Girard'; 'Hellen Kreeger'; 'Hugh Dance'; [REDACTED] (b)(6); 'Jim Coley'; 'Jim Hufham'; [REDACTED] (b)(6); 'Ken Clark'; 'Kerry Landis'; 'Milt Shymlock'; Nancy Sanford; 'Nick Economos'; 'Phil Stohr'; 'Taylor'; 'Uryc'; 'Woodruff, Gena'
Subject: Update

Here are some new developments on the continuing crisis concerning the Japanese BWR reactors damaged by the massive earthquake:

- NRC today issued a press release saying the agency believes it is appropriate for U.S. residents within 50 miles of the Fukushima reactors to evacuate, based on guidelines for public safety that would be used in this country under similar circumstances. The statement reiterated: "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." Included in the NRC statement is a hyperlink to two sets of computer calculations used to support the NRC recommendations. You can access the press release at www.nrc.gov.
- BBC News (<http://www.bbc.co.uk/news/uk-12765593>) reports: The Foreign Office has advised Britons to consider leaving Tokyo and north-eastern Japan following Friday's quake and subsequent radiation fears. British officials report there is still "no real human health issue that people should be concerned about".
- Just before 1 p.m. today, The New York Times posted on its "Green" blog a lengthy Q&A feature with inquiries from readers in the U.S. and overseas about the reactor accidents and answers from Times reporters who are covering various phases of it. Access it at <http://green.blogs.nytimes.com/2011/03/16/q-and-a-on-the-nuclear-crisis-in-japan/?partner=rss&emc=iss>.
- The Times today (<http://www.nytimes.com/cwire/2011/03/16/16climatewire-radiation-levels-spike-forcing-temporary-ret-87245.html>) also has a story—which also has been reported by other media organizations—that the 50 workers left at the Fukushima complex were pulled back temporarily Wednesday because of "dangerous spikes in radiation levels." This story also reports that the Japanese emperor made a rare television address calling on the nation's people to "treat each other with compassion and overcome these difficult times."
- The Washington Post's Dan Eggen reports today (<http://www.nytimes.com/cwire/2011/03/16/16climatewire-radiation-levels-spike-forcing-temporary-ret-87245.html>) that nuclear power lobbyists are waging a crash lobbying campaign on Capitol Hill to ward off restrictions on new nuclear power plants as a result of the situation in Japan. Major players in this effort, the story says, are the Nuclear Energy Institute and Exelon.
- Several stories from various sources have indicated that David Lochbaum of the Union of Concerned Scientists has been holding conference calls with reporters. The UCS web page at <http://www.ucsusa.org/> also has a link to streaming video from the Senate committee that is hearing testimony this afternoon from the UCS senior scientist, as well as from the NRC chairman and the secretary of energy. At this hearing, Sen. Barbara Boxer of California said and Sen. Dianne Feinstein are sending the NRC a letter with a list of actions they want taken.

joe

Joe T. Gilliland

(b)(6)

Ellis, Kevin

From: Bartley, Jonathan
Sent: Wednesday, March 16, 2011 3:47 PM
To: Stamm, Eric; Rapp, Curtis; Harmon, Lee; Davis, Angel; Brady, Joseph; Cureton, Ronald; Ellis, Kevin; Hamman, Joyce; Heath, Jermaine; Hutto, Andy; Ottenberg, Geoffrey; Sabisch, Andrew
Subject: Good web site for updates on Japan nuclear crisis (now fully accessible) | Kyodo News

http://english.kyodonews.jp/news/japan_nuclear_crisis/

Kellner, Robert

From: Stutzcage, Edward
Sent: Wednesday, March 16, 2011 4:20 PM
To: Kellner, Robert
Subject: FW: Fukushima Status



The hyperlink included in the email is:
http://www.jaif.or.jp/english/news_images/pdf/ENGNEWS01_1300273535P.pdf

From: Williams, Joseph
Sent: Wednesday, March 16, 2011 3:45 PM
To: NRO_ARP_Distribution
Subject: Fukushima Status

This link provides a summary of the status of the reactors at Fukushima from the Japan Atomic Industrial Forum. To the best of my knowledge from working in the Operations Center today, it is reasonably accurate, though several hours old at this point.

The situation at the plant is very grave. Photographs available at commercial news sites show substantial damage to the Unit 3 and 4 buildings. Operators face severe challenges to cool the reactors and spent fuel pools, encountering very high doses and lacking equipment and power. NRC is working with the Department of Defense and other Federal agencies, domestic vendors, utilities, and trade organizations to provide technical and material assistance.

Joe

Status of nuclear power plants in Fukushima as of 22:00 March 19 (Estimated by JAIF)

JAIF
LOP

| Power Station | Fukushima Daiichi Nuclear Power Station | | | | | |
|---|---|---------------------------------|---|--|---|-----------------------|
| Unit | 1 | 2 | 3 | 4 | 5 | 6 |
| Electric / Thermal Power output (MW) | 460 / 1380 | | 784 / 2381 | | | 1100 / 3293 |
| Type of Reactor | BWR-3 | BWR-4 | BWR-4 | BWR-4 | BWR-4 | BWR-5 |
| Operation Status at the earthquake occurred | In Service → Shutdown | In Service → Shutdown | In Service → Shutdown | Outage | Outage | Outage |
| Core and Fuel Integrity | Damaged | Damaged | Damaged | No fuel rods | Not Damaged | Not Damaged |
| Reactor Pressure Vessel Integrity | Unknown | Unknown | Unknown | | | |
| Containment Vessel Integrity | Not Damaged | Damage Suspected | Might be "Not damaged" | Not Damaged | Not Damaged | Not Damaged |
| Core cooling requiring AC power | Not Functional | Not Functional | Not Functional | Not necessary | Not necessary | Not necessary |
| Core cooling not requiring AC power | Not Functional | Not Functional | Not Functional | Not necessary | Not necessary | Not necessary |
| Building Integrity | Severely Damaged | Slightly Damaged | Severely Damaged | Severely Damaged | Open a vent hole on the rooftop for avoiding hydrogen explosion | |
| Water Level of the Reactor Pressure Vessel | Fuel exposed partially or fully | Fuel exposed partially or fully | Fuel exposed partially or fully | Safe | Safe | Safe |
| Pressure of the Reactor Pressure Vessel | Stable | Unknown | Stable | Safe | Safe | Safe |
| Containment Vessel Pressure | Unknown | Low | Low | Safe | Safe | Safe |
| Water injection to core (Accident Management) | Continuing (Seawater) | Continuing (Seawater) | Continuing (Seawater) | Not necessary | Not necessary | Not necessary |
| Water injection to Containment Vessel (AM) | Continuing (Seawater) | To be decided (Seawater) | Continuing (Seawater) | Not necessary | Not necessary | Not necessary |
| Containment venting (AM) | Temporally stopped | Temporally stopped | Temporally stopped | Not necessary | Not necessary | Not necessary |
| Fuel Integrity in the spent fuel pool | Water injection to be considered | (No info) | Water level low, Water injection continue | Water level low, Preparing Water injection, Hydrogen from the pool | Pool Temp. High but decreasing | Pool Temp. Increasing |
| Environmental effect | The West Gate: 313.1 μSv/h at 11:30, Mar. 19 North of Service Building: 2972.0 μSv/h at 19:00, Mar. 19 | | | | | |
| Evacuation | 20km from NPS * People who live between 20km to 30km from the Fukushima #1NPS are to stay indoors. | | | | | |
| INES (estimated by NISA) | Level 3 | | | | | |
| Remarks | Immediate threat is damage of the fuels in the fuel pool outside the containment vessel. The operation for filling the pool with water has been conducted since March 17 at Unit-3. Unit-3 is now in operation to fill the water for more than 7 hours from about 14:00 March 19. Unit-4 is now in preparation for filling the water. Attempting to receive external power supply, TEPCO is laying a power cable between the transmission line. The line to Unit-1 and 2 was connected, and External power supply are scheduled tomorrow. Unit 3 to 6 are scheduled to be connected until March 20. | | | | | |

| Power Station | Fukushima Daini Nuclear Power Station | | | |
|---|---|---------|-------------|---------|
| Unit | 1 | 2 | 3 | 4 |
| Electric / Thermal Power output (MW) | | | 1100 / 3293 | |
| Type of Reactor | BWR-5 | BWR-5 | BWR-5 | BWR-5 |
| Operation Status at the earthquake occurred | In Service → Automatic Shutdown | | | |
| Status | All the units are in cold shutdown. | | | |
| INES (estimated by NISA) | Level 3 | Level 3 | — | Level 3 |
| Remarks | Unit-1, 2, 3 & 4, which were in full operation when the earthquake occurred, all shutdown automatically. External power supply was available after the quake. While injecting water into the reactor pressure vessel using make-up water system, TEPCO recovered the core cooling function and made the unit into cold shutdown state one by one. Latest Monitor Indicator: 16.8 μSv/h at 12:00, Mar. 17 at NPS border. Evacuation Area: 10km from NPS. | | | |

[Significance judged by JAIF]

| Power Station | Onagawa Nuclear Power Station | | |
|---|--|---|---|
| Unit | 1 | 2 | 3 |
| Operation Status at the earthquake occurred | In Service → Automatic Shutdown | | |
| Status | All the units are in cold shutdown. | | |
| Remarks | Unit-1, 2 & 3 all shutdown automatically when the earthquake occurred. Unit-2 & 3 were then led into cold shutdown state. Unit-2, which had just started operation after planned outage, got into cold shutdown immediately. | | |

: high

: severe

[Source] Governmental Emergency Headquarters: News Release (-3/19 17:00), Press conference

[Abbreviations]

INES: International Nuclear Event Scale

NISA: Nuclear and industrial Safety Agency

SFP: spent fuel pool

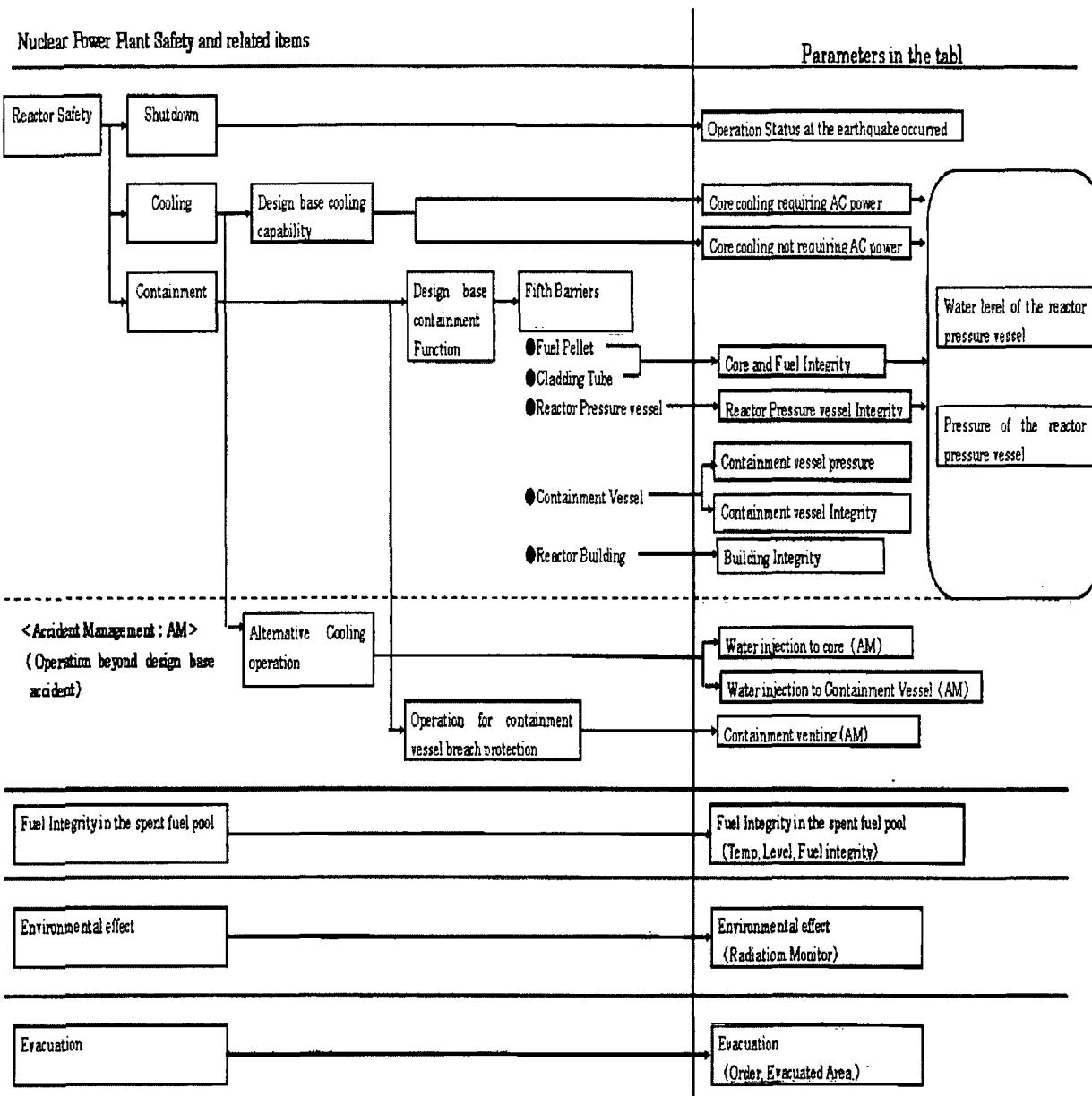
TEPCO: Tokyo Electric Power Company, Inc.

NISA: News Release (-3/19 13:30), Press conference

TEPCO: Press Release (-3/19 18:00), Press Conference

Parameters in the Table

JAIF picks up these parameters to evaluate safety condition of the nuclear plants during this accident from the view point of the principles of nuclear power plant safety which are "Shutdown", "Cooling" and "Containment". Then we create the chart. The following diagram is to show the correspondence relation of these parameters in the table to nuclear power plant safety.



Accidents of Fukushima Dai-ichi and Fukushima-Dai-ni Nuclear Power Stations

March 19, 2011 (17:00)

by Government Nuclear Emergency Response Headquarters

1. Latest Major Incidents and Actions

<March 18>

14:00 Ground-based water discharge (7 times) by SDF (~14:38)

14:42 Ground-based water discharge (once) by TEPCO using US forces' water cannon truck (~14:45)

17:50 NISA announced that Fukushima Dai-ichi 1,2 and 3 has been rated as 5 on the INES scale, and that Fukushima Dai-ichi 4, Fukushima Dai-ni 1,2 and 4 as 3.

<March 19>

00:30 Ground-based water discharge by Tokyo Fire Department (~01:10)

Attempting to receive external power supply, TEPCO is laying a power cable between the transmission line.

Ground-based water discharge is scheduled to start in the afternoon.

05:00 Two diesel generators at Fukushima Dai-ichi 5 supply power to Unit 5 and 6.

A pump restarted cooling water circulation in the spent fuel pools of Unit 5.

05:11 A pump restarted water circulation in the spent fuel pools of Unit 6 (not cooling).

2. Status of Nuclear Power Stations

(1) Fukushima Dai-ichi NPS

| | Unit 1 | Unit 2 | Unit 3 | Unit 4 | Unit 5, 6 |
|--|--|--|---|--|--|
| Major Incidents and Actions | 11th 15:42 Report IAW Article 10* (Loss of power) | 11th 15:42 Report IAW Article 10* (Loss of power) | 11th 15:42 Report IAW Article 10* (Loss of power) | 14th 04:08 Water temperature in Spent Fuel Storage Pool increased at 84°C | Water temperature in SF Storage Pool is increasing |
| *The Act on Special Measures Concerning Nuclear Emergency Preparedness | 11th 16:36 Event falling under Article 15* occurred (Incapability of water injection by core cooling function) | 11th 16:36 Event falling under Article 15* occurred (Incapability of water injection by core cooling function) | 13th 05:10 Event falling under Article 15* occurred (Loss of reactor cooling functions) | 15th 09:38 Fire occurred on 3rd floor (extinguished spontaneously) | 18th Vent hole was opened on the rooftop for avoiding hydrogen explosion |
| | 12th 00:49 Event falling under Article 15* occurred (Abnormal rise of CV pressure) | 14th 13:25 Event falling under Article 15* occurred (Loss of reactor cooling functions) | 13th 08:41 Start venting | 16th 05:45 Fire occurred (extinguished spontaneously) | 19th 05:00 RHR-pump in the unit 5 restarted. |
| | 12th 14:30 Start venting | 14th 16:34 Seawater injection to RPV | 13th 13:12 Seawater injection to RPV | | |
| | 12th 15:36 Hydrogen explosion | 14th 22:50 Report IAW Article 15* (Abnormal rise of CV pressure) | 14th 07:44 Event falling under Article 15* occurred (Abnormal rise of CV pressure) | | |
| | 12th 20:20 Seawater injection to RPV | 15th 00:00 Start venting | 14th 11:01 Hydrogen explosion | | |
| | | 15th 06:10 Sound of explosion, Suppression Pool damaged | 15th 10:22 Radiation dose 400mSv/h | | |
| | | 15th 08:25 White smoke reeked | 16th 06:40, 08:47 Radiation dose 400mSv/h | | |
| | | | 16th 08:34, 10:00 White smoke reeked | | |
| | | | 17th 09:48 Water discharge by SDF helicopters | | |
| | | | 17th 19:05 Water discharge by riot police (once) | | |
| | | | 17th 19:35 Water discharge by SDF (5 times) | | |
| | | | 18th 14:00 Water discharge by SDF | | |
| | | | 18th 14:42 Water discharge by TEPCO using US forces' water cannon truck (once) | | |
| | | | 19th 00:30 Ground-based water discharge by Tokyo Fire Department (~14:38) | | |
| | | | 19th P.M. Ground-based water discharge will restart | | |
| | External power supply of Unit 1 and 2 are scheduled to be connected until March 19. | | | | |
| | External power supply of Unit 3 to 6 are scheduled to be connected until March 20. | | | | |
| Major Data | Water level (19th 03:30) (A)-1750mm (B)-1750mm | Water level (19th 03:30) -1400mm | Water level (19th 06:10) (A)-1200mm, (B)-2300mm | Water temperature of SF Storage Pool (18th 22:00) Unit 5 67.6°C Unit 6 65.0°C | Water temperature of SF Storage Pool |
| | Reactor pressure (19th 03:30) (A) 0.205MPaG, (B) 0.155MPaG | Reactor pressure (19th 03:30) (A)-0.005MPaG, (B)-0.018MPaG | Reactor pressure (19th 06:10) (A) 0.005MPaG, (B) 0.045MPaG | | |
| | CV pressure (19th 03:30) Unmeasurable (14th 10:30) | CV pressure (19th 03:30) 0.135MPaabs | CV pressure (19th 06:10) 0.045MPaabs | | |

(2) Fukushima Dai-ni NPPs

All units are cold shutdown (Unit 1, 2, 4 have been recovered from a event falling under Article 15*)

3. State of Emergency Declaration

11th 19:03 State of nuclear emergency was declared (Fukushima Dai-ni NPS)

12th 07:45 State of nuclear emergency was declared (Fukushima Dai-ichi NPS)

4. Evacuation Order

11th 21:23 PM direction: for the residents within 3km radius from Fukushima I to evacuate, within 10km radius from Fukushima I to stay in-house

12th 05:44 PM direction: for the residents within 10km radius from Fukushima I to evacuate

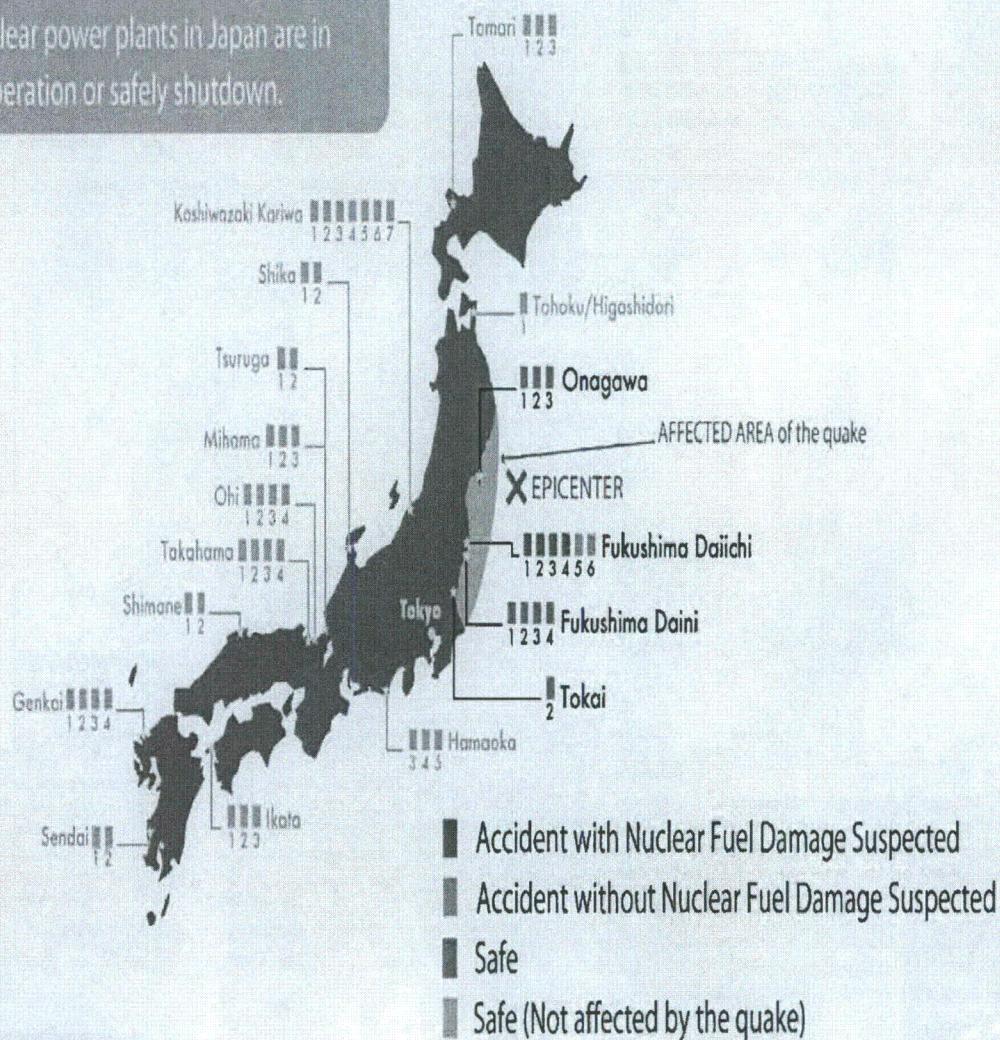
12th 17:39 PM direction: for the residents within 10km radius from Fukushima II to evacuate

12th 18:25 PM direction: for the residents within 20km radius from Fukushima I to evacuate

15th 11:06 PM direction: for the residents within 20-30km radius from Fukushima I to stay in-house

Status of the Nuclear Power Plants after the Earthquake

Every efforts and measures have been taken at Fukushima Daiichi nuclear power plants.
Other nuclear power plants in Japan are in normal operation or safely shutdown.



Nazario, Tomy

From: Breskovic, Clarence
Sent: Wednesday, March 16, 2011 4:24 PM
To: Breskovic, Clarence
Subject: GNOSIS 2011-03-16

GNOSIS News 2011-03-16 ~~For Official Use Only~~

Arms Control

Report: FMCT and Pakistan: futuristic perspectives

"....An FMT should be concluded in such a way that it should represent a non-discriminatory approach; address legitimate security concerns of all its member states; accommodate present realities and become a real and practical foundation for a world free of nuclear weapons. By focusing on regional security dynamics the international community can bring onboard countries like Pakistan. Otherwise it would become difficult for Pakistan to join an FMT at the expense of its national security...."

South Korea to Ease Strategic Materials Control For Exporters

South Korea will ease control over exports of strategic materials that can be used for military purposes for companies adhering to a state-sponsored compliance program, the government said Tuesday. The Ministry of Knowledge Economy said the deregulation, which will go into effect on Wednesday, is designed to reduce red tape on materials that can be used to make weapons of mass destruction (WMD). Under the revision, two types of materials that require prior export authorization will be taken off the control list, with rules governing one material to be eased to reflect practical considerations. SEOUL, March 15 (Yonhap)

Cooperation

Chile: government Ratifies Nuclear Agreement With US Despite Crisis in Japan

Santiago El Mercurio publishes a report by R. Franco and C. Saldivia on Chile's decision to go ahead with the nuclear agreement with the United States that is to be signed on 18 March, despite the current crisis in Japan.
Santiago El Mercurio 2011-03-16

India-Japan nuclear deal becomes uncertain

The fate of proposed India- Japan nuclear deal has become uncertain following explosions at nuclear power plant in Japan in the wake of the devastating earthquake and tsunami four days ago, said local daily The Tribune on Monday. India and Japan have been negotiating a nuclear agreement since June last year. NEW DELHI, March 14 (Xinhua)

Energy Policy

Finland: Too Early To Tell Effects of Japan Crisis on Finnish Reactor Plans

Finnish power company Teollisuuden Voima (TVO) said Wednesday [16 March] it was too early to say how Japan's nuclear crisis might affect the construction of a new state-of-the-art nuclear reactor in western Finland. "There are no immediate changes to the construction plans in the works, due to the fact that we don't really know exactly what happened at the Fukushima plant," Jouni Silvennoinen, project director for the unfinished reactor, told AFP. HELSINKI, March 16, 2011 (AFP)

Turkey to Stick to Nuclear Plant Construction Project

The current accident at a nuclear power plant in Japan will not make Turkey pull the plug on the current construction of its first nuclear power station, a facility Russia is helping build, Turkish Prime Minister Recep

Tayyip Erdogan said on Wednesday. Turkey and Russia are sticking to the schedule in building the nuclear plant, to be situated near the town of Akkuyu on the Mediterranean coast, Erdogan told a news conference after talks with Russian President Dmitry Medvedev. MOSCOW. March 16 (Interfax)

Germany: Construction of Offshore Wind Farms Facing Delays, Rising Costs

Construction of offshore wind farms off Germany's northern coast in the North and Baltic Seas has faced significant delays, even as the country's utility companies tackle one project after another abroad. Things have fallen so far behind that government officials are happy to see anything happen at all. Spiegel Online in English 1359 GMT 16 Mar 11

China Suspends Construction Approval for New Nuclear Power Plants

The Chinese government decided Wednesday to temporarily stop authorizing construction plans for nuclear power stations in the wake of radioactive leaks from a Japanese nuclear plant hit by a massive earthquake and tsunami Friday. The State Council, China's Cabinet, also ordered relevant departments to conduct emergency safety checks at existing nuclear plants, according to a statement issued after an executive meeting chaired by Premier Wen Jiabao. Beijing, March 16 Kyodo

Polish nuclear plans unchanged by meltdown risk in Japan

The Chancellery of the Prime Minister of Poland has said that fears of a nuclear disaster in Japan following last Friday's earthquake and tsunami would not disturb Poland's own plans to develop two nuclear plants. At a press conference in Gdańsk Prime Minister Donald Tusk said that Poland was not prone to seismic activity, while spokesperson Paweł Gras added that safety will be one of the government's principal criteria when it selects technology for the nuclear plant. 15th March 2011, Warsaw Business Journal

European Commission: Energy Efficiency Plan 2011

"...The measures proposed in this Plan aim at closing the gap in reaching the EU's 20% energy saving target as well as at helping to realise our 2050 vision of a resource efficient and low carbon economy, as well as aiming at increased energy independence and security of supply. Fully implementing this plan should deliver important energy savings: it is estimated that the actions of the public sector and the new minimum efficiency requirements for appliances should yield savings of up to 100 Mtoe and that comparable savings can also be expected from measures in the transport sector and from energy savings for consumers from their energy suppliers."

Global & Regional Energy

'Backgrounder': Review of World Nuclear Power Development

From the establishment of the world's first nuclear plant in the former Soviet Union in 1954, to a large-scale utilization of nuclear power in the 1970s, and to the meltdown of Ukraine's Chernobyl nuclear power plant in 1986, the pursuit of nuclear energy for electricity underwent a circle of expansion and decline. However, nuclear power has regained popularity in recent years. BEIJING, March 16 (Xinhua)

Government & Public Sector

Cuba Offers Medical Aid, Rescuers to Japan

Cuba on Tuesday said it has offered Japan assistance to grapple with the effects of last week's devastating earthquake and tsunami. The communist island, while cash poor, has a wealth of highly-trained medical personnel who are the envy of Latin America, and more skilled workers than it can gainfully employ. Havana, March 15, 2011 (AFP)

Chinese Doctor Recommends Drinking Tea To Combat Radiation

Want a good tip to fend off the threat of radiation poisoning? The answer is to drink more tea, said a Chinese medicine doctor Wednesday. Lu Chih-hong, president of the Sheng Te Tang Chinese Medical Hospital in

Taichung City, central Taiwan, suggested the public take more tea to avoid the effects of radioactive fallout that may come from Japan. Taipei, March 16 (CNA)

Czech politicians stand behind nuclear energy

The Czechs' ambition to become one of the biggest producers of nuclear energy in Europe still stands -- despite the events in Japan and the skepticism in Germany and other European countries. Prague Hospodarske Noviny Online in Czech 16 Mar 11

Switzerland: Japanese Nuclear Crisis Raises Fears Over Swiss Safety

Switzerland has suspended the building of new nuclear plants amid concerns that potential dangers were underestimated. But nuclear skeptics say more needs to be done to protect existing plants from natural disasters. Switzerland is taking a long hard look at its nuclear power industry in the wake of the catastrophe in Japan. Bonn DW-WORLD.DE 1442 GMT 16 Mar 11

EU Energy Ministers To Hold Special Meeting To Discuss Impact of Japan Crisis

European Union energy ministers will hold an extraordinary meeting next week to assess the impact of quake-hit Japan's nuclear crisis on the vital industry, the EU's president said Wednesday. Herman Van Rompuy said the ministers will hold talks in Brussels on Monday to "discuss the consequences for the energy sector and markets, and the response we can give." European heads of state and government will then debate the consequences of the Japanese catastrophe at a long-scheduled summit on March 24-25, he said. BRUSSELS, March 16, 2011 (AFP)

UK Energy Secretary Commissions Study Into Lessons From Japan's Nuclear Crisis

An official inquiry into whether Japan's nuclear crisis holds lessons for the safety of Britain's nuclear power stations will "affect" investment in a new generation of reactors, according to Chris Huhne, the energy secretary. The report, to be compiled by Dr Mike Weightman, the chief nuclear inspector, will cover the UK's existing reactors and the programme to build new ones. Mr Huhne's commissioning of the study comes at a delicate moment in the UK's ambition to build nuclear power stations at eight sites in England and Wales. The first, at Hinkley Point in Somerset, is scheduled to begin operating in 2018. London FT.com in English 15 Mar 11

Japan: Tepco, Government Blasted for Slow Response To Nuclear Plant Disaster

Radiation leaks at the quake-hit Fukushima No. 1 nuclear plant have highlighted the slow response to the disaster by the plant's operator, Tokyo Electric Power Co. (TEPCO), as well as the central government. Prime Minister Naoto Kan belatedly set up an ad hoc joint headquarters for the government and TEPCO on March 15, four days after the killer earthquake and tsunami that devastated a wide area along the Pacific Coast in northeastern and eastern Japan, leaving at least 3,700 people dead and about 22,000 missing. Some officials familiar with the case said the Kan government's response to the nuclear accidents was too slow. Mainichi Daily News Online 1643 GMT 16 Mar 11

Germany Cripples Itself With Nuclear Angst

Sales of Geiger counters have gone through the roof in Germany in recent days, and people have been buying so many iodine pills that medical experts have warned of the health risks of taking them. It only makes sense, said the Federation of German Pharmacists, "if there is a radioactive cloud directly over Germany." Judging by the near-panic with which Europe's largest nation is responding to the Fukushima incident, one might assume that a toxic cloud had already arrived. But the reaction has been strikingly angst-ridden in Germany, which is over 5,500 miles away from Japan. The Japanese, one could be forgiven for thinking, are facing their plight with a lot more stoicism than the Germans. Der Spiegel, 2011-03-15

Japanese Leaders Leave People in the Dark

Leaders in Japan have not comported themselves well since Friday's disaster. Information has been in short supply and distrust among the Japanese has begun to spread. Now, the blame game has begun in earnest. Der Spiegel, 2011-03-15

Japan: Accurate information key to effective crisis management

The issuing of evacuation orders for areas near a nuclear power plant where explosions have occurred without clarifying what is the actual situation at the plant has only caused anxiety to the public.... relevant organizations have failed to provide consistent information to the public. The Prime Minister's Office, the Nuclear and Industrial Safety Agency (NISA) and Tokyo Electric Power Co. (TEPCO) and other organizations concerned have so far held separate news conferences to explain what has happened to the Fukushima No. 1 Nuclear Power Plant. Since TEPCO, which operates the plant, is the primary information source, there are time lags and gaps in the accuracy of information announced by the power supplier and other entities. The Mainichi Daily News, 2011-03-15

Belgium Authority Advocating Nuclear Energy Tax To Promote 'Fair Competition'

The federal regulator of the Belgian energy market, the Regulatory Commission for Electricity and Gas (CREG), advocates a tax on energy generated by nuclear plants. The CREG said that such a tax already exists in Germany. This proposal comes out of the recommendation in a report released on Wednesday [9 March] by the International Energy Agency (IEA) to Belgium to review its nuclear power output. "For Electrabel [Belgian energy provider], this means lower production costs," said CREG spokesman Laurent Jacquet. "But it is not fair to new players in the industry. The tax on energy generated by nuclear power could thus promote fair competition," he said. The regulator would ensure that this tax is not passed along to consumers," said Laurent Jacquet. Brussels RTBF.be in French 10 Mar 11

Industry

French Advisor Sees 'Advantage' for French NPP Providers From Incidents in Japan

The nuclear accident in Japan could help French [nuclear power] industry, whose trademark is safety," said Henri Guaino, special adviser to President Nicolas Sarkozy. Asked if the events in Japan would have a negative impact on this sector, he replied: "I do not think so. I would argue the opposite, because France, in particular, has demonstrated its concern for safety," he said during the broadcast of Le Grand Jury RTL-LCI-Le Figaro television show. "So, I think it should give our nuclear industry an advantage over nuclear providers from other countries, where security takes second place." France's Areva is the world's number one nuclear power provider, and the French public utility EDF is the top supplier of nuclear-generated electricity. Paris lefigaro.fr in French 13 Mar 11

Iran To Export Nuclear Products

Atomic Energy Organization of Iran Director Fereydoun Abbasi Davani has said that Iran is determined to lay the foundations for the export of nuclear products to other countries. The AEOI director stated that Iran must take the measures necessary to enable it to export domestically manufactured nuclear products and provide other states with services that will help them access nuclear technology meant for peaceful purposes. Tehran Iranian Labor News Agency 0715 GMT 14 Mar 11

Media & Publications

Survey: Leaders More Optimistic On Transatlantic Relations Than General Public

A new opinion survey released today shows that American and European leaders consider the state of transatlantic relations to be better than the public on either side of the Atlantic. Transatlantic Trends, 2011-03-15

Reactors

Canada: Pickering nuclear plant suffers minor water leak

Canada's nuclear regulator has reported a water leak at a nuclear power plant in Pickering. Ontario Power Generation, which sells electricity in the province, notified the CNSC about the leak shortly before midnight on Monday. Because of a pump seal failure, 73,000 litres of demineralized water were released at the Pickering A nuclear generating station earlier that day, the CNSC says. National Post, March 16, 2011 1:02 PM

South Korea To Offer Boric Acid To Japan

Korea plans to transfer its reserve of boric acids to Japan to help the country stabilize quake-damaged nuclear reactors that have started to release radioactive material, the government said Wednesday. The Ministry of Knowledge Economy said that Tokyo requested assistance of the key material vital for stopping fission nuclear reactions after its own stockpile was largely used up at the Fukushima nuclear power plant. The state-run Korea Hydro & Nuclear Power Co., which operates South Korea's 21 commercial reactors, said it has 309 tons of the material in powder form and could transfer 52.6 tons in the next few days, the ministry said. It said the remainder is adequate for six months of use. SEOUL, March 16 (Yonhap)

Spain To Review Safety at Nuclear Power Plants

Spain's government said Wednesday [16 March] it will review security measures at all its six nuclear power plants in the wake of the disaster in Japan. "A review of the safety systems of all the reactors in the country will take place," Industry Minister Miguel Sebastian told parliament. "Specifically, a supplementary seismic survey has been requested as well as a study on the risk of flooding." MADRID, March 16, 2011 (AFP)

Armenian nuclear plant secure against earthquakes - country's energy expert

The Armenian Nuclear Power Plant (ANPP) is secure against an earthquake, an Armenian nuclear expert has said. Vahram Petrosyan, director of the Armenian scientific-research institute for the operation of nuclear power plants, Armatom, said continuous work aimed at increasing the nuclear plant's security was under way and that Armenia strictly adhered to IAEA rules on increasing the plant's security, the Novosti-Armenia news website said. Yerevan Novosti Armenia 1450 GMT 15 Mar 11

Slovakia To Upgrade Nuclear Plants To Prevent Japan-Style Explosions of Hydrogen

Marta Ziajova, head of the Slovak Nuclear Supervision Office: we are now planning additional safety upgrades, thanks to which we will start using in our nuclear power plants installations that will render the hydrogen harmless so as to prevent the risk of its explosion. Bratislava Pravda.sk 15 Mar 11

Pakistan: PAEC Plans To Install Modern Nuclear Reactor at Chashma

The Pakistan Atomic Energy Commission [PAEC] will set up a modern nuclear reactor at Chashma. This reactor will be set up at C-II and C-IV of Chashma Nuclear Power Project and Pakistan's friendly neighbor China will cooperate in this regard. These reactors will be purely for the acquisition of power and defense purposes. Meanwhile, the C-II plant has been completed. Sources said that C-II will soon be made functional and start supplying 300 MW power to the national grid. Islamabad Ausaf 14 Mar 11 pp 5, 8

Lithuanian Prime Minister: Belarus Nuclear Plant 'Very Serious Threat'

Lithuania has used up all political measures to prevent the construction of the Belarusian nuclear power plant next to the Lithuanian border, and now has the only way out -- to address international organizations, Prime Minister Andrius Kubilius said. Vilnius, Mar 16 (ELTA)

China Ordering Safety Inspections of Nuclear Facilities

China on Wednesday ordered safety inspections of the country's nuclear plants and suspended approval of new projects after quake and tsunami disasters in Japan led to an atomic crisis. The State Council, or cabinet, issued the order as Chinese authorities stepped up radiation monitoring of passengers and goods from neighbouring Japan as fears mounted about harmful nuclear contamination from the stricken country. BEIJING, March 16, 2011 (AFP)

Iran: Fuel Assemblies Unloaded From Bushehr NPP; Checked For Presence of Metal Chips

Tomorrow, specialists are to complete the unloading of fuel assemblies from the reactor of the first Iranian NPP [nuclear power plant] in the city of Bushehr. As an informed source close to the project told Nezavisimaya Gazeta, they are to be studied for the presence of metallic chips. The power generation start-up of Bushehr is being postponed for now. In the worst case, there will be a 2-month delay. Iranian parliamentarians are

blaming Russia for everything, while in Moscow they are shifting the responsibility onto Tehran, saying: "The miser pays twice." Moscow Nezavisimaya Gazeta Online 28 Feb 11 pp1, 6

Iran: Russia promises Bushehr plant to become operational on schedule

President Dmitry Medvedev, in a telephone conversation with President Mahmoud Ahmadinejad, has said that Russia will make every effort to make the Bushehr nuclear power plant fully operational at the planned time. Medvedev also said that Russia is determined to enhance its ties with Iran in all areas. EHRAN, March 15 (MNA)

Fukushima triggers debate in India (Seismic map of India)

India's 20 commissioned nuclear reactors are built with adequate earthquake emergency backups and do not suffer from two key factors that appear to have worked against the Fukushima plant, atomic energy scientists and officials said today. An earthquake of the scale of the one in Japan, followed by a tsunami, would however likely have significantly damaged – if not crippled – the Indian reactors too. Hindustan Times, 2011-03-14

India: EPR technology proposed for Jaitapur has to be evaluated

Atomic Energy Commission (AEC) chairperson Srikumar Banerjee on Monday said the EPR technology proposed at Jaitapur would have to be evaluated for safety from the context of earthquakes and tsunamis coming together. Addressing a press conference here, Dr. Banerjee and other heads of India's nuclear establishment sought to dispel myths about the accident in Japan. The Hindu, 2011-03-15

Switzerland to review safety at nuclear power plants

Energy Minister Doris Leuthard has ordered safety to be re-examined at Swiss nuclear power plants following blasts at a Japanese power station hit by a tsunami. She has also decided to suspend requests to build new replacement nuclear power stations in Switzerland possibly delaying the timetable for a nationwide vote in 2013. Leuthard reaffirmed that there was no direct danger to the Swiss population from the nuclear incidents in Japan or from Switzerland's five nuclear power facilities. Bern swissinfo.ch 1607 GMT 14 Mar 11

Kazakhstan to conduct safety assessment of planned nuclear power plant

Kazakhstan would carry out an extra safety and risk assessment of a scheduled nuclear power plant near the western port city of Aktau, a nuclear official said Monday. The plant is designed to operate with a Russian VBER-300 nuclear reactor. ALMATY, March 14 (Xinhua)

Russian: Rosatom Complains Of Irregular Data On Japan Nuclear Situation

The information on the situation with the nuclear power stations in Japan is not sufficient and is coming in at irregular intervals, a statement from experts of the Rosatom (the State Nuclear Energy Corporation) headquarters for monitoring the situation at Japanese nuclear stations has said, as quoted by Russian news agency Interfax on 14 March. Moscow Interfax 0811 GMT 14 Mar 11

South Korea: Experts Divided Over Safety of Nuclear Plants

The release of radioactivity Saturday from the Fukushima Daiichi nuclear plant after the massive earthquake that rocked Japan has once again sparked debate over the safety of South Korea's own nuclear plants. The Lee Myung-bak [Yi Myo'ng-pak] administration says South Korea's nuclear plants are earthquake-resistant, having been designed to resist a quake of 6.5 magnitude, but environmental groups counter that the possibility of an accident remains strong since South Korea is not an earthquake-free zone. Seoul Hankyoreh 0557 GMT 14 Mar 11

GE to offer technical assistance to Japan

General Electric Co. of the United States, which supplied the nuclear reactors at the quake-hit Fukushima No. 1 nuclear power plant, said Tuesday it will offer technical assistance to the Japanese government and the plant's operator Tokyo Electric Power Co. More than 1,000 engineers from the company's joint venture with Hitachi Ltd., the Wilmington, North Carolina-based GE Hitachi Nuclear Energy Inc., will provide assistance, it said.

Responding to a request by Tokyo Electric, GE will also provide 10 truck-mounted gas turbines for emergency use to address power shortages in Japan, it said. NEW YORK, March 15, Kyodo

Vietnam: Powering up Ninh Thuan Reactor plans

Preparations for Ninh Thuan 1 and 2 projects are now underway. Both projects are in the stage of finding strategic partners and drawing feasibility studies. As estimated, it needs between 18 to 24 months to finalise feasibility studies. The Vietnamese government is intensifying efforts to embrace preparatory activities for key nuclear power plant right in the first half of 2011 to be able to commence construction of Ninh Thuan 1 nuclear power plant in 2014. Vietnam Net, 2011-03-13

French watchdog puts Japan nuclear accident at level five or six

The nuclear accident in Fukushima has reached a level of seriousness "beyond the Three Mile Island level (level five) without reaching that of Chernobyl" (level seven - highest level), the president of the French Nuclear Safety Authority (ASN), Andre-Claude Lacoste, said on Monday [14 March]. "We feel that we are at least at level five and no doubt at level six, and I'm talking with the approval of my Japanese colleagues," Andre-Claude Lacoste said during a joint press briefing given by the ASN-IRSN (Radioprotection and Nuclear Safety Institute). Paris, 14 March 2011 (AP)

India: NPCIL develops first nuclear reactor for thorium utilisation

The Nuclear Power Corporation of India Limited (NPCIL) today said it has developed the first of its kind nuclear reactor for thorium utilisation, whose design was under review of the Atomic Energy Regulatory Board (AERB). "We have developed the first of its kind Advance Heavy Water Reactor(AHWR) having 300 MW capacity for thorium utilisation, whose design is under review of AERB," NPCIL director (technical) SA Bhardwaj said. (Daily News & Analysis) 2011-03-12

Safety

Indian Govt Orders Radiation Testing Of Food Originating From Japan

Authorised officers of Food Safety and Standards Authority of India (FSSAI) at Indian ports, airports have been asked to get food originating from Japan after March 11, 2011 to be tested for radiation, the order said. The Department of Revenue, Government of India, has also been requested to advise all the customs points in the country where imported food is cleared, to test samples on similar lines. India imports processed foods, sea food, oil seeds and seeds of vegetables such as cauliflower and cabbage come from Japan. Tehran IRNA 0855 GMT 16 Mar 11

Taiwan: Three Day Radioactive Grace Period

Radioactive fallout from Japan's troubled Fukushima Daiichi nuclear power plant is not expected to hit Taiwan in the coming three days, Taiwan's Central Weather Bureau (CWB) said in a statement Wednesday (Mar. 16). The bureau made the forecast amid the spiraling crisis at the complex, where three active reactors were seriously impaired by a magnitude 9.0 earthquake and following tsunami on Mar. 11. The bureau said that recorded radiation levels around Taiwan were not currently showing any abnormalities, remaining at a normal 0.2 microsieverts per hour, and they were not likely to increase in the next three days given current weather patterns. Taipei Want China Times 0855 GMT 16 Mar 11

Thailand To Offer Potassium Iodide Tablets to Japan-Bound Travelers

The Thai Public Health Ministry plans to hand out free potassium iodide tablets to people traveling to northern Japan in the wake of radiation leaks from a stricken nuclear power plant, officials said Wednesday. The government has ordered the state-run pharmaceutical agency to produce 15,000 potassium iodide pills as the first step. The pills will be available free at international airports in Bangkok and Phuket, where flights to Japan are operated, according to the ministry officials. Bangkok, March 16 Kyodo

India: 20 Years, 92 Quakes: Ground Trembles Beneath Jaitapur's Feet

Jaitapur area falls in the seismic zone 3 category, and data from the Geological Survey of India shows that between 1985 and 2005, there were 92 earthquakes. The biggest earthquake in Jaitapur, recorded in 1993, measured 6.2 on the Richter scale. The ground is unstable, say activists and geologists, and there is no guarantee that the government's safeguards will protect the people and ecologically sensitive Konkan coast from a nuclear disaster should there be another earthquake. Mumbai The Times Of India Online 16 Mar 11

France: Areva's CEO Sees 'Lessons To Be Learned' From NPP Flooding in Japan

Japan is experiencing an overall catastrophe. The earthquake in itself did not cause the problem with the nuclear reactors. It was the tsunami that followed it. The waves were one meter higher than the maximum height planned for. If there was a mistake made, it was in not planning for such a high wave. We need to draw a lesson from that. Paris lefigaro.fr in French 15 Mar 11

Meltdown 101: What are spent-fuel pools and why are they a threat?

Spent-fuel pools are shielded only by the buildings at Japan's Fukushima I nuclear power plant, and three have now been damaged by explosions. Low-level radiation leaking from the pools could dramatically worsen if the water levels drop low enough for spent rods to burn. Christian Science Monitor, 2011-03-15

Red Wine may help against Nuclear Toxins

It may sound frivolous to advise the unfortunate Japanese currently facing the trauma of possible radioactive nuclear radiation, to drink red wine to neutralize the toxic effects but this was the refrain after the Chernobyl disaster and a study in 2008 by the University of Pittsburgh School of Medicine indicative of a scientific basis of the advisory gains more relevance. India Wine Academy, 2011-03-14

Poland's Prime Minister Tusk: Poland's Nuclear Energy Program Must Be Safe

The prime minister asserts that the planned nuclear power plant in Poland will be safe. However, experts are warning that it will be difficult to talk the public into such an investment following explosions in a nuclear power plant in Japan. Warsaw rp.pl in Polish 14 Mar 11

EU Holds Fact-Finding Meeting on Nuclear Safety

European Energy Commissioner Guenther Oettinger (Germany) convened a fact-finding meeting on nuclear safety on 15 March, inviting EU energy ministers, national nuclear regulators, and industry representatives. The EU-focused Europolitics reported that the European Commission admits that it needs first-hand information on contingency plans and safety measures in place in the EU in the event of seismic activity. This includes information on controls carried out by national authorities, safety requirements for earthquakes, and emergency power supply systems for reactor cooling. A Commission spokeswoman said that this was the "very first meeting" of its kind and was a "fact-finding" meeting, the aim of which was to find "any lessons that need to be drawn" from the situation in Japan. European Union -- OSC Summary 15 Mar 11

South Africa has 'nuclear safety culture': Eskom

South Africa was "well-equipped" to have nuclear power stations and had a "nuclear safety culture", Eskom said on Monday. ar 14, 2011 2:07 PM | By Sapa

Malaysia: Gerakan Party Wants Review of Nuclear Plans Following Japan Crisis

Gerakan broke ranks with its Barisan Nasional (BN) partners and called today for a government review of nuclear energy plans. This comes on the heels of a series of explosions at a Japanese nuclear plant -- sparking fears of radiation leaks in the aftermath of Friday's massive earthquake. A rare earth plant being built in Kuantan has also piqued concern over radiation pollution, as reports have suggested that it may be a repeat of a similar Bukit Merah plant shuttered in 1992 that has been linked to seven leukemia deaths there. Kuala Lumpur The Malaysian Insider 14 Mar 11

France: We Cannot Guarantee Absolutely There Will Never Be an Accident

"...The ASN's constant position has been that it is not possible to absolutely guarantee that there will never be a nuclear accident, but we are doing all we can to assure that the likelihood of occurrence and its consequences are as low as possible. It is no coincidence that we impose draconian safety measures on operators and we constantly strengthen and improve them." Paris LeFigaro.fr in French 14 Mar 11

Security

India: Atomic plants remain targets of terror groups, MoS tells Lok Sabha

The government on Tuesday said atomic power plants in the country are under threat from various terrorist groups. Minister of State for Home Mullappally Ramachandran said in view of the prevailing security scenario, the atomic power plants continue to remain targets of terrorist groups. "Central security agencies review security of atomic power plants periodically and make specific recommendations to enhance the security wherever required," he told the Lok Sabha. Central Chronicle, 2011-03-15

India: Stolen Cobalt-60 isotopes partially recovered

The government today, march 14, 2011, said 15 disused and decayed Cobalt-60, a radioactive isotope, were stolen from state-run SAIL's Durgapur plant in January. Of them, two isotopes with their two operational lead shields have since been recovered, Steel Minister Beni Prasad Verma said in a written reply to the Lok Sabha. Economic Times, India 2011-03-14

Clarence Breskovic
International Policy Analyst
U.S. Nuclear Regulatory Commission
Office of International Programs
11555 Rockville Pike
Rockville, MD 20852, USA
Tel: 1-301-415-2364
Fax: 1-301-415-2395
Alternate Email: (b)(6)

Woodruff, Gena

From: LIA04 Hoc
Sent: Wednesday, March 16, 2011 5:35 PM
To: OST05 Hoc
Cc: 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; Turtl, Richard; Virgilio, Rosetta
Subject: FW: Questions NRC RI Is Receiving - RESPONSE NEEDED ASAP

Fyi...

From: McIntyre, David
Sent: Wednesday, March 16, 2011 4:45 PM
To: LIA04 Hoc
Subject: FW: Questions NRC RI Is Receiving - RESPONSE NEEDED ASAP

From: McIntyre, David
Sent: Wednesday, March 16, 2011 4:22 PM
To: Bonaccorso, Amy
Cc: Deavers, Ron; Turtl, Richard; Screni, Diane; Uselding, Lara; Hannah, Roger; Harrington, Holly; Brenner, Eliot; McNamara, Nancy; Mitlyng, Viktoria
Subject: RE: Questions NRC RI Is Receiving - RESPONSE NEEDED ASAP

Suggest this:

The 10-mile EPZ reflects the area expected to be affected by design basis accidents at nuclear power plants, and we are confident that it would be adequate even for severe accidents. However, the 10-mile zone was always considered a base for emergency response that could be expanded if the situation warranted. The situation in Japan, with four reactors experiencing exceptional difficulties simultaneously, creates the need to expand the EPZ beyond the normal 10-mile radius.

We have said from the beginning of this crisis that the NRC would analyze this situation for any lessons that can be derived to improve our oversight of U.S. nuclear power plants. Emergency protection planning will be part of that review.

Dave Mc, OPA

From: Bonaccorso, Amy
Sent: Wednesday, March 16, 2011 4:04 PM
To: McIntyre, David
Cc: Deavers, Ron
Subject: FW: Questions NRC RI Is Receiving - RESPONSE NEEDED ASAP
Importance: High

Dave:

Holly told me I should forward this to you.

From: Bonaccorso, Amy
Sent: Wednesday, March 16, 2011 3:52 PM
To: Burnell, Scott
Cc: Deavers, Ron
Subject: FW: Questions NRC RI Is Receiving - RESPONSE NEEDED ASAP
Importance: High

Scott:

Are you downstairs?

I don't know anyone on the PMT. We're isolated from all of the teams with specialized knowledge up here.

From: LIA04 Hoc
Sent: Wednesday, March 16, 2011 3:49 PM
To: Deavers, Ron; Bonaccorso, Amy
Cc: OST05 Hoc; McNamara, Nancy
Subject: FW: Questions NRC RI Is Receiving - RESPONSE NEEDED ASAP
Importance: High

Ron and Amy:

You may wish to touch base with our PMT folks for insights. I can't help on this.

Richard Turtl
State Liaison – Liaison Team
Incident Response Center

From: McNamara, Nancy
Sent: Wednesday, March 16, 2011 3:24 PM
To: LIA04 Hoc; OST05 Hoc
Subject: Questions NRC RI Is Receiving - RESPONSE NEEDED ASAP
Importance: High

1. How is it that the NRC has always defined the emergency planning zone to be out to 10 miles based on worse case scenarios, yet they just recommended a 50 mile evacuation?
2. What does a PAR out to 50 miles say about the current 10 mile EPZ used here in the United States?

Woodruff, Gena

From: OST05 Hoc
Sent: Wednesday, March 16, 2011 9:14 PM
To: Easson, Stuart; Flannery, Cindy; Lukes, Kim; Maupin, Cardelia; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtur, Richard; Virgilio, Rosetta; Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena
Cc: Piccone, Josephine; Jackson, Deborah; LIA04 Hoc; LIA06 Hoc; OST05 Hoc
Subject: State Liaison Staffing in the Op Center

After speaking to the LT Director on duty we will be going to a 7am to 9pm schedule at the State Liaison desk in the Op Center . We are staying with staffing two people during the day. We will also be on call throughout the night if the Director feels it is necessary to call us in they will have the HOO do so.

Rich and I will be signing off shortly and Rosetta and Alison will be back on at 7am tomorrow morning and then Rich and Stu at 2pm.

7am to 2pm and 2pm to 9pm. Close to our 7 to 7 schedule we will just have to double up. I will revisit the schedule tomorrow.

RSLO's if anything comes up during the night please contact the HOO and they will call us. Alison and Rosetta will let you know when they sign on in the morning.

Amanda Noonan
State Liaison – Liaison Team
Incident Response Center

Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Wednesday, March 16, 2011 11:22 PM
To: Charles and Barbara Hackney; Bob Newlin; Mitch & Carol Carnell; ' Hunt (?)'; 'Al Belisle
'; 'Al Gibson'; 'Al Herdt'; 'Al Ignatonis'; 'Bill Kleinsorge'; 'Bill Miller'; 'Bill Tobin'; [REDACTED] (b)(6) 'Bob
Wright'; 'Bob/Angie Martin'; 'Bruce Mallett'; 'Ed Girard Kreeger'; 'Hugh Dance'; [REDACTED] (b)(6); 'Jim Coley Hufham'; 'Ken Clark'; 'Kerry Landis Plisco'; Luis Reyes; Milt Shymlock; Nancy Sanford; 'Nick Economos
'; 'Taylor'; 'Uryc'; 'Woodruff, Gena
Subject: Timely advice

I was interested to find this piece.

joe

Joe T. Gilliland

[REDACTED]
(b)(6)

*Los Angeles Times
March 16, 2011*

Potassium iodide can be dangerous if taken incorrectly

By Shari Roan, Los Angeles Times

Potassium iodide supplements are flying off drug-store shelves in the United States, according to a number of reports. There are two reasons why this is not a good thing. One, experts have repeatedly reassured Americans that any radiation from the leaking nuclear reactors in Japan will not be a threat in this country. The radiation will dissipate as it traverses the Pacific Ocean. Buying it is a waste of money.

Two, taking potassium iodide tablets without just cause can be risky for some people, health experts warned Wednesday.

"All of the predictions are that there will not be enough radiation reaching Hawaii or the West Coast to be of any concern, said Dr. Leonard Wartofsky, an endocrinologist at the Uniformed Services University of Health Sciences in Bethesda, Md., and a past president of the Endocrine Society. "Although in Japan, especially among those living very close to the reactor, there is major exposure and there is reason to take iodide tablets or solution."

Potassium iodide is not recommended until radiation levels are in the 50-rad region, he said. "It's not going to be anywhere near that in the United States. It's hitting the panic button unnecessarily."

In cases of true radiation exposure, the benefits of potassium iodide outweigh the risks.

Taking stable iodide tablets can protect the thyroid from exposure to radioactive iodine-131 by "filling up" the gland and preventing it from taking up the radioactive iodine. But potassium iodide can be harmful to people who are allergic to the substance or who have the skin disorders dermatitis herpetiformis or urticaria vasculitis, according to the Centers for Disease Control and Prevention.

People with thyroid disorders who take the substance can experience a worsening of their thyroid illnesses, Wartofsky said. If potassium iodide is truly necessary for these people, they should take it under a doctor's supervision. Pregnant women and infants should not be given potassium iodide because it could cause a serious thyroid disorder in infants.

The supplements can cause some side effects including nausea, rashes and inflammation of the salivary glands.

Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Wednesday, March 16, 2011 11:38 PM
To: Charles and Barbara Hackney; Bob Newlin; Mitch & Carol Carnell; ' Hunt (?)'; 'Al Belisle
'; 'Al Gibson'; 'Al Herdt'; 'Al Ignatonis'; 'Bill Kleinsorge'; 'Bill Miller'; 'Bill Tobin' [REDACTED] (b)(6); 'Bob Wright'; 'Bob/Angie Martin'; 'Bruce Mallett'; 'Ed Girard'; 'Hellan Kreeger'; 'Hugh Dance'; [REDACTED] (b)(6); 'Jim Coley'; 'Jim Hufham'; [REDACTED] (b)(6); 'Ken Clark'; 'Kerry Landis Plisco'; Luis Reyes; Milt Shymlock; Nancy Sanford; 'Nick Economos'; 'Phil Stohr
'; 'Taylor'; 'Uryc'; 'Woodruff, Gena'
Subject: NY Times story on chairman's testimony

This story fills out the import of Chairman Jaczko's testimony that was not apparent when I watched most of the streamed video of the Senate committee hearing Wednesday afternoon. It appears on reading it that The Times interviewed the chairman Wednesday night to clarify some points of his testimony.

joe

Joe T. Gilliland

[REDACTED]
(b)(6)

*The New York Times
March 16, 2011
(posted online, prepared for the March 17 print edition)*

U.S. Calls Radiation 'Extremely High,' Sees Japan Nuclear Crisis Worsening

By DAVID E. SANGER, MATTHEW L. WALD and HIROKO TABUCHI

WASHINGTON — The chairman of the United States Nuclear Regulatory Commission gave a far bleaker appraisal on Wednesday of the threat posed by Japan's nuclear crisis than the Japanese government had offered. He said American officials believed that the damage to at least one crippled reactor was much more serious than Tokyo had acknowledged, and he advised Americans to stay much farther away from the plant than the perimeter established by Japanese authorities.

The announcement opened a new and ominous chapter in the five-day-long effort by Japanese engineers to bring the six side-by-side reactors under control after their cooling systems were knocked out by an earthquake and a tsunami last Friday. It also suggested a serious split between Washington and its closest Asian ally at an especially delicate moment.

The Congressional testimony by Gregory Jaczko, the chairman of the commission, was the first time the Obama administration had given its own assessment of the condition of the plant, apparently mixing information it had received from Japan with data it had collected independently.

Mr. Jaczko's most startling assertion was that there was now little or no water in the pool storing spent nuclear fuel at the No. 4 reactor of the Fukushima Daiichi Nuclear Power Station, leaving fuel rods stored there exposed and bleeding radiation into the atmosphere.

As a result, he said, "We believe that radiation levels are extremely high, which could possibly impact the ability to take corrective measures."

His statement was quickly but not definitively rebutted by officials of Tokyo Electric Power, the Daiichi's plant's operator, and Japan's nuclear regulatory agency.

"We can't get inside to check, but we've been carefully watching the building's environs, and there has not been any particular problem," said Hajime Motojuku, a spokesman for Tokyo Electric. Speaking on Thursday morning in Japan, Takumi Koyamada, a spokesman for the regulatory agency, said that when it was checked 12 hours earlier, water remained in the spent fuel pool at reactor No. 4.

"We cannot confirm that there has been a loss in water," he said.

On Wednesday night, Mr. Jaczko reiterated his earlier statement and added that commission representatives in Tokyo had confirmed that the pool was empty. He said Tokyo Electric and other officials in Japan had confirmed that, and also stressed that high radiation fields were going to make it very difficult to continue having people work at the plant.

If the American analysis is accurate and emergency crews at the plant have been unable to keep the spent fuel at that inoperative reactor properly cooled — it needs to remain covered with water at all times — radiation levels could make it difficult not only to fix the problem at reactor No. 4, but to keep servicing any of the other problem reactors at the plant. In the worst case, experts say, workers could be forced to vacate the plant altogether, and the fuel rods in reactors and spent fuel pools would be left to meltdown, leading to much larger releases of radioactive materials.

While radiation levels at the plant have varied tremendously, Mr. Jaczko said that the peak levels reported there "would be lethal within a fairly short period of time." He added that another spent fuel pool, at Reactor No. 3, might also be losing water and could soon be in the same condition.

On Thursday morning, Japan's Self-Defense Forces started dumping water from a helicopter on reactor No. 3. The helicopter made at least several passes, according to images shown on NHK, the public broadcaster.

On Wednesday, the American Embassy in Tokyo, on advice from the Nuclear Regulatory Commission, told Americans to evacuate a radius of "approximately 50 miles" from the Fukushima plant.

The advice to Americans in Japan represents a graver assessment of the risk in the immediate vicinity of Daiichi than the warnings made by the Japanese themselves, who have told everyone within 20 kilometers, about 12 miles, to evacuate, and those 20 to 30 kilometers to take shelter. While maps of the plume of radiation being given off by the plant show that an elongated cloud will stretch across the Pacific, American officials said it would be so dissipated by the time it reached the West Coast of the United States that it would not pose a health threat.

"We would recommend an evacuation to a much larger radius than has currently been provided by Japan," Mr. Jaczko said. That assessment seems bound to embarrass, if not anger, Japanese officials, suggesting they have miscalculated the danger or deliberately played down the risks.

It was not immediately clear how many people live within the zone around the plant that American officials believed should be evacuated. But the zone gets far closer to the city of Sendai, with its population of one million, which took the brunt of the earthquake last week.

At a hearing on Wednesday, Senator Barbara Boxer, chairman of the Senate Environment and Public Works Committee, pointed out that 50 miles could take in a huge number of people; San Onofre, in her home state, California, has seven million people living within that radius, she said.

American officials who have been dealing with their Japanese counterparts report that the country's political and bureaucratic leadership has appeared frozen in place, unwilling to communicate clearly about the scope of the problem and, in some cases, unwilling to accept outside assistance. Two American officials said they believed that the Japanese government itself was not getting a clear picture from the Tokyo Electric Power Company.

"Everything in their system is built to build consensus slowly," said one American official who would not be quoted by name because of the delicacy of discussions with Japan. "And everything in this crisis is about moving quickly. It's not working."

United States Air Force officials announced Wednesday that a Global Hawk remotely piloted surveillance plane would be sent on missions over Japan to help the government assess damage from the earthquake and the tsunami. A Pentagon official said the drone was expected to fly over the stricken nuclear plant.

American officials were careful to offer no public comparisons to past nuclear accidents when discussing the Fukushima disaster. But clearly the crisis in Japan already far outstrips what happened at Three Mile Island in Pennsylvania, where very little radiation escaped a crippled reactor. The effort now is to keep the Japanese crisis, involving at least three reactors that had been in active use before the quake, and three others that were inactive but had storage pools for spent fuel, from escalating to the levels of the worst nuclear disaster in history: Chernobyl.

Though the plant's reactors shut down automatically when the quake struck on Friday, the subsequent tsunami wiped out the backup electronic pumping and cooling system necessary to keep the fuel rods in the reactors and the storage pools for spent nuclear fuel covered with cool water.

The spent fuel pools can be even more dangerous than the active fuel rods, as they are not contained in thick steel containers like the reactor core. As they are exposed to air, the zirconium metal cladding on the rods can catch fire, and a deadly mix of radioactive elements can spew into the atmosphere. The most concern surrounds Cesium-137, which has a half-life of 30 years and can get into food supplies or be inhaled.

Mr. Jaczko (pronounced YAZZ-koe) said radiation levels might make it impossible to continue what he called the “backup backup” cooling functions that have so far helped check the fuel melting inside the reactors. Those efforts consist of using fire hoses to dump water on overheated fuel and then letting the radioactive steam vent into the atmosphere.

Those emergency measures, carried out by a small squad of workers and firefighters, represent Japan’s central effort to forestall a full-blown fuel meltdown that would lead to much higher releases of radioactive material into the air.

Mr. Jaczko’s testimony, the most extended comments by a senior American official on Japan’s nuclear disaster, described what amounts to an agonizing choice for Japanese authorities: keep sending workers into an increasingly contaminated area in a last-ditch effort to cover nuclear fuel with water, or do more to protect the workers but risk letting the pools boil away — and thus risk a broader meltdown.

According to Tokyo Electric's data, the spent fuel pool at the No. 4 reactor contains 548 fuel assemblies that were in use at the reactor until last November, when they were moved to the storage pool on the site. That means that the fuel rods were only recently taken out of active use and that their potential to burn and release radioactivity is higher than spent fuel in storage for a longer period.

Experts say workers at the plant probably could not approach a fuel pool that was dry, because radiation levels would be too high. In a normally operating pool, the water not only provides cooling but also shields workers from gamma radiation.

Earlier in the day, Japanese authorities announced a different escalation of the crisis at Daiichi when they said that a second reactor unit at the plant might have suffered damage to its primary containment structure and appeared to be releasing radioactive steam.

The break, at the No. 3 reactor unit, worsened the already perilous conditions at the plant, a day after officials said the containment vessel in the No. 2 reactor had also cracked.

Woodruff, Gena

From: LIA04 Hoc
Sent: Thursday, March 17, 2011 7:54 AM
To: Powell, Amy
Cc: 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; Turtl, Richard; Virgilio, Rosetta
Subject: Chairman Remarks

Amy – Can we get a copy of the Chairman's oral statement yesterday before Congress?
I understand the written statement was focused on the budget – before the event in Japan took place, and that his remarks were updated.

Thanks much.

Rosetta Virgilio
State Liaison
NRC Emergency Operations Center
301-816-5193
LIA04.Hoc@nrc.gov

From: Tifft, Doug
Sent: Thursday, March 17, 2011 7:44 AM
To: LIA04 Hoc; OST05 Hoc
Cc: Nguyen, Quynh; McNamara, Nancy
Subject: chairman remarks

Is a transcript available of the Chairman's remarks yesterday? Nancy and I had trouble connecting to the webcast.

-Doug
NRC Regional State Liaison Officer
Office: 610-337-6918
Cell: (b)(6)

Travick, Vanette

From: McCree, Victor
Sent: Thursday, March 17, 2011 9:14 AM
To: Nease, Rebecca; Wert, Leonard
Subject: RE: 0730 Cmr Briefing

Got it, thanks.

From: Nease, Rebecca
Sent: Thursday, March 17, 2011 8:55 AM
To: McCree, Victor; Wert, Leonard
Subject: 0730 Cmr Briefing

Status of Units:

1, 2, and 3: Status remains the same
Salt-water injections continue
Level in reactors is approx ½ ht of fuel
Containments appear intact; however, there are mixed reports on Units 2 and 3 (he didn't explain)

Unit 4: TEPCO requested recommendations, saying SFP would not hold water; however, has backed off, and now says there is some water.
We see no evidence of water in the SFP. Vapor is rising from other SFPs, but not from U4 SFP.

Unit 4 reactor bldg received worst damage.

(b)(5)

5 and 6: Cooling established in SFPs

Dose rates: New info that the dose has increased to 150 mR/hr
375R/hr at 300' above Unit 3

Japanese: Working on getting electrical power to the site – expect power to 2, 5, and 6 today and to 1, 3, and 4 tomorrow.

(b)(5)

Media reports use of water cannons, but cannot confirm.

Pumps delivered approx 9 hrs ago. We have no info on how the pumps will be used. Japanese have no plans to send anyone into harm's way.

Focused on using water cannons, right now.

(b)(5)

PMT: Just getting in radiological data from a fly-over and analysis is in progress
Requested (last night) to develop dose projections in CA. We will work with RES and Sandia to perform this dose calc.

(b)(5)

(b)(5)

Working to clarify info in NRC press release, in case we get questions. (earlier brfg, someone said that the info might be confusing)

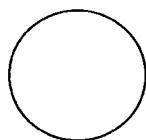
Travick, Vanette

From: McCree, Victor
Sent: Thursday, March 17, 2011 9:15 AM
To: Wert, Leonard
Subject: RE: Japan Situation

K got it

From: Wert, Leonard
Sent: Thursday, March 17, 2011 8:32 AM
To: McCree, Victor
Subject: FW: Japan Situation

From: Boger, Bruce
Sent: Thursday, March 17, 2011 8:31 AM
To: Tracy, Glenn
Cc: Leeds, Eric; Nelson, Robert; Wert, Leonard; Lew, David; Miller, Mark; Cohen, Miriam
Subject: Japan Situation



Glenn, Relative to the NRC folks in Japan, have folks been considering how to interact with their families to share information on what's going on in Japan? Perhaps the travelers have been able to achieve regular phone contact, but now with a voluntary evacuation a greater concern at home may exist. Your thoughts?
Bruce

Romano, Michelle

From: Romano, Michelle
Sent: Thursday, March 17, 2011 9:32 AM
To: (b)(6) Elizabeth.Downey@clorox.com'
Subject: FW: ISIS Statement on Events at Fukushima Daiichi Nuclear Site in Japan

FYI... this may give a little perspective, but was from Tuesday.

From: ISIS [mailto:isis@isis-online.org]
Sent: Tuesday, March 15, 2011 11:59 AM
To: Romano, Michelle
Subject: ISIS Statement on Events at Fukushima Daiichi Nuclear Site in Japan

Institute for Science and International Security

ISIS REPORT

ISIS Statement on Events at Fukushima Daiichi Nuclear Site in Japan

March 15, 2011

ISIS assesses that the situation at the Fukushima Daiichi nuclear plant has worsened considerably. The explosion in the Unit 2 reactor, the third so far, and the fire in the spent fuel pond in the reactor building for Unit 4 means that this accident can no longer be viewed as a level 4 on the International Nuclear and Radiological Events (INES) scale that ranks events from 1 to 7. A level 4 incident involves only local radiological consequences. This event is now closer to a level 6, and it may unfortunately reach a level 7. A level 6 event means that consequences are broader and countermeasures are needed to deal with the radioactive contamination. A level 7 event would constitute a larger release of radioactive material, and would require further extended countermeasures. The international community should increase assistance to Japan to both contain the emergency at the reactors and to address the wider contamination. We need to find a solution together.

Visit the Japan country page on the ISIS website [here](#).

Institute for Science and International Security (ISIS)
236 Massachusetts Ave. NE
Suite 305
Phone: 202 547 3633
Email: ISIS@ISIS-Online.org
Washington, DC 20002

To remove your email from this mailing list, [Unsubscribe](#)

Romano, Michelle

From: Romano, Michelle
Sent: Thursday, March 17, 2011 9:33 AM
To: [REDACTED] (b)(6) 'Elizabeth.Downey@clorox.com'
Subject: FW: New Satellite Image of Fukushima Daiichi Nuclear Site in Japan, March 16

A couple pictures that describe the damage...

From: ISIS [<mailto:isis@isis-online.org>]
Sent: Wednesday, March 16, 2011 10:00 AM
To: Romano, Michelle
Subject: New Satellite Image of Fukushima Daiichi Nuclear Site in Japan, March 16

Institute for Science and International Security

ISIS IMAGERY BRIEF

March 16, 2011

New Satellite Image of Fukushima Daiichi Nuclear Site in Japan From March 16, 2011

DigitalGlobe has released a new satellite image of the Fukushima Daiichi Nuclear site in Japan taken at 9:35AM local time on March 16, 2011. Damage to the Unit 1 reactor building from a previous explosion can still be seen. Damage to the Unit 3 reactor building from an explosion can be seen as well. Steam can still be seen emitted from the top of the damaged building. The angle of this new image, however, shows what appears to be more extensive damage to the Unit 3 reactor building than can be seen in previous satellite imagery. The image also shows damage to the reactor building for Unit 4 from an explosion. Steam can be seen venting out of a hole in the side of the reactor building for Unit 2. Workers likely removed a panel in the side of the building to vent the steam.

Additional imagery shows the reactor buildings for Units 5 and 6. The side and roof of the buildings appear intact and there is no sign of steam venting from the buildings.

See the full report imagery here: [New Satellite Image of Fukushima Daiichi Nuclear Site in Japan From March 16, 2011](#)

Institute for Science and International Security (ISIS)
236 Massachusetts Ave. NE
Suite 305
Phone: 202 547 3633
Email: ISIS@ISIS-Online.org
Washington, DC 20002

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Travick, Vanette

From: McCree, Victor
Sent: Thursday, March 17, 2011 9:37 AM
To: Caballero, Bruno
Subject: RE: Japan

The earliest date would be March 28..., but you are one of about 50 people who have "volunteered" to support this effort...and you may not be asked to go at all, or if so, much later. But, again, the earliest date would be March 28.

Vic

From: Caballero, Bruno
Sent: Thursday, March 17, 2011 8:58 AM
To: McCree, Victor
Subject: Japan

Victor,

If I'm needed to assist in Japan, do you have an estimate on the departure date? (I'm going to Brunswick on Monday.) I do have my international passport ready.

bruno

Seymour, Deborah

Subject: FW: CCI Division Meeting with ORA
Location: R2-945-30p

Start: Thu 3/17/2011 10:00 AM
End: Thu 3/17/2011 10:30 AM
Show Time As: Tentative

Recurrence: (none)

Meeting Status: Not yet responded

Organizer: R2-945-30p

I think you should call in to this tomorrow. Please plan to do so. Thanks, Deb

-----Original Appointment-----

From: Sloan, Kimberly **On Behalf Of** R2-945-30p
Sent: Wednesday, March 16, 2011 1:46 PM
To: R2-945-30p; R2CCI1; Wert, Leonard; Orr, Laura; Dubose, Sheila
Cc: Miles, Patricia; Piccirillo, Darren; Michel, Eric; Karlovich, Nicholas; Crespo, Guillermo; Masters, Anthony; Freeman, Scott; Even, Christopher; Adkins, Brannen; Jones, Carl; Khouri, George; Gardner, George; Yerokun, Jimi
Subject: CCI Division Meeting with ORA
When: Thursday, March 17, 2011 10:00 AM-10:30 AM (GMT-05:00) Eastern Time (US & Canada).
Where: R2-945-30p

ORA to discuss the status and events of Japan.

Added Info:

Bridge Line: 888-946-7306

Passcode: (b)(6)

Woodruff, Gena

From: Joe Gilliland [REDACTED] (b)(6)
Sent: Thursday, March 17, 2011 10:30 AM
To: Charles and Barbara Hackney; Bob Newlin; Mitch & Carol Carnell; ' Hunt (?); 'Al Belisle
'; 'Al Gibson ; 'Al Herdt ; 'Al Ignatonis ; 'Bill
Kleinsorge'; 'Bill Miller ; 'Bill Tobin ; [REDACTED] (b)(6) ; 'Bob
Wright ; 'Bob/Angie Martin ; Bruce Mallett; 'Ed Girard ; 'Hellan
Kreeger'; 'Hugh Dance [REDACTED] (b)(6) ; 'Jim Coley ; 'Jim
Hufham ; [REDACTED] (b)(6) ; 'Ken Clark'; 'Kerry Landis ; 'Loren
Plisco; Luis Reyes; Milt Shymlock; Nancy Sanford; 'Nick Economos ; 'Phil Stohr
'; 'Taylor ; 'Uryc ; Woodruff, Gena
Subject: Another update

In the news this morning:

- From a Washington Post breaking news alert at 12:56 a.m. today: The State Department announced Wednesday night that it would arrange charter flights to evacuate family members of U.S. diplomats from Tokyo and other parts of northern Japan. Undersecretary Patrick Kennedy said the flights may also be made available to private U.S. citizens who are unable to get flights out of the country. The Pentagon said that it would extend the offer to eligible dependents of its officials as well. The U.S. Embassy in Tokyo will remain open, and the evacuations are voluntary, Kennedy said.
http://www.washingtonpost.com/world/japans-emperor-akihito-urges-quake-devastated-nation-to-share-the-burden/2011/03/16/ABsYvRd_story.html?wpisrc=nl_natlalert

(By later this morning, the item about the State Department announcement was moved down into a more comprehensive story about ongoing efforts by the Japanese government to deal with the emergency.)

- The Washington Post also reports that China's State Council is suspending approval for all new nuclear power plants until the government could issue revised safety rules, in light of the unfolding crisis at the Fukushima Daiichi nuclear facility in Japan. German Chancellor Angela Merkel said seven older nuclear plants in her country will be shut down while safety tests are conducted. Switzerland has announced that it will freeze plans to build or replace plants, and Austria has called for "stress tests" for such facilities across Europe. (http://www.washingtonpost.com/world/china-suspends-all-new-nuclear-plants-orders-safety-review/2011/03/16/ABZHULD_story.html)
- Japanese authorities have been using military fire trucks, helicopters and water cannons in efforts to spray water on overheating spent fuel rods at the No. 3 Fukushima reactor, which uses mixed oxide fuel. The New York Times:
http://www.nytimes.com/2011/03/18/world/asia/18nuclear.html?_r=1&hp
- The Times has a short feature about the Indian Point facility 35 miles north of New York City, with a headline reading: **Living With a Nuclear Question Mark in the Backyard.**
(<http://www.nytimes.com/2011/03/17/nyregion/17towns.html?hp>)
- The Associated Press has moved a story from Tokyo, written by a Japanese reporter, that describes the nuclear power establishment this way in its lead paragraph: "TOKYO — Behind Japan's escalating nuclear crisis sits a scandal-ridden energy industry in a comfy relationship with government regulators often willing to overlook safety lapses." Atlanta Journal Constitution,
<http://www.ajc.com/business/bungling-cover-ups-define-875426.html>.
- A Wall Street Journal story reports on questions being raised about U.S. plants located on or near earthquake faults. Among other things, it cites a disagreement between the California Energy

Commission and the utilities about the safety of both Diablo Canyon and San Onofre.
<http://online.wsj.com/article/SB10001424052748704396504576204672681780248.html>

joe

Joe T. Gilliland

(b)(6)

Bartleman, John

From: jeff guthrie [REDACTED] (b)(6)
Sent: Thursday, March 17, 2011 10:38 AM
To: Bartleman, John
Subject: Re: CSpan - Jaczko
Attachments: image001.png

<http://www.c-span.org/Events/Congress-looks-at-Nuclear-Safety-and-Crisis-in-Japan/10737420229-3/>

On Thu, Mar 17, 2011 at 10:25 AM, jeff guthrie <[REDACTED] (b)(6)> wrote:
Thanks! Great talking to you. I'll do some research and let you what's coming up. Jeff

On Thu, Mar 17, 2011 at 9:34 AM, Bartleman, John <John.Bartleman@nrc.gov> wrote:

Hey Jeff.

Good to hear from you. I did not get to see or hear the discussion, but I looked for it on the web and found I could buy it for \$30. I guess I will wait for short version to get released to us in one of his memos to the staff. Yes, we have all been wondering what is going on and as you know it is sometimes to listen to the good number of erroneous statements being made on TV over almost anything nuclear. Since half of what you hear is not correct or misrepresented. I sure was good to see you again January. Next time we see each other let's make sure we get together for dinner or do something to catch up more.

[REDACTED] (b)(6)
[REDACTED] (b)(6). However, I am sure there will be at least some delays in building new plants. I just hope it doesn't stop it all together. Just when things were picking up in Nuclear Power all this mess had to happen. Oh well, hopefully things will stay on track here in this country but will probably have some delays. We will all find out more in the future on this ordeal. I am sure that there will be some additional improvements to nuclear power this time just as there was after TMI. Well my two cents worth anyway.

Respectfully,



John Bartleman, P.E.

Senior Construction Inspector (CIB3)

U.S. NRC - Region II, Center for Construction Inspection

245 Peachtree Center Ave., Suite 1200

Atlanta, GA 30303-1257

Office Phone No.: (404) 997-4408

Office Fax No.: (404) 997-4902

E-Mail Address: John.Bartleman@nrc.gov

From: jeff guthrie [mailto:(b)(6)]
Sent: Thursday, March 17, 2011 7:09 AM
To: Bartleman, John
Subject: CSpan - Jaczko

Hi John,

I watched Mr. Jaczko on CSpan yesterday, he did a great job! There've been so many know-it-alls lately on every news station trying for ratings, it was good to hear him speak in generality when so much information is yet unknown. Any yet, very knowledgeable on every question poise about the US industry. None of those professional politicians were able to break his composure.

He provided great reassurance that the NRC is an open, conservative organization that's firm in its knowledge and technical oversight of the US plants.

Good luck, I'm sure you guys are much busier these days.

Jeff

(b)(6)

(b)(6)

Michel, Eric

From: Ogle, Chuck
Sent: Thursday, March 17, 2011 11:37 AM
To: R2DCI
Subject: FW: Launch of FAQ Related to Events Occuring in Japan

Importance: High

Here's the Q&A that Vic mentioned. Please note the OOO designations.

From: McCree, Victor
Sent: Wednesday, March 16, 2011 10:00 AM
To: Gody, Tony; Croteau, Rick; Munday, Joel
Cc: Hannah, Roger; Ledford, Joey; Wert, Leonard; Jones, William; Cobey, Eugene; Ogle, Chuck; Moorman, James
Subject: AFW: Launch of FAQ Related to Events Occuring in Japan
Importance: High

Shown below is a link to a (sensitive) Sharepoint site that contains Q&A's associated with the events occurring in Japan [in particular, see the file "**Chairman JaczkoQA7_031511.docx**"]. I believe these Q&As, which are being updated regularly, will be very useful to the Branch Chiefs and Division Directors who will participate in the upcoming ROP EOC public meetings and Fuel Cycle Facility LPRs.

Please note that the document includes 2 types of answers (a "Public Answer" and "Additional technical, non-public information") and use the information accordingly.:

Thanks, Vic

From: Trojanowski, Robert
Sent: Wednesday, March 16, 2011 8:07 AM
To: McCree, Victor; Wert, Leonard
Subject: FW: Launch of FAQ Related to Events Occuring in Japan
Importance: High

Vic-----FYI-----As we discussed-----Bob

From: Nguyen, Quynh
Sent: Tuesday, March 15, 2011 1:16 PM
To: Thomas, Eric; Sigmon, Rebecca; Powell, Amy; Riley (OCA), Timothy; Browder, Rachel; Erickson, Randy; Tifft, Doug; McNamara, Nancy; Trojanowski, Robert; Woodruff, Gena; Barker, Allan; Logaras, Harral; Maier, Bill
Cc: Stone, Rebecca; Westreich, Barry; Scales, Kerby; Leeds, Eric; Boger, Bruce; Grobe, Jack; Diec, David; Deegan, George; Williams, Donna; Rini, Brett; Wittick, Brian; Andersen, James; Brenner, Eliot; Couret, Ivonne; Burnell, Scott; Harrington, Holly; Azeem, Almas; Cartwright, William; Cusumano, Victor; Heida, Bruce; Mahoney, Michael; Meighan, Sean; Nguyen, Quynh; Roquecruz, Carla; Susco, Jeremy; Titus, Brett; Valentine, Nicholee; Wertz, Trent; Bahadur, Sher; Blount, Tom; Brown, Frederick; Cheok, Michael; Evans, Michele; Galloway, Melanie; Giitter, Joseph; Givvines, Mary; Hiland, Patrick; Holian, Brian; Howe, Allen; Lee, Samson; Lubinski, John; Lund, Louise; McGinty, Tim; Nelson, Robert; Quay, Theodore; Ruland, William; Skeen, David
Subject: Launch of FAQ Related to Events Occuring in Japan
Importance: High

All,



Per Eric Leeds' request and working closely with NSIR and OPA...

The below SharePoint link is the location of our INTERNAL USE ONLY activities regarding the Japan Events and the effects on their nuclear operations. Again, NO PUBLIC RELEASE of any documents.

Given lessons learned from 9-11, we want to ensure clear, concise messages in alignment with the Chairman and focus of our safety mission in the United States. To this end, we established this SharePoint as a centralized location to collect our questions from stakeholders and our draft responses. These draft responses will be vetted by OPA and once approved by OPA – it is OK for use by the staff to answer questions from stakeholders.

As such, please understand that, while we are doing our best to be timely with the most up-to-date information, it is more important to ensure accurate information is being posted.

<http://portal.nrc.gov/edo/nrr/NRR%20TA/FAQ%20Related%20to%20Events%20Occuring%20in%20Japan/Forms/AllItems.aspx>

Note: "Chairman JaczkoQA7_031511" contains parts that are PUBLIC and additional information for NRC staff.

All correspondence to the public should be directed to our Office of Public Affairs (OPA)!

Additionally, if questions arise out of the Region, please let us know. We'll do our best to coordinate the answer and ensure that we get OPA's blessing.

Thank you for all your support during this time and understanding!

POC:

Quynh Nguyen (301) 415-5844; BlackBerry

(b)(6)

Sean Meighan (301) 415-1020

Romano, Michelle

From: Romano, Michelle
Sent: Thursday, March 17, 2011 10:50 AM
To: 'Nick Romano'
Subject: dr hertel quoted

<http://thechart.blogs.cnn.com/2011/03/15/what-you-should-know-about-radiation/?hpt=Sbin>

Hutto, Andy

From: Hutto, Andy
Sent: Thursday, March 17, 2011 11:15 AM
To: 'Ramseur, Timothy S'
Subject: RE: Japan

Tim,

I am not aware of the specifics of what recommendations/expertise we are providing in Japan. A consolidated contact number for information related to the Japanese reactor situation with respect to what we are doing is 301-415-8200.

From: Ramseur, Timothy S [<mailto:Timothy.Ramseur@duke-energy.com>]
Sent: Thursday, March 17, 2011 10:33 AM
To: Hutto, Andy
Subject: Japan

Andy,

It appears the water they are dropping on the cores is dispersing in the air. Has the NRC suggested to them to evaluate something similar to a large water balloon/bladder so the water gets there intact. I don't believe FME would be an issue with the high temps.

Tim Ramseur
Catawba Nuclear Station
Operations Training Instructor
Mail Code CT01A
803-701-5154

Travick, Vanette

From: McCree, Victor
Sent: Thursday, March 17, 2011 12:33 PM
To: Wert, Leonard
Cc: Munday, Joel; Bernhard, Rudolph
Subject: RE: Passport Renewal

Ok, got it, thanks

From: Wert, Leonard
Sent: Thursday, March 17, 2011 11:57 AM
To: McCree, Victor
Cc: Munday, Joel; Bernhard, Rudolph
Subject: Passport Renewal

Vic,

Probably not urgent need now, but I'll have my renewed passport no later than next Tuesday am. Pretty impressive, the expedite service I used waived all their fees, I only had to pay the State Dept fees. They indicated that they are doing this for all those going to Japan in the near term. Very good thing they are doing, absorbing some costs on their own, considering it their contribution to helping out with the situation. Len

Travick, Vanette

From: McCree, Victor
Sent: Thursday, March 17, 2011 12:34 PM
To: Kolcum, Gregory
Subject: RE: Available for Japan assistance

Ok, thanks.

From: Kolcum, Gregory
Sent: Thursday, March 17, 2011 11:47 AM
To: McCree, Victor
Subject: Available for Japan assistance

I want to let you know that I stand ready to support the NRC's efforts in providing whatever assistance is necessary for the Japan multiple nuclear plant events.

Best regards,
Greg

Gregory Kolcum
U.S. Nuclear Regulatory Commission
Resident Inspector
Region 2/Branch 4/Brunswick Plant
8470 River Road SE
Southport, NC 28461
910.457.9532

Travick, Vanette

From: McCree, Victor
Sent: Thursday, March 17, 2011 12:36 PM
To: Rapp, Curtis
Subject: RE: Japan support

Ok, thanks.

From: Rapp, Curtis
Sent: Thursday, March 17, 2011 10:22 AM
To: McCree, Victor
Subject: Japan support

Victor:
I am available to support the NRC staff assisting in Japan after July 9th.

Travick, Vanette

From: McCree, Victor
Sent: Thursday, March 17, 2011 12:37 PM
To: OBryan, Phil
Subject: RE: ~~FOR OFFICIAL USE ONLY~~ - 0700 EDT (March 17, 2011) USNRC Earthquake/Tsunami SitRep ~~FOR OFFICIAL USE ONLY~~

Ok, got it, thanks Phil.

From: OBryan, Phil
Sent: Thursday, March 17, 2011 10:04 AM
To: McCree, Victor
Subject: RE: ~~FOR OFFICIAL USE ONLY~~ - 0700 EDT (March 17, 2011) USNRC Earthquake/Tsunami SitRep - ~~FOR OFFICIAL USE ONLY~~

Vic, I'd be willing to help in any way I can including travel to Japan. Recall that my technical credentials include SRI at a PWR and BWR, Masters of Nuclear Engineering, and training in accident sequencing at Bettis Atomic Power Labs.

Phil

From: McCree, Victor
Sent: Thursday, March 17, 2011 9:49 AM
To: R2MAIL; R2_RESIDENT_SITES
Subject: ~~FOR OFFICIAL USE ONLY~~ - 0700 EDT (March 17, 2011) USNRC Earthquake/Tsunami SitRep - ~~FOR OFFICIAL USE ONLY~~

~~FOR OFFICIAL USE ONLY~~

Attached, for your information, is the 0700, March 17, 2011, NRC situation report regarding the impacts of the earthquake/tsunami event. For your convenience, I (yellow) highlighted several of the noteworthy status items. As a reminder, this information is considered ~~FOR OFFICIAL USE ONLY~~ and is not to be distributed outside the agency.

Vic

~~FOR OFFICIAL USE ONLY~~

Desai, Binoy

From: Higgins, Patrick
Sent: Thursday, March 17, 2011 1:40 PM
To: Desai, Binoy
Subject: RE: Action: Consider potential on-site activities in near-term

Binoy

(b)(5)

PH

From: Desai, Binoy
Sent: Thursday, March 17, 2011 12:58 PM
To: R2DRS_EB1; Su, Teh-Chiun; Walker, Shakur; Sandal, Shane
Subject: FW: Action: Consider potential on-site activities in near-term
Importance: High

Please provide comments on the TI by this evening. Binoy Thanks

From: Munday, Joel
Sent: Thursday, March 17, 2011 12:25 PM
To: Desai, Binoy; Nease, Rebecca
Cc: Hopper, George
Subject: FW: Action: Consider potential on-site activities in near-term
Importance: High

Please have a couple of folks look at this. You may want to weigh in also. It is not very long. Please send your comments to me and George Hopper. I think he may be consolidating a response.

The question was raised on whether the INPO document could be sent to staff reviewing the TI. The answer is yes with the following understanding:

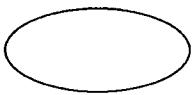
An INPO Event Report Importance Level 1 (IER Level 1)document has been issued on the "Fukushima Daiichi Nuclear Station Fuel Damage Caused by Earthquake and Tsunami." (Reminder: INPO documents are considered proprietary information, not for public distribution)

Sorry, I should have made that clear in the first e-mail.

Tim

From: Kobetz, Timothy
Sent: Thursday, March 17, 2011 10:54 AM
To: Hopper, George; Lara, Julio; Powell, Raymond; Hay, Michael
Cc: Roberts, Darrell; Clifford, James; Croteau, Rick; Jones, William; OBrien, Kenneth; Kennedy, Kriss; Shear, Gary; Pruitt, Troy; Westreich, Barry; West, Steven; Vegel, Anton; Wilson, Peter; Miller, Chris; Weerakkody, Sunil; OBrien, Kenneth;

Reynolds, Steven; Munday, Joel; Moorman, James; Christensen, Harold; Brown, Frederick; Albert, Ronald; Erlanger, Craig; Thomas, Eric; Thorp, John; Ashley, MaryAnn; Cutler, Iris
Subject: Action: Consider potential on-site activities in near-term
Importance: High



Dear George, Julio, Ray, and Mike,

As I discussed by phone with each of you today, due to the events in Japan, DIRS intends to issue a TI for follow-up on domestic plants. It is based (heavily based) on the INPO Event Report – Level 1 that was issued on Tuesday. Here are the highlights:

- It reviews licensee verification of INPO recommendations
- The main focus of the inspection is to assess the licensee's verification, not perform an independent inspection.
- It references applicable NRC inspection guidance when possible (please add on as necessary).
- We have forwarded a copy to INPO to see if they have any objections with us following up on their recommendations.
- It recommends 40 hours per site and allows the regions to take credit for the baseline inspections if possible (I do expect a lot of feedback on the level of effort).
- The information gathered from this TI will be used to evaluate industry's readiness for a similar event and to aid in evaluating whether additional NRC regulatory actions are warranted.

Please coordinate the regional review and comment on it by COB Friday (March 18) and I will update the TI accordingly over the weekend. However, I fully understand the significance of this review so if you need extra time (say until COB on Monday or later) just let me know. Please send your comments to me (timothy.kobetz@nrc.gov) and to Iris Cutler (iris.cutler@nrc.gov).

I will be out of the office this afternoon but can be reached via e-mail or my cell phone ((b)(6)) when possible.

I appreciate your efforts on this and apologize for going "out of process" for this review but I think you understand why.

Also attached is the INPO document for reference.

Thanks for your efforts on this,

Tim

Attached for review

Inspection Manual Document for Comment (DC 11-10)

TI 2515/183, "Follow-up to Fukushima Daiichi Nuclear Station Fuel Damage Event

DIRS Technical Lead:

Timothy Kobetz, NRR/DIRS/IRIB, 301-415-1932, email, timothy.kobetz@nrc.gov

The is a new document so it represents a significant change.

From: Brown, Frederick
Sent: Wednesday, March 16, 2011 3:15 PM
To: Kobetz, Timothy

Subject: FW: Action: Consider potential on-site activities in near-term

Importance: High

Tim,

Your action. How quickly can we do a TI out for review?

From: Brown, Frederick

Sent: Wednesday, March 16, 2011 11:17 AM

To: Roberts, Darrell; Clifford, James; Croteau, Rick; Jones, William; Croteau, Rick; Darrell Roberts; James Clifford; Jones, William; Kennedy, Kriss; Shear, Gary; Troy Prueett; West, Steven

Cc: Vegel, Anton; Wilson, Peter; Miller, Chris; Weerakkody, Sunil; OBrien, Kenneth; Reynolds, Steven; Munday, Joel; Moorman, James; Christensen, Harold; Westreich, Barry

Subject: Action: Consider potential on-site activities in near-term

Importance: High

On the DRA call today, I'm going to float the potential for either a smart sample or a TI to look at the following areas:

- Licensee verification of 50.54(hh)(2) current status and readiness;
- Licensee verification of SBO current status and readiness consistent with their coping strategy;
- Licensee verification of Internal and External Flooding design features consistency with their licensing basis; and
- Licensee verification that their 50.54(hh)(2) equipment would survive a seismic event undamaged.

If you have thoughts, I'd like to hear them, and you may want to prep your DRAs.



Thanks,

Fred

Musser, Randy

From: Musser, Randy
Sent: Thursday, March 17, 2011 2:27 PM
To: Guthrie, Eugene; Hopper, George; R2DRP_BRANCHCHIEF
Cc: King, Michael; Taylor, Ryan; Quinones-Navarro, Joylynn; Croteau, Rick; Jones, William
Subject: RE: Action: Consider potential on-site activities in near-term

(b)(5)

From: Guthrie, Eugene
Sent: Thursday, March 17, 2011 2:12 PM
To: Hopper, George; R2DRP_BRANCHCHIEF
Cc: King, Michael; Taylor, Ryan; Quinones-Navarro, Joylynn; Croteau, Rick; Jones, William
Subject: RE: Action: Consider potential on-site activities in near-term

All,

(b)(5)

What are your thoughts?

From: Hopper, George
Sent: Thursday, March 17, 2011 1:16 PM
To: R2DRP_BRANCHCHIEF; Croteau, Rick; Jones, William
Cc: King, Michael; Taylor, Ryan; Quinones-Navarro, Joylynn
Subject: FW: Action: Consider potential on-site activities in near-term

Please take a moment to review this immediate TI (183). It is short and will more than likely be implemented next week (March 23rd) with completion due by June 30th. Read the IER first to understand the short interval of time the licensees have to complete the action items. I suspect the resident staff will be performing the bulk of the TI due to the short fuse on this. Send your comments to Joylynn and cc me.

An INPO Event Report Importance Level 1 (IER Level 1) document has been issued on the "Fukushima Daiichi Nuclear Station Fuel Damage Caused by Earthquake and Tsunami." (Reminder: INPO documents are considered proprietary information, not for public distribution)

George

From: Kobetz, Timothy
Sent: Thursday, March 17, 2011 10:54 AM
To: Hopper, George; Lara, Julio; Powell, Raymond; Hay, Michael
Cc: Roberts, Darrell; Clifford, James; Croteau, Rick; Jones, William; OBrien, Kenneth; Kennedy, Kriss; Shear, Gary; Pruitt, Troy; Westreich, Barry; West, Steven; Vegel, Anton; Wilson, Peter; Miller, Chris; Weerakkody, Sunil; OBrien, Kenneth; Reynolds, Steven; Munday, Joel; Moorman, James; Christensen, Harold; Brown, Frederick; Albert, Ronald; Erlanger,

Craig; Thomas, Eric; Thorp, John; Ashley, MaryAnn; Cutler, Iris
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I will be out of the office this afternoon but can be reached via e-mail or my cell phone ([redacted] (b)(6)) when possible.

I appreciate your efforts on this and apologize for going "out of process" for this review but I think you understand why.

Also attached is the INPO document for reference.

Thanks for your efforts on this,

Tim

Attached for review

Inspection Manual Document for Comment (DC 11-10)

TI 2515/183, "Follow-up to Fukushima Daiichi Nuclear Station Fuel Damage Event
DIRS Technical Lead:

Timothy Kobetz, NRR/DIRS/IRIB, 301-415-1932, email, timothy.kobetz@nrc.gov

The is a new document so it represents a significant change.

From: Brown, Frederick
Sent: Wednesday, March 16, 2011 3:15 PM
To: Kobetz, Timothy
Subject: FW: Action: Consider potential on-site activities in near-term
Importance: High

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Sent: Wednesday, March 16, 2011 11:17 AM

To: Roberts, Darrell; Clifford, James; Croteau, Rick; Jones, William; Croteau, Rick; Darrell Roberts; James Clifford; Jones, William; Kennedy, Kriss; Shear, Gary; Troy Pruett; West, Steven

Cc: Vegel, Anton; Wilson, Peter; Miller, Chris; Weerakkody, Sunil; OBrien, Kenneth; Reynolds, Steven; Munday, Joel; Moorman, James; Christensen, Harold; Westreich, Barry

Subject: Action: Consider potential on-site activities in near-term

Importance: High

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- 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

Glenn, Patricia

From: Glenn, Patricia
Sent: Thursday, March 17, 2011 2:27 PM
To: McCree, Victor
Subject: FW: ARTICLE: INFO: China suspends nuclear building plans
Attachments: image001.jpg

FYI – Interesting article

<><><><><><><><><><><><><><><><><><><><>
Patricia D. Glenn
Nuclear Engineer, Fuel Facility Inspector
Division of Fuel Facility Inspection, Region II
United States Nuclear Regulatory Commission
Office: (404) 997-4442
Email: Patricia.Glenn@nrc.gov
<><><><><><><><><><><><><><><><><><>

From: Calle, Joselito
Sent: Thursday, March 17, 2011 12:22 PM
To: Cobey, Eugene; Gepford, Heather; Gody, Tony; Kirby, Janice; McCallie, Karen; R2DFFI_FFIB1; R2DFFI_FFIB2; R2DFFI_FFIB3; Toth, Matthew; Vias, Steven
Subject: FW: ARTICLE: INFO: China suspends nuclear building plans

FYI.

From: Harmon, David
Sent: Thursday, March 17, 2011 12:01 PM
To: R2CCI1
Subject: FW: ARTICLE: INFO: China suspends nuclear building plans

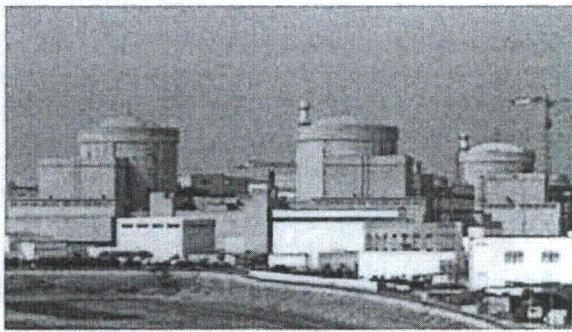
FYI - From ConE folks concerning Japan's accident effects on China

Thanks,
Dave Harmon
404-997-4447

From: Tabatabai, Omid
Sent: Thursday, March 17, 2011 10:53 AM
To: Frye, Timothy; King, Mark; Thorp, John; Beardsley, James; Copeland, Douglas; Craffey, Ryan; Harmon, David; Issa, Alfred; Patel, Jay
Cc: Brown, Frederick; Tappert, John
Subject: ARTICLE: INFO: China suspends nuclear building plans

Just fyi... a BBC report today...

17 March 2011
By Michael Bristow BBC News, Beijing



China has suspended approval for new nuclear power stations following the accident at Japan's Fukushima Daiichi plant. It will also carry out checks at existing reactors and those under construction. China is currently building 27 new reactors - about 40% of the total number being built around the world. The news comes as China grows increasingly worried about the nuclear accident in Japan. The decision to temporarily halt approval for nuclear plants came at a meeting of China's State Council, or Cabinet, chaired by Premier Wen Jiabao. "We will temporarily suspend approval for nuclear power projects, including those that have already begun preliminary work, before nuclear safety regulations are approved," read a statement from the State Council. "Safety is our top priority in developing nuclear power plants." It went on to say that China's medium and long-term nuclear plans would be "adjusted and improved". If there is an accident it will be worse than in Japan because many of the new plants are near high-population areas so we need to be careful"

China currently gets only about 2% of its electricity from nuclear power from 13 reactors, but it has launched an ambitious project to drastically increase those figures. It is currently building more reactors than any other country in the world. According to the World Nuclear Association, China wants to build a total of 110 nuclear reactors over the next few years. This is part of a plan to develop other energy sources - such as wind and solar power - to reduce the country's dependence on coal, which currently supplies about three-quarters of its energy needs. China also recently announced that it had developed its own technology to reprocess spent nuclear fuel, which could be used to run these new power plants. Yang Fuqiang, an energy and climate change expert, said the government's latest move showed it was being responsible. "There are many nuclear power stations under construction at the moment - that's risky. We have to go back and check each one," he said. "If there is an accident it will be worse than in Japan because many of the new plants are near high-population areas so we need to be careful." China's State Council has assured people that the country will not be affected by the radioactive leaks. But shoppers have been buying up vast quantities of salt in many parts of the country, partly in the belief that it could protect them against radiation. Potassium iodide, a salt, protects the thyroid gland against radioactive iodine. Some people also seem to believe future supplies of salt could be contaminated by radiation leaking from the Daiichi nuclear plant, so they are buying up stocks now. "We need to dispel rumours. Don't let Japan's nuclear crisis become China's salt crisis," said an online commentator. Pharmacies are also reporting massive demand for medicine that protects against radiation.