

Titus, Brett

From: Astwood, Heather *MEK*
Sent: Friday, March 11, 2011 8:25 AM
To: Leeds, Eric; Boger, Bruce; McGinty, Tim; Valentine, Nicholee; Titus, Brett; Susco, Jeremy; Roquecruz, Carla; Nguyen, Quynh; Meighan, Sean; Heida, Bruce; Fields, Leslie; Cusumano, Victor; Cartwright, William; Azeem, Almas
Cc: Cullingford, Michael; Hopkins, Jon; Quinones, Lauren; Regan, Christopher; Rodriguez, Veronica
Subject: INFORMATION Japan No radiation Leaks Or Abnormalities - 11 reactors shut down

FYI

From: Breskovic, Clarence *OVX*
Sent: Friday, March 11, 2011 4:05 AM
To: Breskovic, Clarence
Subject: Japan: No Radiation Leaks Or Abnormalities - 11 reactors shut down

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

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

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

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

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

Titus, Brett

From: Astwood, Heather *me*
Sent: Friday, March 11, 2011 8:32 AM
To: Leeds, Eric; Boger, Bruce; McGinty, Tim; Valentine, Nicholee; Titus, Brett; Susco, Jeremy; Roquecruz, Carla; Nguyen, Quynh; Meighan, Sean; Heida, Bruce; Fields, Leslie; Cusumano, Victor; Cartwright, William; Azeem, Almas
Cc: Cullingford, Michael; Hopkins, Jon; Quinones, Lauren; Regan, Christopher; Rodriguez, Veronica
Subject: FW: Japan initiates emergency protocol after earthquake

FYI

From: Breskovic, Clarence *10/11*
Sent: Friday, March 11, 2011 6:39 AM
To: Breskovic, Clarence
Subject: Japan initiates emergency protocol after earthquake

Japan initiates emergency protocol after earthquake

11 March 2011

Nuclear Engineering International

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

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

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

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

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

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

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

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

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

A minister in its controlling organisation, the Ministry of Economy, Trade and Industry, notifies the prime minister's office. The central nuclear emergency response headquarters (NERHQ) of the national government issues a nuclear emergency declaration, which also includes instructions about preventative measures. It receives technical advice from the Nuclear Safety Commission. The NERHQ sends a specialist and the NSC sends a commissioner to the site.

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

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

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

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

release

Balarabe, Sarah

From: Cullingford, Michael
 Sent: Friday, March 11, 2011 7:47 AM
 To: Lubinski, John; Cheok, Michael; Ruland, William; Brown, Frederick; McGinty, Tim; Holian, Brian; Holian, Brian; Giitter, Joseph
 Cc: Thomas, Brian
 Subject: FW: OECD/NEA - WGPC Secretariat - FW: Japan Situation update (Friday 11 March 11:45 UTC - 19:45 Japan time)
 Attachments: NPP_Japan_map2011.pdf

> NRR Front Office

fyi

From: Jean.GAUVAIN@oecd.org [mailto:Jean.GAUVAIN@oecd.org]

Sent: Friday, March 11, 2011 7:34 AM

To: klaus.kotthoff@grs.de; yves.vandenberghe@belv.be; imj@csn.es; tanaka-nobuo@jnes.go.jp; petteri.tiippana@stuk.fi; benoit.deboeck@belv.be; Thorp, John; greg.rzentkowski@cncs-ccsn.gc.ca; jean-christophe.niel@asn.fr; bogdan@secnrs.ru; alexander.duchac@ec.europa.eu; utenkov@gosnadzor.ru; vc@aerb.gov.in; x.bernard-bruls@iaea.org; christian.kirchsteiger@ec.europa.eu; nakamura-koichiro1@meti.go.jp; olivier.veyret@asn.fr; adeline.clos@asn.fr; lauriane.giroud-giacomel@asn.fr; diane.jackson@oecd.org; toshihiko.kamada@mofa.go.jp; pierre.barras@belv.be; Cullingford, Michael; hklonk@bfs.de; jukka.laaksonen@stuk.fi; leedh@kins.re.kr; maciej.jurkowski@paa.gov.pl; michel.bieth@ec.europa.eu; silviu.pop@cncan.ro; roberto.ranieri@isprambiente.it; steve.nsd.lewis@hse.gsi.gov.uk; andrej.stritar@gov.si; ozawa-yoshihiro@jnes.go.jp; akosoroukov@yahoo.com; marli.vogels@minvrom.nl; mcasero@unesa.es; mikulas.bencat@ujd.gov.sk; jukka.kupila@stuk.fi; christine.wassilew@bmu.bund.de; wolfgang.breyer@kerntext.de; per.bystedt@ssm.se; ryh@kins.re.kr; kees.desbouvrie@minvrom.nl; ismael.yabda@tractebel.com; tlm3@wanadoo.fr; thomas.sigrist@ensi.ch; Astwood, Heather; mike.weightman@hse.gsi.gov.uk; sidorchuk@secnrs.ru; rafal.frac@oecd-poland.org; lgutierrez@cnsns.gob.mx; manfred.schrauben@fanc.fgov.be; evr@csn.es; jouko.turpeinen@fortum.com; vmgonzalez@cnsns.gob.mx; k400kmc@kins.re.kr; acm@csn.es; leekw@kins.re.kr; andreas.wielenberg@grs.de; walter.gloeckle@um.bwl.de; a.nicic@iaea.org; leopold.vrankar@gov.si; francescopaolo.michetti@isprambiente.it; watanabe.norio@jaea.go.jp; remy.bertrand@irsn.fr; jcb@csn.es; franco.malerba@esteri.it; zdenek.tipek@sujb.cz; klas.idehaag@ssm.se; pavel.bobaly@ujd.gov.sk; Holahan, Gary; nnn@gan.ru; rob.campbell@hse.gsi.gov.uk; Kobetz, Timothy; g.caruso@iaea.org; dwchung@kins.re.kr; petr.brandejs@sujb.cz; benoit.poulet@cncs-ccsn.gc.ca; hans.wanner@ensi.ch; benjamin.stanford@oecd.org; sabhardwaj@npcil.co.in; michael.hertrich@bmu.bund.de; jiri.vesely@sujb.cz; didier.wattrelot@irsn.fr; juergen.wolf@bmu.bund.de; giorgio.grimaldi@apat.it; ktkim@kins.re.kr; Dudes, Laura; Tabatabai, Omid; rhonda.evans@arpana.gov.au; masayuki.yoneya@cao.go.jp; vince.fisher@awe.co.uk; irga@csn.es; grigoras.benescu@cncan.ro; dgawande@npcil.co.in; derek.lacey@hse.gsi.gov.uk; lux@haea.gov.hu; soda.kunihisa@jaea.go.jp; ales.janezic@gov.si; len.creswell@hse.gsi.gov.uk; kanno-masanori@jnes.go.jp; georg.schwarz@ensi.ch; marta.ziakova@ujd.gov.sk; lennart.carlsson@ssm.se; i.sokolova@gosnadzor.ru; safety@gan.ru; hans-rudolf.fierz@ensi.ch; marc.noel@ec.europa.eu; burton.valpy@cncs-ccsn.gc.ca; julien.husse@asn.fr; Lukes, Robert; timo.vanttola@vtt.fi; swaller@cnsns.gob.mx; juhasz@haea.gov.hu; michael.maqua@grs.de; seiya.suksi@stuk.fi; m.schneider@bfs.de; yhhah@kins.re.kr; dana.drabova@sujb.cz; kirsi.alm-lytz@stuk.fi; kenneth.broman@ssm.se;

A/3

niina.yliknuussi@ec.europa.eu; wolfgang.hilden@ec.europa.eu; yang@kins.re.kr; Leeds, Eric; michel.lemay@cnsccsn.gc.ca; peter.corcoran@cnsccsn.gc.ca; aspeshkov@mnr.gov.ru; noguchi-y asunori@meti.go.jp; m. Kearney@iaea.org; kutin@gosnadzor.ru; lankin@secnrs.ru; Yamamoto-yoshihiro@jnes.go.jp; mlgs@csn.es; snrao@aerb.gov.in; fred.vaniddekinge@minvrom.nl; karol.janko@ujd.gov.sk; pyw@kins.re.kr; fichtinger@haea.gov.hu; akasaka@mext.go.jp; Johnson, Michael; tamao-shigeo@jnes.go.jp; ralph.schulz@ensi.ch; je@cnsns.gob.mx; soaresjc@cii.fc.ul.pt; takahashi-masakazu@meti.go.jp; kawaguchi-ken@jnes.go.jp; motokuni.eto@cao.go.jp; kozlov-vv@atomenergoprom.ru; alexandra.brasat@amb-roumanie.fr

Subject: OECD/NEA - WGPC Secretariat - FW: Japan Situation update (Friday 11 March 11:45 UTC - 19:45 Japan time)

Dear CNRA and WGOE and WGIP Members,

Cc Other WG Chairs

Please find hereafter information about the earthquake in Japan received from our former NEA colleague that was sent earlier today by the NEA secretariat to the WGPC Flashnews network

Update of Japan NPP situation Friday 11 March at 11:45 UTC time.

Jean Gauvain - NEA/NSD – CNRA/WGPC Secretariat

From: Akihiro YAMAMOTO [mailto:a-yamamoto@houshasen.tsuruga.fukui.jp]

Sent: Friday, March 11, 2011 12:00

Subject: [Yama] Situation update (19:45 Japan time)

NISA is now holding a press conference.

Fukushima 1-1 (ECCS mode)

Fukushima 1-2 (ECCS mode) - Call off the emergency

Fukushima 1-3 (ECCS mode)

Fukushima 2-1 (ECCS mode)

The problem is that they can't monitor water injection (ECCS).

It might be a problem of the monitoring system.

In fact, TEPCO called off the emergency of unit 1-2 a while ago because they are able to monitoring the water level in the reactor now.

Yama

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Akihiro YAMAMOTO

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From: Akihiro YAMAMOTO [mailto:a-yamamoto@houshasen.tsuruga.fukui.jp]

Sent: Friday, March 11, 2011 7:30 PM

Subject: [Yama] Situation now - ECCS mode

Dear all,

TEPCO (Tokyo Electric Power Company) declared the state of emergency of following NPPs:

Fukushima 1-1

Fukushima 1-2

Fukushima 1-3

Fukushima 2-1 (**ECCS mode now**)

I am trying to get information why DG can't start up (problem of intake sea water for the cooling DG system?)

There is a fire from turbine building (B1 floor) at Onagawa NPP unit 1 but the fire fighting was completely succeeded.

<http://www.yomiuri.co.jp/dy/national/20110311dy01.htm>

A while ago, Fukui (my office located) had also earthquake (M4.1). We have 15 NPPs but no damage to the NPPs.

Yama

+++++

Akihiro YAMAMOTO

Ageing Management Specialist

Nuclear Safety Measurement Division

Fukui Prefectural Government

Telephone: +81 (0) 776 20 0314

E-mail: a-yamamoto@houshasen.tsuruga.fukui.jp

+++++

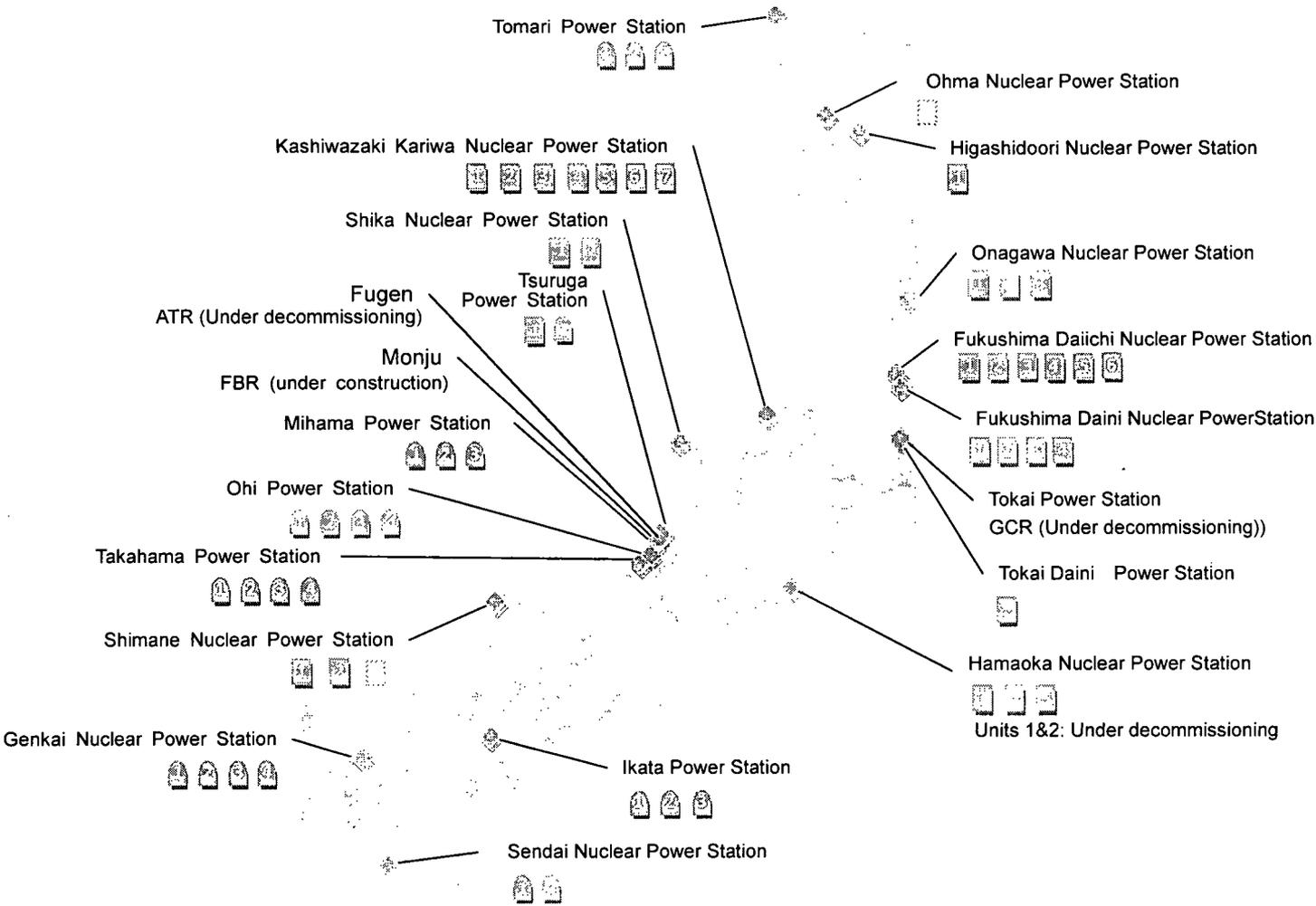
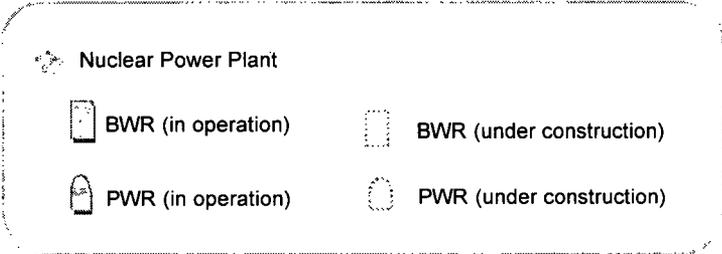


Fig. A-2 Locations of Nuclear Installations

Titus, Brett

From: Davidson, Evan *INRR*
Sent: Friday, March 11, 2011 4:05 PM
To: Vaaler, Marlayna
Subject: japan reactor

<http://www.tepco.co.jp/en/press/corp-com/release/11031207-e.html>

new announcement. Sounds like they must not have indication of RCIC flow, or for some reason the cooling is not effective.

Balarabe, Sarah

From: Lehning, John *MLK*
Sent: Friday, March 11, 2011 3:00 PM
To: Klein, Paul
Subject: RE: Airlifted Coolant

I assume first story is controlled venting of primary containment – high pressure in primary system must have lifted SRVs and pressurized the containment to the point where venting has become an option? Wow...

<http://www.latimes.com/news/nationworld/world/la-fgw-japan-quake-nuclear-20110312,0,3015818.story>

Cooling soon to be restored -

<http://www.platts.com/RSSFeedDetailedNews/RSSFeed/ElectricPower/6900698>

From: Klein, Paul *MLK*
Sent: Friday, March 11, 2011 2:13 PM
To: Lehning, John
Subject: RE: Airlifted Coolant

<http://e.nikkei.com/e/fr/tnks/Nni20110311D11JF351.htm>

From: Lehning, John
Sent: Friday, March 11, 2011 1:00 PM
To: Klein, Paul
Subject: RE: Airlifted Coolant

Yeah, no kidding. It also looks like externally, the Lochbaums and Lyman are being quoted versus officials, since official sources can't or won't comment.

Another site says this:

Kyodo news agency quoted the company as saying that the radiation level was rising in the turbine building and the pressure had risen to 1.5 times the designed capacity.

I hope that's not correctly interpreted as 1.5x design pressure of the RPV...

From: Klein, Paul
Sent: Friday, March 11, 2011 12:54 PM
To: Lehning, John
Subject: RE: Airlifted Coolant

I was hoping we would send out an internal email about this event. Isn't that why we get test messages during drills?

From: Lehning, John
Sent: Friday, March 11, 2011 12:53 PM
To: Klein, Paul
Subject: Airlifted Coolant

A/S

Wonder about the details of how this played out. I still see stories talking about the primary pressure rising, now going on 13 hours after the event initiated.

Quote from:

<http://ecocentric.blogs.time.com/2011/03/11/japan-quake-causes-nuclear-fears/>

Later on Friday Hillary Clinton said the U.S. had assisted in the emergency by sending coolant to the plant. "We just had our Air Force assets in Japan transport some really important coolant to one of the nuclear plants," Clinton said, according to Reuters. "You know Japan is very reliant on nuclear power and they have very high engineering standards but one of their plants came under a lot of stress with the earthquake and didn't have enough coolant."

Balarabe, Sarah

From: Lehning, John *NRK*
Sent: Friday, March 11, 2011 3:48 PM
To: Klein, Paul
Subject: RE: Airlifted Coolant

One of the most coherent accounts I have yet come across:

http://www.ucsusa.org/news/press_release/nuclear-crisis-in-japan-fukushima-0518.html

From: Klein, Paul *NRK*
Sent: Friday, March 11, 2011 2:13 PM
To: Lehning, John
Subject: RE: Airlifted Coolant

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Titus, Brett

From: Davidson, Evan *in reply*
Sent: Friday, March 11, 2011 9:26 AM
To: Nguyen, Quynh; Titus, Brett; Bowen, Jeremy
Subject: Japan nuclear plants

Anyone hear news coming through on Japan's reactors? I've been reading reports of four reactors shut down, one reported to have lost cooling, one that reported a fire, and evacuations being ordered.

Titus, Brett

From: Astwood, Heather *NER*
Sent: Friday, March 11, 2011 8:30 AM
To: Leeds, Eric; Boger, Bruce; McGinty, Tim; Valentine, Nicholee; Titus, Brett; Susco, Jeremy; Roquecruz, Carla; Nguyen, Quynh; Meighan, Sean; Heida, Bruce; Fields, Leslie; Cusumano, Victor; Cartwright, William; Azeem, Almas
Cc: Cullingford, Michael; Hopkins, Jon; Quinones, Lauren; Regan, Christopher; Rodriguez, Veronica
Subject: FW: Japan: Fukushima 1 & 2 cooling system problems

FYI

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

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

Balarabe, Sarah

From: Beall, James *MB*
Sent: Friday, March 11, 2011 8:03 AM
To: Ruland, William
Subject: Japan earthquakes

Bill –

I don't recall if any of your division were part of the NRC team(s) that responded to Japan after the last quake, but I would expect that the Commission would want that initiative repeated, if not expanded. That is, the conclusions of the previous teams (both Japanese and NRC) will need to be compared to the more recent data, etc.

I am sorry if this may be obvious, but the recent SE by the staff for GE Hitachi may also get folk to want to compare any Hitachi statements on seismic with what happened to Hitachi over there.

jim

Balarabe, Sarah

From: Leeds, Eric *NRC*
Sent: Friday, March 11, 2011 12:41 PM
To: Weber, Michael
Cc: Virgilio, Martin; McDermott, Brian; Boger, Bruce; Grobe, Jack; Hiland, Patrick; McGinty, Tim; Ruland, William
Subject: FW: UPDATE: RTR Facilities- no immediate impact from Tsunami Warning
Importance: High

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

From: Quichocho, Jessie *NRC*
Sent: Friday, March 11, 2011 11:40 AM
To: McGinty, Tim; Blount, Tom; Leeds, Eric; Boger, Bruce
Cc: Reed, Elizabeth; Sloan, Scott; Eads, Johnny; Adams, John; Ross-Lee, MaryJane; Tran, Linh; Isaac, Patrick
Subject: UPDATE: RTR Facilities- no immediate impact from Tsunami Warning
Importance: High

The facility that comes close to the coast line is UC- Irvine at about 4 miles or so at an elevation of 100 feet. All other facilities are much further inland and will not be impacted by a Tsunami.

At 11:15am the NRC contacted the Facility Director, UC- Irvine and was informed that he was aware of the Tsunami warning, that the predictions in the area of the facility were small waves, and that he does not feel that the effects of a Tsunami would impact his facility. We discussed other indirect impacts such as loss of power and possible flooding. The licensee will contact the NRC if there should be any other developments resulting from the Tsunami Warning.

Questions, please feel free to contact Linh Tran or myself.

Jessie

Wegner, Mary

From: Wegner, Mary
Sent: Friday, March 11, 2011 12:09 PM
To: Breskovic, Clarence
Subject: RE: U.S. delivers coolant to Japan nuclear plant: Clinton/ Plant Being Cooled

I just got a request from a friend which mentioned this report. I would be interested in EVERYTHING you get on it. Delivering coolant via aircraft does not make much sense. If the report is accurate as written, Japan (and us) has a PROBLEM!.

From: Breskovic, Clarence
Sent: Friday, March 11, 2011 12:02 PM
To: Breskovic, Clarence
Subject: U.S. delivers coolant to Japan nuclear plant: Clinton/ Plant Being Cooled

WASHINGTON | Fri Mar 11, 2011 11:05am EST

WASHINGTON (Reuters) - The United States has transported coolant to a Japanese nuclear plant affected by a massive earthquake and will continue to assist Japan, Secretary of State Hillary Clinton said on Friday.

"We just had our Air Force assets in Japan transport some really important coolant to one of the nuclear plants," Clinton said at a meeting of the President's Export Council.

"You know Japan is very reliant on nuclear power and they have very high engineering standards but one of their plants came under a lot of stress with the earthquake and didn't have enough coolant," Clinton said.

Japan Reactor Being Cooled

LONDON, March 11 (Reuters) - The World Nuclear Association, the main nuclear industry body, said on Friday that it understood the situation at Japan's Fukushima plant after a massive earthquake was under control, and water was being pumped into its cooling system.

"We understand this situation is under control," an analyst at the association told Reuters.

The Japanese government had declared an emergency situation around the plant as a precaution and evacuated residents, saying a cooling system was not working.

The analyst said he understood that a back-up battery power system had been brought online after about an hour, and began pumping water back into the cooling system, where the water level had been falling.

Wegner, Mary

From: Wegner, Mary
Sent: Friday, March 11, 2011 12:17 PM
To: Beasley, Benjamin
Subject: FW: U.S. delivers coolant to Japan nuclear plant: Clinton/ Plant Being Cooled

We may be okay for a tsunami, but are we prepared for what will happen if the situation at Fukushima Daini gets worse?

From: Breskovic, Clarence
Sent: Friday, March 11, 2011 12:02 PM
To: Breskovic, Clarence
Subject: **U.S. delivers coolant to Japan nuclear plant: Clinton/ Plant Being Cooled**

WASHINGTON | Fri Mar 11, 2011 11:05am EST

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Richards, Stuart

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

Importance: High

Rosemary/Annie/Andy

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

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

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

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

Thanks
Stu

Wegner, Mary

From: Wegner, Mary
Sent: Friday, March 11, 2011 8:56 AM
To: Thomas, Eric
Subject: FW: Tsunami Warning

From: Wegner, Mary
Sent: Friday, March 11, 2011 8:33 AM
To: Breskovic, Clarence
Subject: Tsunami Warning

<http://www.weather.gov/ptwc/?region=1&id=pacific.2011.03.11.123017>

A/14

From: Chang, Richard
To: Tinkler, Charles
Cc: Schaperow, Jason
Subject: FW: Fukushima NPP and the tsunami predicted to hit the Pacific Northwest around 11.30 am our time
Date: Friday, March 11, 2011 10:09:00 AM

FYI

From: ODonnell, Edward
Sent: Friday, March 11, 2011 9:51 AM
To: Schaperow, Jason; Chang, Richard
Cc: Reed, Phil; Cady, Ralph; Schwartzman, Adam; Richter, Brian; Randall, John; Kanney, Joseph; Orr, Mark; Fuhrmann, Mark; Banic, Merrilee; Carpenter, Robert; Karagiannis, Harriet; carl feldman; Richard Grill
Subject: Fukushima NPP and the tsunami predicted to hit the Pacific Northwest around 11.30 am our time

News about the Fukushima NPP from the Manchester Guardian

<http://www.guardian.co.uk/world/2011/mar/11/japan-declares-nuclear-emergency-quake>

Wikipedia is a good place to start for info on the tsunami which is predicted to hit the Pacific NW around 11.30 am our time.

http://en.wikipedia.org/wiki/2011_Sendai_earthquake_and_tsunami

A/15

Richards, Stuart

From: Richards, Stuart
Sent: Friday, March 11, 2011 11:19 AM
To: Boyce, Tom (RES)
Cc: Case, Michael
Subject: RE: Apparent SBO at Fukushima reactor

Tom

There are numerous e-mail flying around on this, so I'm pretty confident that the agency is engaged at the senior levels.

I suspect that the Ops Center is monitoring the plant status as best they can, and OIP is communicating with our Japanese counterparts.

Thanks
Stu

From: Boyce, Tom (RES)
Sent: Friday, March 11, 2011 11:01 AM
To: Richards, Stuart; Case, Michael
Subject: Apparent SBO at Fukushima reactor

Mike, Stu,

If you haven't already heard, lots of news reports going on right now about Fukushima reactor. Very sketchy information, but Japan has declared a state of emergency as a "precaution," and about 2500 people in the surrounding area are being told to evacuate. From what I can tell, all 6 operating BWR units at the site shutdown due to the earthquake and tsunami. Apparently the DGs for Unit 1 are not operating, so Unit 1 is cooling on batteries for about an expected 8 hours. <http://www.cnn.com/2011/WORLD/asiapcf/03/11/japan.nuclear/index.html>

There is nothing on NRC's web site. Although this is going on in a foreign country, I would think NRC would at least acknowledge it, and perhaps the U.S. government should offer its help. IAEA is reported to be asking for information. I recognize this issue is at least Chairman level and above, but I would think there are other NRC employees who are thinking the same thing.

Any word from NSIR or OPA?

Tom

Beasley, Benjamin

From: Beasley, Benjamin
Sent: Friday, March 11, 2011 11:54 AM
To: Wegner, Mary
Subject: RE: TEPCO Impact

Mary,

Thanks for the emails. I heard NRR management talking this morning about the preparations that west coast plants are making. Things are well in hand. Enjoy your day off.

Ben

From: Wegner, Mary
Sent: Friday, March 11, 2011 9:35 AM
To: Thomas, Eric; Beasley, Benjamin; Criscione, Lawrence; Breskovic, Clarence
Subject: TEPCO Impact

Murphy, Andrew

From: Randall, John
Sent: Friday, March 11, 2011 12:40 PM
To: ODonnell, Edward; Kammerer, Annie; Murphy, Andrew; Ake, Jon; Richard Grill
Subject: NOAA Tsunami Info

See

http://www.wrh.noaa.gov/total_forecast/getprod.php?wfo=sew&pil=TSU&sid=WCA&version=0

Murphy, Andrew

From: Schaperow, Jason
Sent: Friday, March 11, 2011 1:59 PM
To: Murphy, Andrew
Subject: Hi

Hi Andy,

How are you?

The PRA folks talk to us in terms of pga. For example, one of the SBOs in SOARCA is the result of an earthquake with a pga in the range of 0.5 g to 1 g. The news media are saying that today's Japanese earthquake is 8.9 on the Richter scale. How do I convert this to g's?

Thanks,
Jason

Bensi, Michelle

From: Beasley, Benjamin
Sent: Friday, March 11, 2011 3:01 PM
To: Bensi, Michelle
Subject: RE: Japan EQ

I am not keeping up with it. There may be a problem at one of the plants but I have not had time today to inquire. (The ACRS briefing went well.)

BB

From: Bensi, Michelle
Sent: Friday, March 11, 2011 1:57 PM
To: Beasley, Benjamin
Subject: Japan EQ

Hi Ben,

Are you all getting any news on the situation at the plant in Japan?

I imagine this will bring a lot more importance to GI-199, especially in light of a claim made by an NRC speaker at the RIC claiming that Japanese plants are more seismically robust than US plants.

-Shelby

Murphy, Andrew

From: Richards, Stuart
Sent: Friday, March 11, 2011 3:09 PM
To: Kammerer, Annie; Murphy, Andrew; Pires, Jose; Boyce, Tom (RES); Csontos, Aladar; Gavrilas, Mirela; Hogan, Rosemary; Koshy, Thomas; Sydnor, Russell; Ali, Syed; Birla, Sushil; Santos, Daniel; Tregoning, Robert
Subject: FW: ***NRC IS RESPONDING TO AN EMERGENCY OUTSIDE OF THE UNITED STATES**
Importance: High

See the e-mail below.

Note that if you are requested by colleagues in another country to provide technical advice and assistance during this emergency, all such communications must be handled through the NRC Operations Center.

Information received about the event should be provided to the Operations Center.

Thanks
Stu

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

THIS IS NOT A DRILL.

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

Two important reminders:

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

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

No response to this message is required.

THIS IS NOT A DRILL

Beasley, Benjamin

From: Beasley, Benjamin
Sent: Wednesday, March 16, 2011 2:19 PM
To: 'KEITHLINE, Kimberly'
Subject: RE: Article on GI-199

Kimberly,

I do not know if Public Affairs has given any comments to MSNBC. We are referring all communications through Public Affairs and the Incident Response Center so I forwarded your question to them.

Ben

From: KEITHLINE, Kimberly [<mailto:kak@nei.org>]
Sent: Wednesday, March 16, 2011 1:47 PM
To: Beasley, Benjamin
Subject: RE: Article on GI-199

Ben,

Has NRC provided any comments back to MSNBC?

Kimberly

From: Beasley, Benjamin [<mailto:Benjamin.Beasley@nrc.gov>]
Sent: Wednesday, March 16, 2011 10:06 AM
To: KEITHLINE, Kimberly
Subject: Article on GI-199

Kimberly,

This link is to an article discussing the results of the GI-199 safety/risk assessment. We are checking the numbers for accuracy.

http://www.msnbc.msn.com/id/42103936/ns/world_news-asiapacific/.

I thought you might want to know about the article.

Ben

nuclear
Pushing Clean Air Energy Forward

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Sent through mail.messaging.microsoft.com

Hogan, Rosemary

From: Richards, Stuart
Sent: Tuesday, March 22, 2011 3:28 PM
To: Hogan, Rosemary; Pires, Jose; Murphy, Andrew
Cc: Case, Michael
Subject: Indian Point Letter on Seismic
Attachments: Tab B 3-18-11 Schneiderman 11-0133.pdf

See attached for information only - Stu

A/23



STATE OF NEW YORK
OFFICE OF THE ATTORNEY GENERAL

ERIC T. SCHNEIDERMAN
ATTORNEY GENERAL

DIVISION OF SOCIAL JUSTICE
ENVIRONMENTAL PROTECTION BUREAU

March 18, 2011

Chairman Gregory B. Jaczko
Commissioner Kristine L. Svinicki
Commissioner George Apostolakis
Commissioner William D. Magwood, IV
Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
Via electronic and U.S. Mail

Re: Seismic Risk at Indian Point Nuclear Generating Station

Dear Chairman Jaczko and Commissioners Svinicki, Apostolakis, Magwood, and Ostendorff:

I am writing you as a nuclear crisis, initiated by the March 11 earthquake and subsequent tsunami in Northern Japan, is still unfolding. In addition to its potentially devastating impact on the people of Japan, this crisis serves as a graphic demonstration that nuclear power facilities in the U.S. may be vulnerable to seismic activity and experience catastrophic failures that compromise their ability to control and cool multiple nuclear reactors. Data from your staff analysis (GS-199), which demonstrates an increased risk of seismic activity at some nuclear power plants in the country add to my concern.

These factors underscore the importance of a fair, open, and full assessment of seismic risks in the relicensing of Indian Point.

New York State has raised concerns about seismic risk and other issues in relation to the relicensing of Indian Point with your staff on numerous occasions. At each turn, however, the NRC has refused to consider these critical issues in the relicensing review process.

As you know, the Indian Point nuclear power station in Buchanan, New York sits 24 miles from New York City. Of all the power reactors in the United States, the two operating Indian Point reactors have the highest surrounding population both within a 50-mile radius and a 10-mile radius. Seventeen million people live within 50 miles of these reactors. Indian Point Units 2 and 3, which initially came on line in 1973 and 1975, are currently the subject of an adjudicatory proceeding to extend their license by another 20 years (Unit 1 ceased generating in the 1970s).

03/21...To EDO/OGC for Direct Reply... Suspense date: April 4... Copy to: OGC, RF, SECY to Ack 11-0133...EDO should coordinate response with OGC...Commission is to review response prior to dispatch. 120 Broadway, 26th Fl. New York, N.Y. 10271-0332 • Phone (212) 416-8446 • Fax (212) 416-6007 • WWW.AG.NY.GOV

As the NRC has acknowledged, Indian Point Unit 1, which was authorized in 1956, was built prior to any specific requirement for earthquake protection. Although the NRC revoked the operating license for the Indian Point Unit 1 power reactor in 1980, many of Unit 1's system, structures, and components were conjoined to Unit 2 and Unit 3 and are still in use today. These aging Unit 1 systems, structures, and components were built to inferior seismic specifications, and Unit 2 and Unit 3's continued reliance on these systems today poses significant safety questions.

The NRC has consistently blocked consideration of New York's seismic concerns, as well as related concerns about population, emergency evacuation, fire safety, and site security.

In November of 2007, the Attorneys General of New York, Connecticut, Delaware, Illinois, Kentucky, and Vermont submitted a letter to the NRC which expressed the states' serious concerns about the NRC's failure to confront issues such as local seismic activity when deciding whether to renew the operating license of a nuclear power plant beyond its initial forty-year term. The states requested that the NRC expand relicensing criteria to include seismic analysis. On December 30, 2007, the NRC rejected this request.

The NRC also disregarded New York's "scoping" comments in 2007, which noted that the Indian Point operator's Environmental Report and Updated Final Safety Analysis Reports do not reflect seismic information developed after the early 1980s, and which asked the NRC to require the owner to revise those outdated documents. The NRC subsequently issued a Draft Environmental Impact Statement (DSEIS) based on this out-of-date information. The DSEIS failed to mention new information regarding seismic activity developed recently by the United States Geological Survey (USGS) that included the area around Indian Point or to account for the findings of Columbia's Lamont-Doherty Earth Observatory 2008 study. In fact, the NRC has not revised any of its Indian Point-related environmental analyses to take into account findings from this important independent study.

Perhaps most egregious is the NRC Staff's issuance of the Final Supplemental Environmental Impact Statement (FSEIS) for Indian Point, which it issued three months after Staff issued the GS-199 analysis on seismic activity. The FSEIS did not make any reference to the NRC's own findings of increased seismic risk at Indian Point.

In November of 2007, the state submitted two contentions in the license renewal proceeding arguing that the applicant's "Updated" Safety Evaluation Report and Environmental Report insufficiently analyzed alternatives for mitigation of severe accidents like earthquakes in that it (1) failed to include recent information regarding the type, frequency, and severity of potential earthquakes and (2) failed to include an analysis of mitigation measures which could reduce the effects of an earthquake damaging the parts of inactive Indian Point Unit 1 which are currently in use at Units 2 and 3. The NRC Staff opposed acceptance of these contentions, and the Atomic Safety and Licensing Board excluded them from consideration in the adjudicatory proceeding because, it said, the state did not suggest feasible alternatives to address risks posed by the new data, or estimate the cost of the increased margin of safety that would result from any

severe accident mitigation action. This burden is clearly not the public's to bear and these contentions were excluded in error.

Earlier this week, in testimony before the Senate Committee on Environment and Public Works, Chairman Jaczko stated the NRC's intention to conduct a review of the earthquake-related risks faced by nuclear power facilities operating in the central and eastern U.S. He stated that this review would take one to two years to complete, followed by a similar period of time to consider and implement mitigation measures. Indian Point Units 2 and 3 are currently the subject of a proceeding to extend their licenses by another 20 years – a proceeding in which the NRC has consistently ignored serious consideration of the risks that earthquakes and related issues pose to the Indian Point facility.

NRC should not contemplate relicensing Indian Point without first completing an open and public review of earthquake-related risks faced by this facility.

For this reason, the NRC must undertake an immediate, full, fair, and open assessment of all public health and safety risks that earthquakes pose to this facility, and provide the public an opportunity to fully review and comment on all phases of this review.

In addition, the NRC must take the following actions:

1. Promulgate an amendment to Part 54 and any other relevant regulations, which exclude seismicity analysis from the scope of safety review in relicensing proceedings, to specifically require the preparation of a public site-specific seismic analysis for the Indian Point and other reactors;
2. Open up the GS-199 seismic analysis proceeding for meaningful participation by states and the public so that all assumptions can be identified and tested and ensure that all information used in this proceeding is made available in the public record;
3. Address the risk posed by the Indian Point Unit 1 facilities, which share many common components and systems with the other Indian Point units, in a complete and transparent way;
4. Incorporate USGS findings and Columbia Lamont-Doherty's findings into the Indian Point FSEIS for license renewal and re-issue the document for additional public review and comment;
5. Make public immediately the Commission's plans, in their entirety, for addressing seismic risk at all three Indian Point plants; and
6. Maximize public involvement in the Commission's and the NRC Staff's actions regarding seismic risk at Indian Point.

Whether or not one supports the re-licensing of Indian Point Units 2 and 3, we can all agree that we must protect the health, safety, and environment of the nearly 20 million people

living in close proximity to the facility. Only through a full, fair, and open assessment of the earthquake and related security risks surrounding this uniquely-situated plant – one that precedes any consideration of approving an extension of the Indian Point facility for another 20 years – can we provide these fundamental protections.

I thank you for your attention this request, and please do not hesitate to contact me at any time if I can provide additional information or you would like discuss this matter in greater detail.

Sincerely,

A handwritten signature in black ink, appearing to read "Eric Schneiderman". The signature is fluid and cursive, with a prominent initial "E" and a long, sweeping underline.

Eric T. Schneiderman
Attorney General

What does the Japanese Earthquake Mean to Diablo Canyon?

1) Could an earthquake and tsunami the size of the one in Japan happen at Diablo Canyon?

No. This earthquake occurred on a "subduction zone", which is the type of tectonic region that produces the largest magnitude earthquake. A subduction zone is a tectonic plate boundary where one tectonic plate is pushed under another plate. Subduction zone earthquakes are also required to produce the kind of massive tsunami seen in Japan. In the continental US, the only subduction zone is the Cascadia subduction zone which lies off the coast of far northern California, Oregon and Washington. So, a continental earthquake and tsunami as large as in Japan could only happen there. Outside of the Cascadia subduction zone, earthquakes are not expected to exceed a magnitude of approximately 8.25; and that would only occur on the largest fault lines, such as the San Andreas fault, which is 50 miles away onshore.

2) What magnitude earthquake are currently operating US nuclear plants such as Diablo Canyon designed to?

Each reactor is designed for a different ground motion that is determined on a site-specific basis. Ground motion is a function of both the magnitude of an earthquake and the distance from the fault to the site; and it is ground motion that causes damage. So, Nuclear plants, and in fact all engineered structures, are actually designed based on ground motion levels, not earthquake magnitudes. The existing nuclear plants were designed based on a "deterministic" or "scenario earthquake" basis that accounted for the largest earthquakes expected in the area around the plant. The scenario earthquake at Diablo is a magnitude 7.5 on the Hosgri Fault 3 miles from the main plant. This earthquake results in a ground motion that has a peak ground acceleration of 0.75g, that is 75% of the acceleration of gravity.

3) Could the newly discovered Shoreline Fault produce a larger "Scenario Earthquake"?

The NRC's preliminary analyses indicate that the ground motions from the largest earthquakes expected on the smaller Shoreline Fault do not exceed the ground motions from the Hosgri Fault, for which the plant has already been analyzed and been found to be safe. NRC is currently reviewing the Final Report on the Shoreline Fault that was submitted to the NRC earlier this year. The NRC is performing an independent analysis of potential ground motions based the data contained in the report and other information. Much of the data on the Shoreline Fault comes from the USGS in Menlo Park.

4) Could Diablo Canyon withstand an earthquake of the magnitude of the Japanese earthquake?

It could withstand the ground shaking experienced by the Japanese nuclear plants. As discussed above, it is actually ground motions that structures, systems, and components "feel". We do not have direct recordings of ground motion at the Japanese reactors. However, we do have estimates of shaking that come from a ShakeMap produced by the the K-NET system. The ground motion at the Japanese nuclear reactors is believed to be somewhat smaller than the 0.75g peak ground acceleration that Diablo Canyon has been analyzed to. Do, Diablo Canyon could withstand the ground shaking experienced by the Fukushima plant.

In fact, the Fukushima plant also withstood the earthquake. In the hour or so after the earthquake the Fukushima plant's safety systems, including the diesel generators, performed as expected and effectively shut down the reactor. The cause of the problems at the plant stemmed from the loss of emergency power that appears to be the direct result of the subsequent tsunami, which far exceeded the design basis tsunami for the Fukushima plant.

5) Is Diablo Canyon's equipment vulnerable to tsunami?

Nuclear plants are designed to withstand protection against natural phenomena such as tsunami, earthquakes. Diablo Canyon's main plant is located above the flood level associated with tsunami. The intake structures and Auxiliary Sea Water System at Diablo canyon are designed for combination of tsunami and storm wave activity.

6) How do we know that the emergency diesel generators in Diablo Canyon and SONGS will not fail to operate like in Japan?

Emergency Diesel Generators (EDGs) are installed in a seismically qualified structure. Even if these EDGs did fail, plants can safely shutdown using station blackout power source law 10 CFR 50.63. In 1988 the NRC concluded that additional regulatory requirements were justified in order to provide further assurance that a loss of both offsite and onsite emergency ac power systems would not adversely affect public health and safety and the station blackout rule was enacted. Studies conducted by the NRC since this rule has been in effect confirms that the hardware and procedures that have been implemented to meet the station blackout requirements have resulted in significant risk reduction and have further enhanced defense-in-depth. However, we plan to carefully evaluate the lessons learned from the events in Japan to determine if enhancements to the station blackout rule are warranted.

7) Was there any damage to Diablo Canyon from either the earthquake or the resulting tsunami?

A small tsunami did hit the region around Diablo Canyon. There was no damage at the nuclear plant.

8) How do we know the evacuation routes in the region around Diablo Canyon are realistic?

FEMA reviews off-site evacuation plans formally every 2 years during a biennial emergency preparedness exercise. NRC evaluates on-site evacuation plans during the same exercise. Population studies are formally done every 10 years, and evacuation time estimates are re-evaluated at that time. FEMA reviews these evacuation plans, and will conclude their acceptability through a finding of "reasonable assurance" that the off-site facilities and infrastructure is capable of protecting public health and safety in the event of an emergency at DCNPP.

What does the Japanese Earthquake Mean to San Onofre?

1) Could an earthquake and tsunami the size of the one in Japan happen at San Onofre?

No. This earthquake occurred on a "subduction zone", which is the type of tectonic region that produces the largest magnitude earthquake. A subduction zone is a tectonic plate boundary where one tectonic plate is pushed under another plate. Subduction zone earthquakes are also required to produce the kind of massive tsunami seen in Japan. In the continental US, the only subduction zone is the Cascadia subduction zone which lies off the coast of far northern California, Oregon and Washington. So, a continental earthquake and tsunami as large as in Japan could only happen there. Outside of the Cascadia subduction zone, earthquakes are not expected to exceed a magnitude of approximately 8.25; and that would only occur on the largest fault lines, such as the San Andreas fault, which is 50 miles away onshore.

2) What magnitude earthquake are currently operating US nuclear plants such as SONGS designed to?

Each reactor is designed for a different ground motion that is determined on a site-specific basis. Ground motion is a function of both the magnitude of an earthquake and the distance from the fault to the site; and it is ground motion that causes damage. So, Nuclear plants, and in fact all engineered structures, are actually designed based on ground motion levels, not earthquake magnitudes. The existing nuclear plants were designed based on a "deterministic" or "scenario earthquake" basis that accounted for the largest earthquakes expected in the area around the plant. The scenario earthquake at SONGS is a magnitude 7 approximately 5 miles from the main plant. This earthquake results in a ground motion that has a peak ground acceleration of 0.67g, that is 67% of the acceleration of gravity.

3) Could San Onofre withstand an earthquake of the magnitude of the Japanese earthquake?

It could withstand the ground shaking experienced by the Japanese nuclear plants. As discussed above, it is actually ground motions that structures, systems, and components "feel". We do not have direct recordings of ground motion at the Japanese reactors. However, we do have estimates of shaking that come from a ShakeMap produced by the K-NET system. The ground motion at the Japanese nuclear reactors is believed to be somewhat on the order of the 0.67g, or possibly slightly higher, that San Onofre peak ground acceleration has been analyzed to. However, US nuclear plants have additional seismic margin, as demonstrated by the result of the Individual Plant Examination of External Events program carried out by the NRC in the mid-90s.

It should be noted that, the Fukushima plant also withstood the earthquake. In the hour or so after the earthquake the Fukushima plant's safety systems, including the diesel generators, performed as expected and effectively shut down the reactor. The cause of the problems at the plant stemmed from the loss of emergency power that appears to be the direct result of the subsequent tsunami, which far exceeded the design basis tsunami for the Fukushima plant.

4) Is possible to have a tsunami at San Onofre that is capable of damaging the plant?

The San Onofre Units 2 and 3 plant grade is elevation +30.0 feet MLLW. San Onofre has reinforced concrete cantilevered retaining seawall and screen well perimeter wall designed to withstand the design basis earthquake, followed by the maximum predicted tsunami with coincident storm wave action. The controlling tsunami for San Onofre occurring during simultaneous high tide and storm surge produces a maximum runup to elevation +15.6 feet MLLW at the Unit 2 and 3 seawall. When storm waves are superimposed, the predicted maximum runup is to elevation +27 MLLW. Tsunami protection for the

SONGS site is provided by a reinforced concrete seawall constructed to elevation +30.0 MLLW. A tsunami larger than this is extremely unlikely.

5) Has the earthquake hazard at San Onofre been reviewed like Diablo Canyon nuclear power plant is doing? Are they planning on doing an update before relicensing?

Relicensing does not evaluate seismic hazard or other siting issues. Seismic safety is part of NRC's ongoing licensing activities. If an immediate safety concern emerged, the issue would be addressed as part of NRC's response, regardless of relicensing status.

The closest active fault is approximately five miles offshore from San Onofre, a system of folds and faults exist called the offshore zone of deformation (OZD). The OZD includes the Newport-Inglewood-Rose Canyon fault system. The Cristianitos fault is ½ mile southeast, but is an inactive fault. Other faults such as the San Andreas and San Jacinto, which can generate a larger magnitude earthquake, are far enough away that they would produce ground motions much less severe than earthquakes in the OZD for San Onofre.

Notwithstanding the above, the NRC is considering extending the Generic Issue 199 program to all operating reactors. This would require a reassessment of hazard for San Onofre using the latest probabilistic seismic hazard assessment approaches. Based on a preliminary assessment using the source model developed by the USGS for the national seismic hazard maps, the annual probability of occurrence of a 0.67g ground motion at the San Onofre site is only slightly higher than is than the annual probability of occurrence that is recommended for new nuclear plants.

6) How do we know that the emergency diesel generators in San Onofre will not fail to operate like in Japan?

Emergency Diesel Generators (EDGs) are installed in a seismically qualified structure and are seismic Category I equipment. Even if these EDGs did fail, plants can safely shutdown using station blackout power source law 10 CFR 50.63. In 1988 the NRC concluded that additional regulatory requirements were justified in order to provide further assurance that a loss of both offsite and onsite emergency ac power systems would not adversely affect public health and safety and the station blackout rule was enacted. Studies conducted by the NRC since this rule has been in effect confirms that the hardware and procedures that have been implemented to meet the station blackout requirements have resulted in significant risk reduction and have further enhanced defense-in-depth. However, we plan to carefully evaluate the lessons learned from the events in Japan to determine if enhancements to the station blackout rule are warranted.

7) Was there any damage to San Onofre from either the earthquake or the resulting tsunami?

There was no damage at the San Onofre nuclear plant from either the earthquake or tsunami.

8) What about emergency planning for San Onofre. Does it consider tsunami?

FEMA reviews off-site evacuation plans formally every 2 years during a biennial emergency preparedness exercise. NRC evaluates on-site evacuation plans during the same exercise. Population studies are formally done every 10 years, and evacuation time estimates are re-evaluated at that time. FEMA reviews these evacuation plans, and will conclude their acceptability through a finding of "reasonable assurance" that the off-site facilities and infrastructure is capable of protecting public health and safety in the event of an emergency at San Onofre. The next such exercise is planned for April 12, 2011.

The San Onofre emergency plan initiates the emergency response organization and results in declaration of emergency conditions via their Emergency Action Levels. The facility would then make protective action recommendations to the Governor, who would then decide on what protective actions would be ordered for the residents around San Onofre. The consideration of tsunami would be contained in the State and local (City, County) emergency plans, which are reviewed by FEMA.

Richards, Stuart

From: Richards, Stuart
Sent: Friday, March 11, 2011 6:12 PM
To: Hogan, Rosemary; Graves, Herman; Kammerer, Annie; Murphy, Andrew
Cc: Case, Michael; Uhle, Jennifer
Subject: Follow-up to the Japanese Earthquake/Tsunami

Brian wants us to be prepared to answer questions on the earthquake/tsunami, particularly as it is related to US plants.

For example:

- Was the ground motion at the Japanese sites beyond their design basis?
- Why do we have confidence that US nuclear power plants are adequately designed for earthquakes and tsunamis?
- If the earthquake in Japan was a larger magnitude than considered by plant design, why can't the same thing happen in the US?
- What would be the results of a tsunami generated off the coast of a US plant? (Or why are we confident that large tsunamis will not occur relatively close to US shores?)

Mike will likely get additional guidance on Monday morning.

Thanks
Stu

Hopkins, Jon

From: Cullingford, Michael *NRK*
Sent: Friday, March 11, 2011 4:30 PM
To: *NRK* Regan, Christopher; Hopkins, Jon; Astwood, Heather; Quinones, Lauren
Cc: Leeds, Eric; McGinty, Tim; Boger, Bruce; Grobe, Jack; Foggie, Kirk
Subject: FW: Seismic information
Attachments: News_Releases_No5.pdf

Fyi: Latest info.....mc

From: Aono, Kenjiro [<mailto:aono-kenjiro@jnes-usa.org>]
Sent: Friday, March 11, 2011 4:20 PM
To: Cullingford, Michael
Cc: yamachika-hidehiko@jnes-usa.org; Aono Kenjiro
Subject: Seismic information

Dear Michael-san,

Thank you for taking time for our meeting. The meeting is very helpful for us.

Attached file is the Seismic information Mr. Nakagawa explained to you today.
I will e-mail you the latest information continuously.

Best Regards;
Kenjiro

March 11, 2011
Nuclear and Industrial Safety Agency

Seismic Damage Information (the 5th Release)
(As of 20:00 March 11, 2011)

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

Higashidori, Fukushima Dai-ichi, and Fukushima Dai-ni NPSs, Tokyo Electric Power Co., Inc. and works at the Japan Nuclear Fuel, and electricity, gas, heat supply and complex as follows:

1. Summary of Damage

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

1: Tomari-village, Hokkaido

2. The status of operation at Power Stations(Number of automatic shutdown(units): 10 (as of 18:45)

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

(1) The status of operation

Unit 1 (524MWe): automatic shutdown

Unit 2 (825MWe): automatic shutdown

Unit 3 (825MWe): automatic shutdown

(2) Readings of monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitor readings: No

(3) Report concerning other malfunction

Report of fire: CO2 extinguishment started at 17:15

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

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

(1) The status of operation

Unit 1 (460MWe): automatic shutdown

Unit 2 (784MWe): automatic shutdown

Unit 3 (784MWe): automatic shutdown

Unit 4(784MW): in periodic inspection outage

Unit 5(784MW): in periodic inspection outage

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

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Article 10* of Act on Special Measures Concerning Nuclear Emergency Preparedness (Fukushima Dai-ichi, Unit 3)

(*A heightened alert condition)

Article 15** of Act on Special Measures Concerning Nuclear Emergency Preparedness (Fukushima Dai-ichi, Units 1 and 2)

(** Nuclear emergency situation)

c. Fukushima-Daini Nuclear Power Station(TEPCO)
(Naraha-cho/Tomioka-cho, Futaba-gun, Fukushima pref.)

(1) The status of operation

Unit1(1,100MW): automatic shutdown

Unit2(1,100MW): automatic shutdown

Unit3(1,100MW): automatic shutdown

Unit4(1,100MW): automatic shutdown

(2) Readings at monitoring post etc.

Variation in the monitoring post readings: No

Variation in the main stack monitoring readings: No

(3) Report concerning other malfunction

Report of fire: No

Article 10* of Act on Special Measures Concerning Nuclear Emergency
Preparedness (Fukushima Dai-ri, Units 1,2 and 4)

3. Action taken by NISA

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

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

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

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

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

19:03 Government declared the state of nuclear emergency

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

(Contact Person)

Mr. Masaomi Koyama

Deputy Director, International Affairs

Office, NISA/METI

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

Pires, Jose

From: Pires, Jose
Sent: Friday, March 11, 2011 7:38 AM
To: Kammerer, Annie; Hogan, Rosemary
Subject: RE: M8.9 NEAR THE EAST COAST OF HONSHU, JAPAN

I understand that there have 'nuclear emergencies' declared at two plants, Fushima (TEPCO) and Onagawa (Tohoku Power). The last I heard about Onagawa is that cooling was not as anticipated. There are multiple reactors at each of these sites. Other plants were also safely shutdown.

I am certain that the NRC will be preparing a team to collect data and information from these plants. I would be very much interested in participating.

Thanks,

Jose.

From: Kammerer, Annie
Sent: Friday, March 11, 2011 7:34 AM
To: RES_DE_SGSEB; Case, Michael; Richards, Stuart; Chokshi, Nilesh; Munson, Clifford; Karas, Rebecca; Markley, Michael; Manoly, Kamal; Sheron, Brian; Uhle, Jennifer; Cook, Christopher; Bagchi, Goutam; Khanna, Meena
Subject: FW: M8.9 NEAR THE EAST COAST OF HONSHU, JAPAN

FYI. This is from the working version of our beta ShakeCAST system

From: ISSC-Notification@iaea.org [mailto:ISSC-Notification@iaea.org]
Sent: Friday, March 11, 2011 4:38 AM
To: ISSC-Notification@iaea.org
Cc: Kammerer, Annie
Subject: M8.9 NEAR THE EAST COAST OF HONSHU, JAPAN

The following New Earthquake occurred:

Location	NEAR THE EAST COAST OF HONSHU, JAPAN
Magnitude	8.9
Time	2011-03-11 06:46:23
Lat	38.322
Lon	142.369

ISSC ShakeCast Notification System
IAEA

=====

A/ab

Siu, Nathan

✓
Sun 3/13/11

From: Siu, Nathan
Sent: Friday, March 11, 2011 7:53 AM
To: Coyne, Kevin; Demoss, Gary; Beasley, Benjamin; Salley, MarkHenry; Coe, Doug; Stutzke, Martin; Hyslop, JS
Subject: FW: OECD/NEA Secretariat Update - Japanese Seismic Event: Evacuation order to residents
Attachments: NPP_Japan_map2011.pdf

Note the reference to the turbine building fire in the first email. Seismically induced?

From: Greg.LAMARRE@oecd.org [mailto:Greg.LAMARRE@oecd.org]

Sent: Friday, March 11, 2011 7:49 AM

To: luc.demarneffe@gdfsuez.com; martin.zimmermann@psi.ch; hollo@nubiki.hu; dave.shepherd@hse.gsi.gov.uk; eric.van.walle@sckcen.be; aysun.yucel@taek.gov.tr; tanaka-nobuo@jnes.go.jp; gernot.thuma@grs.de; jan.borak@enel.com; vc@aerb.gov.in; m.el-shanawany@iaea.org; serge.vigne@ec.europa.eu; nuklearkoordination@bmlfuw.gv.at; herter@mpa.uni-stuttgart.de; marc.dubois@belv.be; nakamura-koichiro1@meti.go.jp; s.samaddar@iaea.org; vivekb@barc.gov.in; hklonk@bfs.de; marja-leena.jarvinen@stuk.fi; michel.bieth@ec.europa.eu; claude.faidy@edf.fr; nicolas.ile@cea.fr; rauno.rintamaa@vtt.fi; zda@ujv.cz; jsc@csn.es; Murphy, Andrew; wichers@nrg.eu; maly@egp.cz; jeyang@kaeri.re.kr; marc.petit@irsn.fr; wada.yusaku@jaea.go.jp; ali.djaoudi@gdfsuez.com; shibata-satoru@jnes.go.jp; alessandro.martelli@enea.it; laurent-jacques.foucher@irsn.fr; akosoroukov@yahoo.com; ishikawa-masaaki@jnes.go.jp; takeshima-kikuo@jnes.go.jp; cardellicchio@sogin.it; k211ckk@kins.re.kr; ryh@kins.re.kr; tony.mills@british-energy.com; suyama.kenya@jaea.go.jp; tlm_3@wanadoo.fr; didier.combescure@f4e.europa.eu; borut.mavko@ijs.si; michel.hugon@ec.europa.eu; corsi@casaccia.enea.it; par.lansaker@vattenfall.com; john.macfarlane@edf-energy.com; pel@ujv.cz; louis.vanderwiel@minvrom.nl; asmolov@nsi.kiae.ru; tothi@aeki.kfki.hu; jean-michel.evrard@irsn.fr; hofmayer@bnl.gov; hdkim@kaeri.re.kr; kasahara-fumio@jnes.go.jp; rafal.frac@oecd-poland.org; george.solomos@jrc.ec.europa.eu; sychoi@kaeri.re.kr; cillik@vuje.sk; young@kins.re.kr; manfred.schrauben@fanc.fgov.be; nilgun.gerceker@taek.gov.tr; panagiotis.manolatos@ec.europa.eu; frantisek.pazdera@cez.cz; avk@gan.ru; vrachkov@ippe.ru; urs.bumann@ensi.ch; robert.owen@british-energy.com; dietmar.kalkhof@ensi.ch; isabelle.devol-brown@irsn.fr; joh@ujv.cz; makino@tepcoco.co.uk; guenael.lecann@arpansa.gov.au; yamazaki-hiroaki@jnes.go.jp; koyama-masakuni@jnes.go.jp; Sheron, Brian; helmut.schulz.krtn@t-online.de; pbl@ibrae.ac.ru; bjorn.brickstad@ssm.se; lars.bennemo@ssm.se; georges.van-goethem@ec.europa.eu; jikim@kaeri.re.kr; salih.guentay@p.si.ch; ballj@aecl.ca; whitea@aecl.ca; jkpark1@kaeri.re.kr; motohashi-shohei@jnes.go.jp; xavier.pouget-abadie@edf.fr; a.chigama@iaea.org; pierre.nocture@areva.com; pekka.valikangas@stuk.fi; Silvio.Sperbeck@grs.de; giuseppe.pino@apat.it; fuketa.toyoshi@jaea.go.jp; stefan.cepcek@ujd.gov.sk; katonat@npp.hu; bruno.barthelet@edf.fr; sangk@kins.re.kr; atle.valseth@ife.no; elgoharym@aecl.ca; giovanni.bava@isprambiente.it; l.francia@unesa.es; benjamin.stanford@oecd.org; daniel.tasset@asn.fr; sabhardwaj@npcil.co.in; dimitris.leonidou@gmail.com; jussi.solin@vtt.fi; andrei.blahoianu@cnsccsn.gc.ca; gustaf.lowenhielm@ssm.se; james.lyons@nrc.gov; k063cys@kins.re.kr; pierre.labbe@edf.fr; arne.eriksson@jrc.nl; lmandreeva@rosatom.ru; shinichi.higuchi@cao.go.jp; uchiyama-yuichi@jnes.go.jp; forni@enea.it; rhonda.evans@arpansa.gov.au; vincent.deledicque@belv.be; k-yoshid@mext.go.jp; kanda-tadao@meti.go.jp;

pieter.degelder@belv.be; soda.kunihisa@jaea.go.jp; rainer.rantala@stuk.fi; len.creswell@hse.gsi.gov.uk; kanno-masanori@jnes.go.jp; p entti.varpasuo@fortum.com; richard.reister@nuclear.energy.gov; jovica.riznic@cnsccsn.gc.ca; bernard.fourest@edf.fr; catherine.berge-thierry@cea.fr; marta.ziakova@ujd.gov.sk; lennart.carlsson@ssm.se; rob.jansen@minvrom.nl; junekl@uam.cz; ffmr@csn.es; timo.vanttola@vtt.fi; fosco.bianchi@bologna.enea.it; swaller@cnsns.gob.mx; reinhard.zipper@grs.de; eberhard.roos@mpa.uni-stuttgart.de; paul.harrop@hse.gsi.gov.uk; michael.maqua@grs.de; hirano.masashi@jaea.go.jp; Chokshi, Nilesh; marc.deffrennes@ec.europa.eu; paolo.contri@enel.com; gado@aeki.kfki.hu; an.wertelaers@fanc.fgov.be; imrich.krajmer@enel.com; michel.desmet@gdfsuez.com; wolfgang.hilden@ec.europa.eu; izumi@bosai.go.jp; alejandro.huerta@oecd.org; khrennikov@secnrs.ru; hre@ujv.cz; lutz.lindhorst@minvrom.nl; gerry.frappier@cnsccsn.gc.ca; carlo.vitanza@hrp.no; yann.kayser@cea.fr; hshibata@iis.u-tokyo.ac.jp; juergen.sievers@grs.de; keijo.valtonen@stuk.fi; jmcl@csn.es; kostas.xanthopoulos@ssm.se; suzuki.masahide@jaea.go.jp; karol.janko@ujd.gov.sk; pyw@kins.r e.kr; hrazsky@vuje.sk; jgf@madrid.idom.es; pis@ujv.cz; ccl@csn.es; michel.durin@cea.fr; akasaka@mext.go.jp; rob.vantol@minvrom.nl; michel.schwarz@irsn.fr; mathieu.rambach@irsn.fr; Sangimino, Donna-Marie; krz@ujv.cz; Siu, Nathan; janosi@hu.inter.net; Tregoning, Robert; jacques.repussard@irsn.fr; je@cnsns.gob.mx; soaresjc@cii.fc.ul.pt; corine.piedagnel@irsn.fr; lucian.biro@cncan.ro; emmanuel.viallet@edf.fr; jean-marc.cavedon@psi.ch; Ali, Syed; kuznetsov_mv@vosafety.ru; ilie.petre-lazar@edf.fr; reiner.mailaender@ensi.ch; tchienminh.tang@belv.be; vladimir_magula@ibok.sk; alexandra.brasat@amb-roumanie.fr; frank-peter.weiss@grs.de

Subject: OECD/NEA Secretariat Update - Japanese Seismic Event: Evacuation order to residents

Dear CSNI, WGIAGE, WGIAGE Seismic Sub-Group Members,

Please find below a message on the current situation regarding the state of the nuclear industry in Japan following the seismic event.

Best Regards,

Greg

From: Akihiro YAMAMOTO [mailto:a-yamamoto@houshasen.tsuruga.fukui.jp]

Sent: Friday, March 11, 2011 13:41

To: 'Akihiro YAMAMOTO'; GAUVAIN Jean, NEA/SURN

Cc: REIG Javier, NEA/SURN; ECHAVARRI Luis, NEA; YOSHIMURA Uichiro, NEA/SURN; GAS Serge, NEA/RE; BREEST Axel, NEA/SURN; MAUNY Elisabeth, NEA/SURN; LAMARRE Greg, NEA/SURN; REHACEK Radomir, NEA/SURN; HUERTA Alejandro, NEA/SURN; JACKSON Diane, NEA/SURN; GAUVAIN Jean, NEA/SURN; NAKOSKI John, NEA/SURN; GRESS Philippe, NEA/SURN; BURKHART Lawrence, NEA/SURN; 'Carlo Vitanza'; AMRI Abdallah, NEA/SURN

Subject: [Yama] Evacuation order to residents

The people of a town near Fukushima Daiichi Units (Within 2 km) were ordered to evacuate their homes.

I was mentioned previous emails with regard to ECCS but I think this is very strange that ECCS are really being driven even diesel generators has failed to start.

Please correct that following plants are just in the emergency mode and not in the ECCS mode.

- Fukushima 1-1 - State of emergency
- Fukushima 1-2 - Call off the emergency
- Fukushima 1-3 - State of emergency
- Fukushima 2-1 - State of emergency
- Fukushima 2-2 - State of emergency
- Fukushima 2-4 - State of emergency

-

Yama

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Akihiro YAMAMOTO

Ageing Management Specialist.
Nuclear Safety Measurement Division
Fukui Prefectural Government

Telephone: +81 (0) 776 20 0314

E-mail: a-yamamoto@houshasen.tsuruga.fukui.jp

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From: Akihiro YAMAMOTO [mailto:a-yamamoto@houshasen.tsuruga.fukui.jp]

Sent: Friday, March 11, 2011 8:00 PM

To: 'Akihiro YAMAMOTO'; Jean.GAUVAIN@oecd.org

Cc: Javier.REIG@oecd.org; Luis.ECHAVARRI@oecd.org; Uichiro.YOSHIMURA@oecd.org; Serge.GAS@oecd.org; Axel.BREEST@oecd.org; Elisabeth.MAUNY@oecd.org; Greg.LAMARRE@oecd.org; Radomir.REHACEK@oecd.org; Alejandro.HUERTA@oecd.org; Diane.JACKSON@oecd.org; Jean.GAUVAIN@oecd.org; John.NAKOSKI@oecd.org; Philippe.GRESS@oecd.org; Lawrence.BURKHART@oecd.org; 'Carlo Vitanza'; Abdallah.amri@oecd.org

Subject: [Yama] Situation update (19:45 Japan time)

NISA is now holding a press conference.

- Fukushima 1-1 (ECCS mode)
- Fukushima 1-2 (ECCS mode) - Call off the emergency
- Fukushima 1-3 (ECCS mode)

Fukushima 2-1 (ECCS mode)

The problem is that they can't monitor water injection (ECCS).
It might be a problem of the monitoring system.

In fact, TEPCO called off the emergency of unit 1-2 a while ago because they are able to monitoring the water level in the reactor now.

Yama

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Akihiro YAMAMOTO

Ageing Management Specialist.
Nuclear Safety Measurement Division
Fukui Prefectural Government

Telephone: +81 (0) 776 20 0314

E-mail: a-yamamoto@houshasen.tsuruga.fukui.jp

+++++

From: Akihiro YAMAMOTO [mailto:a-yamamoto@houshasen.tsuruga.fukui.jp]
Sent: Friday, March 11, 2011 7:30 PM
To: 'Jean.GAUVAIN@oecd.org'
Cc: 'Javier.REIG@oecd.org'; 'Luis.ECHAVARRI@oecd.org'; 'Uichiro.YOSHIMURA@oecd.org'; 'Lydie.GUYOT@oecd.org'; 'Marie-Laure.PEYRAT@oecd.org'; 'Serge.GAS@oecd.org'; 'Axel.BREEST@oecd.org'; 'Elisabeth.MAUNY@oecd.org'; 'Greg.LAMARRE@oecd.org'; 'Radomir.REHACEK@oecd.org'; 'Alejandro.HUERTA@oecd.org'; 'Diane.JACKSON@oecd.org'; 'Jean.GAUVAIN@oecd.org'; 'John.NAKOSKI@oecd.org'; 'Philippe.GRESS@oecd.org'; 'Lawrence.BURKHART@oecd.org'; 'Nicolina.IANNOLO@oecd.org'; 'Roopa.CHAUHAN@oecd.org'; 'christele.tephanympania@oecd.org'; 'Aileen.LITTLE@oecd.org'; 'Carlo Vitanza'; 'Abdallah.amri@oecd.org'
Subject: [Yama] Situation now - ECCS mode

Dear all,

TEPCO (Tokyo Electric Power Company) declared the state of emergency of following NPPs:

Fukushima 1-1

Fukushima 1-2

Fukushima 1-3

Fukushima 2-1 (**ECCS mode now**)

I am trying to get information why DG can't start up (problem of intake sea water for the cooling DG system?)

There is a fire from turbine building (B1 floor) at Onagawa NPP unit 1 but the fire fighting was completely succeeded.

<http://www.yomiuri.co.jp/dy/national/20110311dy01.htm>

A while ago, Fukui (my office located) had also earthquake (M4.1). We have 15 NPPs but no damage to the NPPs.

Yama

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Akihiro YAMAMOTO

Ageing Management Specialist.

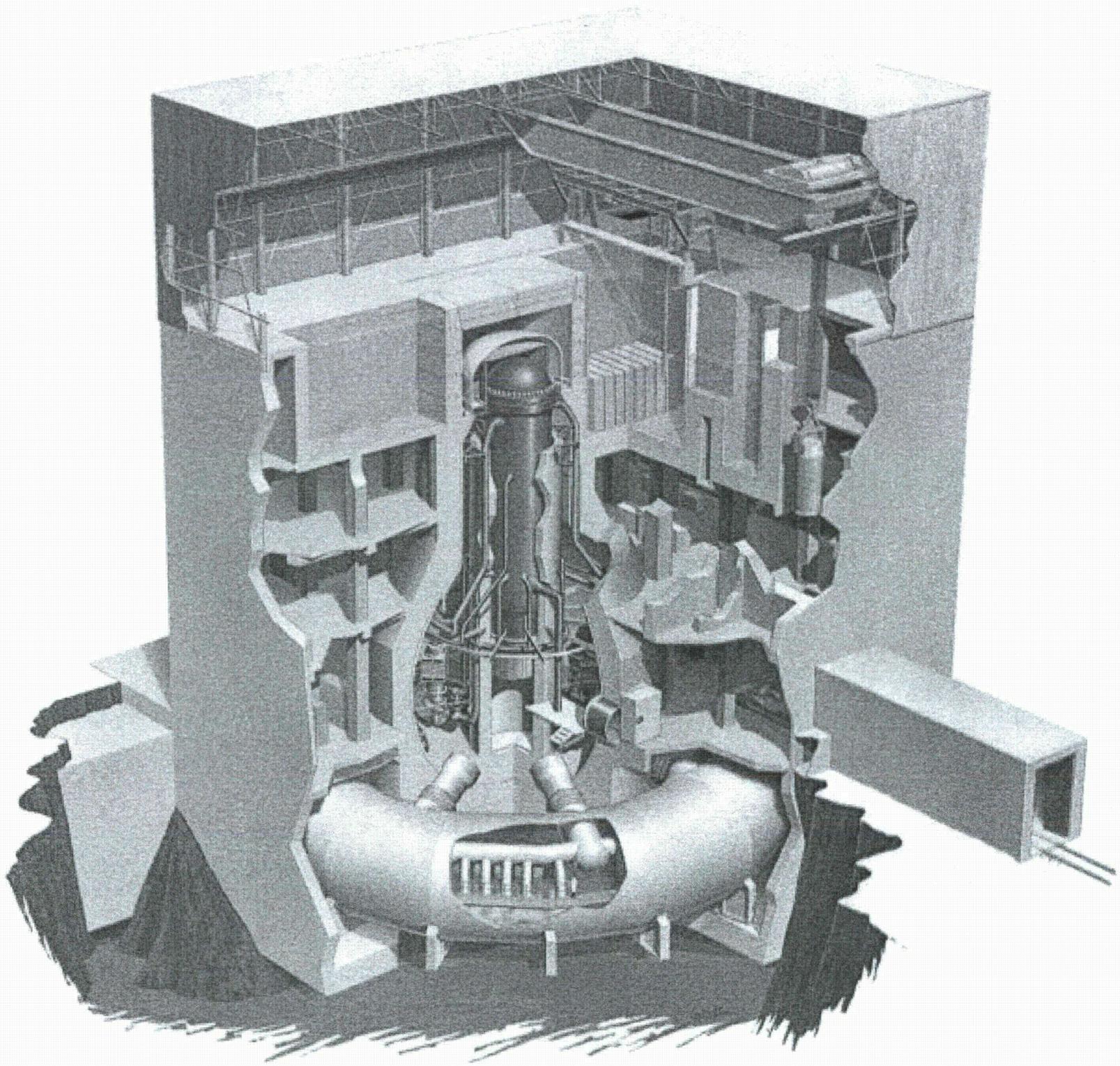
Nuclear Safety Measurement Division

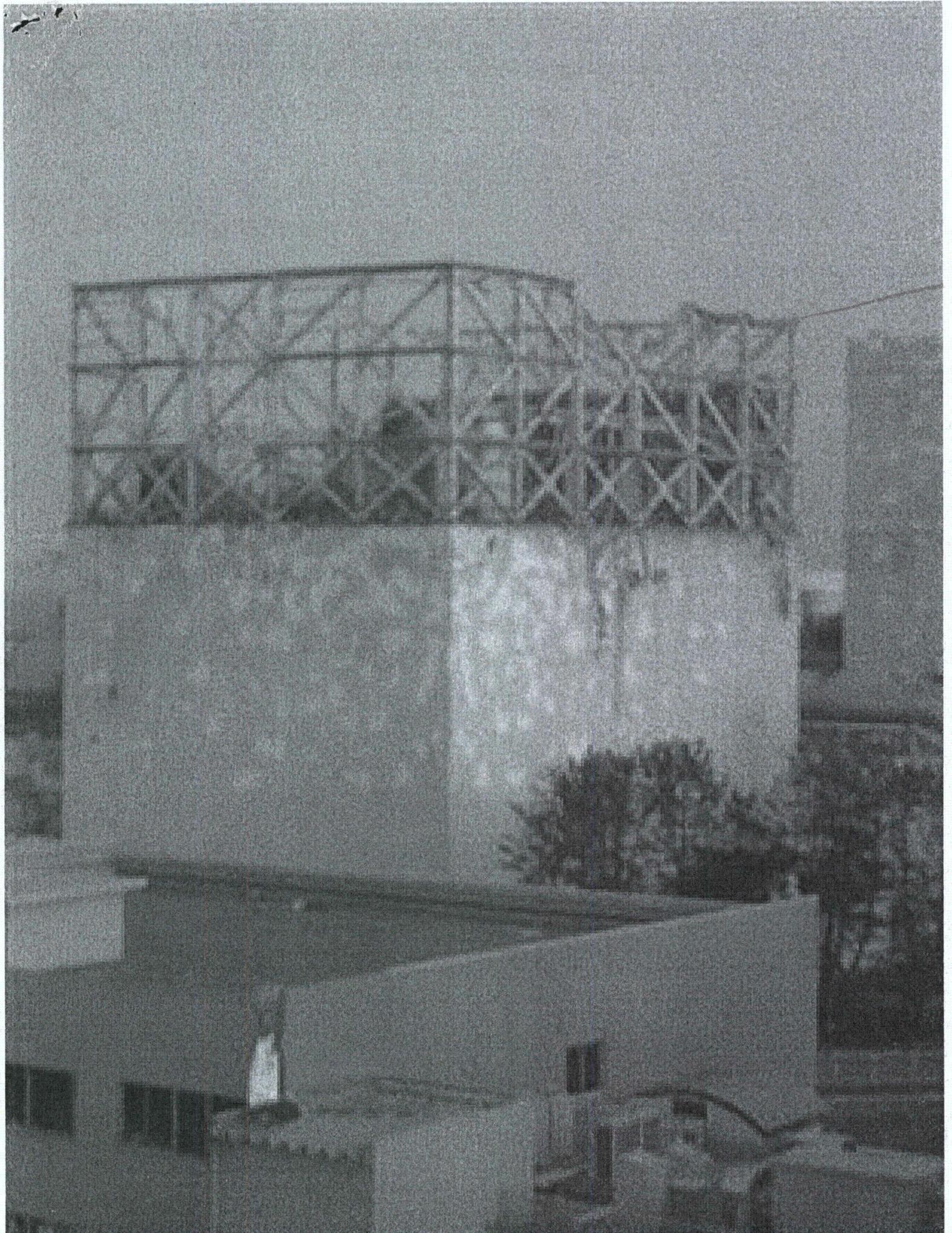
Fukui Prefectural Government

Telephone: +81 (0) 776 20 0314

E-mail: a-yamamoto@houshasen.tsuruga.fukui.jp

+++++





Nosek, Andrew

From: Wagner, Brian
Sent: Friday, March 11, 2011 7:28 PM
To: Mills, Daniel; Nosek, Andrew; Davidson, Evan
Subject: RE:

IAEA blog has a little bit of info we didn't know <http://www.iaea.org/press/>
Specifically that " Mobile electricity supplies have arrived at the site."

This has some new info <http://ansnuclearcafe.org/2011/03/11/media-updates-on-nuclear-power-stations-in-japan/>

From: Mills, Daniel
Sent: Friday, March 11, 2011 6:13 PM
To: Nosek, Andrew; Davidson, Evan; Wagner, Brian
Subject: RE:

<http://english.kyodonews.jp/news/2011/03/76962.html>

From: Nosek, Andrew
Sent: Friday, March 11, 2011 5:08 PM
To: Davidson, Evan; Mills, Daniel
Subject: RE:

<http://www.iaea.org/press/?p=1133>

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

From: Davidson, Evan
Sent: Friday, March 11, 2011 5:07 PM
To: Nosek, Andrew
Subject: RE:

<http://www.bbc.co.uk/news/world-middle-east-12307698>

From: Nosek, Andrew
Sent: Friday, March 11, 2011 4:14 PM
To: Davidson, Evan
Subject: FW:

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

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

USGS guy on BBC just said that in response to the earthquake they went into "salami response mode".
Corrected himself "I mean tsunami"

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

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

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

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

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

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

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

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

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

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

From: Nosek, Andrew
Sent: Friday, March 11, 2011 3:52 PM

To: Mills, Daniel; Wagner, Brian
Subject: RE:

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

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

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

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

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

That statement makes me think that RCIC is not running.

Is RCIC part of the ECCS?

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

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

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

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

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

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

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

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

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

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

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

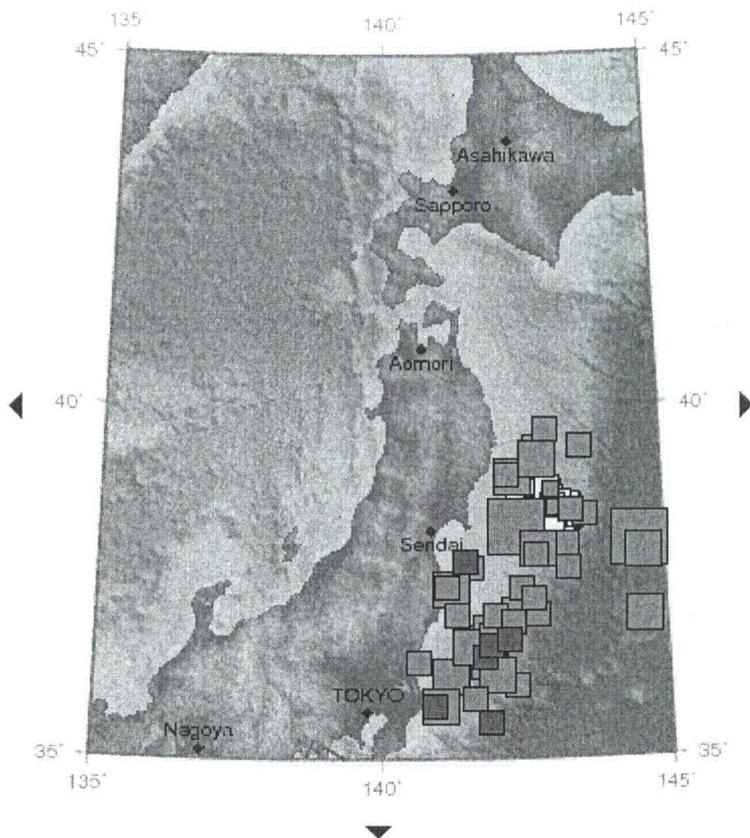
http://www.world-nuclear-news.org/RS_Massive_earthquake_hits_Japan_1103111.html?je

Wegner, Mary

From: Wegner, Mary
Sent: Friday, March 11, 2011 7:39 AM
To: Tabatabai, Omid
Subject: RE: INFO: Japan Earthquake
Attachments: image001.png; image002.jpg; image003.png; image004.png; image005.png; image006.png; image007.png; image008.jpg; image009.jpg; image010.jpg; image011.jpg; image012.png; image013.jpg

Fri Mar 11 12:00:03 UTC 2011

80 earthquakes on this map



Magnitude 8.9 - NEAR THE EAST COAST OF HONSHU, JAPAN

2011 March 11 05:46:23 UTC

Earthquake Details

- This is a computer-generated message -- this event has not yet been reviewed by a seismologist.

Magnitude 8.9

Date-Time

- **Friday, March 11, 2011 at 05:46:23 UTC**
- Friday, March 11, 2011 at 02:46:23 PM at epicenter
- Time of Earthquake in other Time Zones

Location 38.322°N, 142.369°E
Depth 24.4 km (15.2 miles) set by location program
Region NEAR THE EAST COAST OF HONSHU, JAPAN
130 km (80 miles) E of **Sendai, Honshu, Japan**
Distances 178 km (110 miles) E of **Yamagata, Honshu, Japan**
178 km (110 miles) ENE of **Fukushima, Honshu, Japan**
373 km (231 miles) NE of **TOKYO, Japan**

Location Uncertainty horizontal +/- 13.5 km (8.4 miles); depth fixed by location program

Parameters NST=350, Nph=351, Dmin=416.3 km, Rmss=1.46 sec, Gp= 29°,
M-type="moment" magnitude from initial P wave (tsuboi method) (Mi/Mwp), Version=A

Source
• USGS NEIC (WDCS-D)

Event ID usc0001xgp

Very strong quake rattles Japan

2011/03/11

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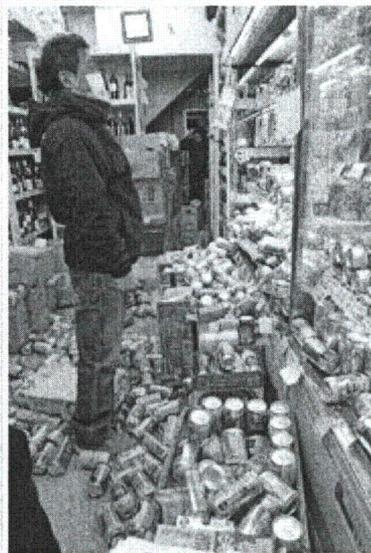


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district of Tokyo's Chuo Ward on Friday. (Mitsuyoshi Amata)

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Fukuoka) Cans of beer are strewn across the floor of a liquor store in Tokyo's Koto Ward after a strong quake jolted eastern Japan on Friday. (Azumi Fukuoka)

Editor's note: We will update our earthquake news as frequently as possible on AJW's Facebook page: <http://www.facebook.com/AJW.Asahi>. Please check to keep informed on what's happening. / Toshio Jo, managing editor at International Division, The Asahi Shimbun.

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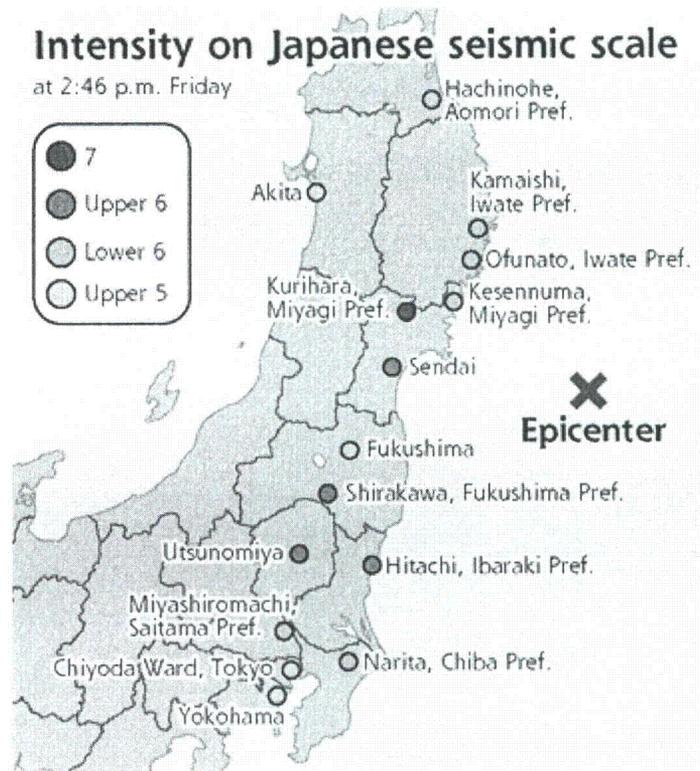
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The Economy, Trade and Industry Ministry said the Onagawa nuclear power plant in Onagawa, eastern Miyagi Prefecture, suspended its operations following the earthquake.

East Japan Railway Co. suspended all services on its Shinkansen bullet train and other lines in the Tokyo metropolitan area

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

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

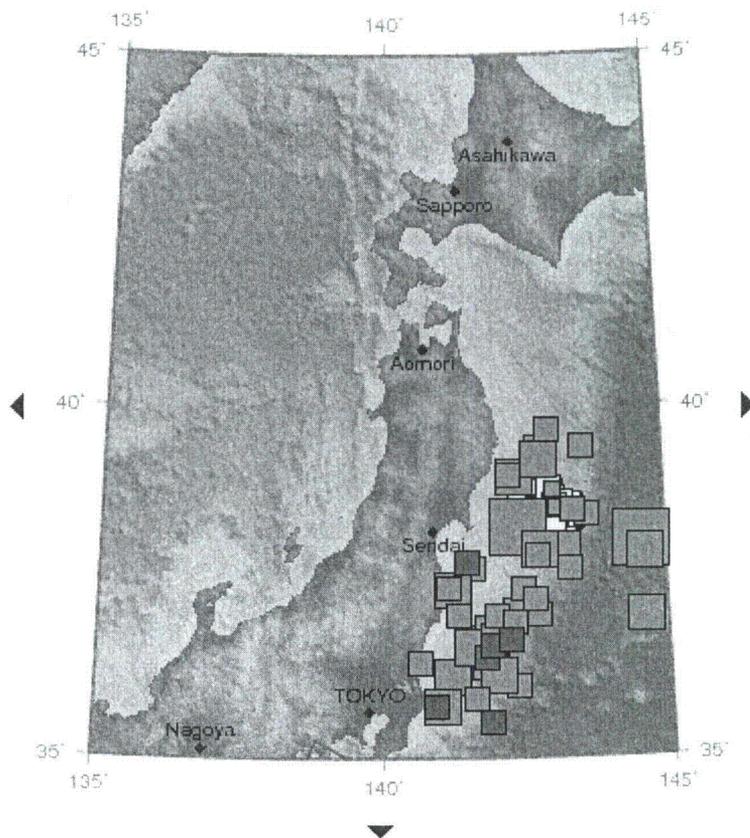
Wegner, Mary

From: Wegner, Mary
Sent: Friday, March 11, 2011 8:54 AM
To: Thomas, Eric
Subject: FW: Earthquake in Japan
Attachments: Powerful quake rocks northern Japan - Onagawa reactor automatically shuts down; Japan: Onagawa and Fukushima plants shut down; Japan: Onagawa map and details; Japan earthquake: Government Says No radioactive leaks at Tohoku nuke plants; Japan earthquake/tsunami - more reactors shut down; Japan: No Radiation Leaks Or Abnormalities - 11 reactors shut down; Japan: Fukushima diesel generator failure; Japan: media reports government has decided to declare a nuclear power emergency situation; Japan: Fukushima 1 & 2 cooling system problems; Japan Update: Emergency Cooling System Working at Quake-hit Fukushima Plant; Japan's Tepco shuts seven nuclear units after earthquake ; Japan initiates emergency protocol after earthquake; image001.png; image002.jpg; image003.png; image004.png; image005.png; image006.png; image007.png; image008.jpg; image009.jpg; image010.jpg; image011.jpg; image012.png; image013.jpg

From: Wegner, Mary
Sent: Friday, March 11, 2011 7:38 AM
To: Beasley, Benjamin; Criscione, Lawrence; King, Mark
Subject: Earthquake in Japan

Please forward if you like. I do not have my lists at home.

Fri Mar 11 12:00:03 UTC 2011
80 earthquakes on this map



Magnitude 8.9 - NEAR THE EAST COAST OF HONSHU, JAPAN

2011 March 11 05:46:23 UTC

Earthquake Details

- This is a computer-generated message -- this event has not yet been reviewed by a seismologist.

Magnitude 8.9

Date-Time

- Friday, March 11, 2011 at 05:46:23 UTC
- Friday, March 11, 2011 at 02:46:23 PM at epicenter
- Time of Earthquake in other Time Zones

Location

38.322°N, 142.369°E

Depth

24.4 km (15.2 miles) set by location program

Region

NEAR THE EAST COAST OF HONSHU, JAPAN

Distances

130 km (80 miles) E of **Sendai, Honshu, Japan**

178 km (110 miles) E of **Yamagata, Honshu, Japan**

178 km (110 miles) ENE of **Fukushima, Honshu, Japan**

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Source

- USGS NEIC (WDCS-D)

Event ID

usc0001xgp

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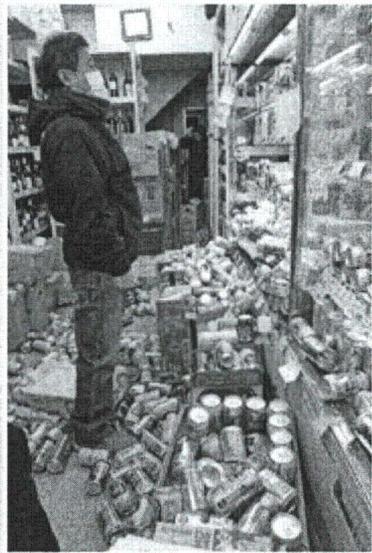


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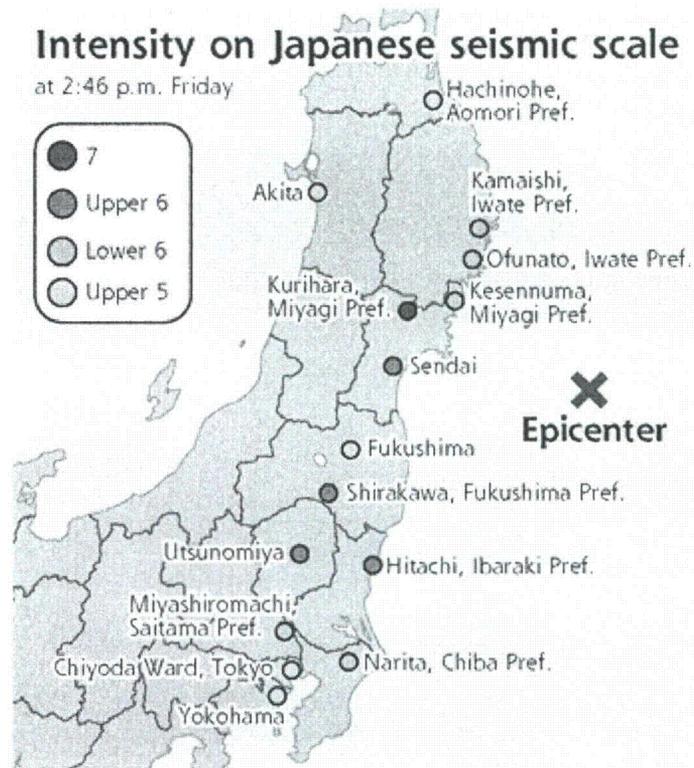
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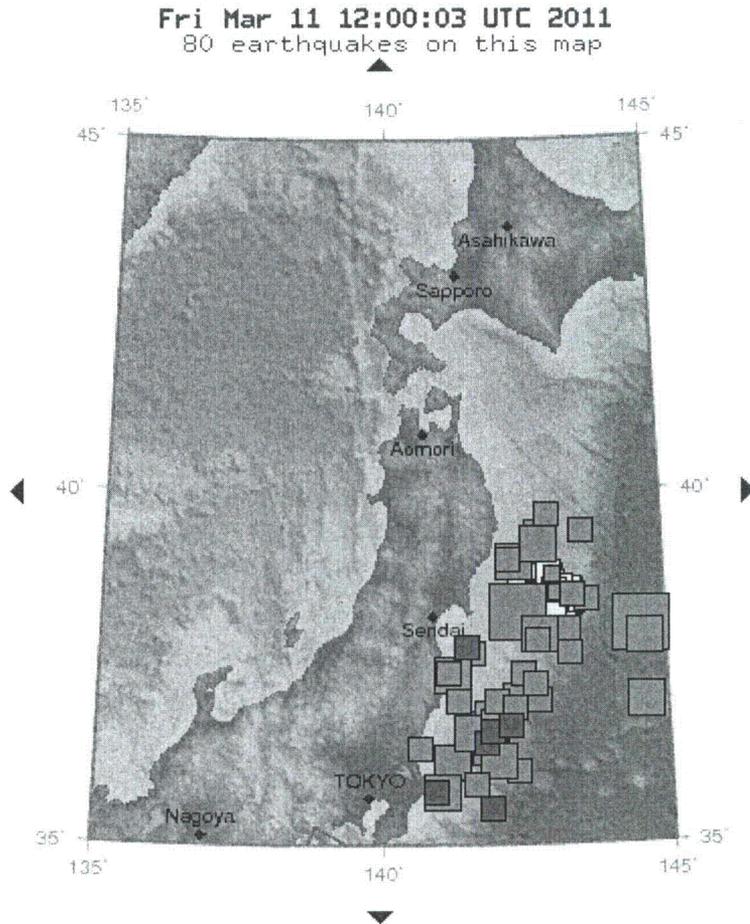
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Wegner, Mary

From: Wegner, Mary
Sent: Friday, March 11, 2011 7:49 AM
To: Breskovic, Clarence
Subject: Earthquake in Japan
Attachments: image001.png; image002.jpg; image003.png; image004.png; image005.png; image006.png; image007.png; image008.jpg; image009.jpg; image010.jpg; image011.jpg; image012.png; image013.jpg

Thanks for the info. This is what I have:



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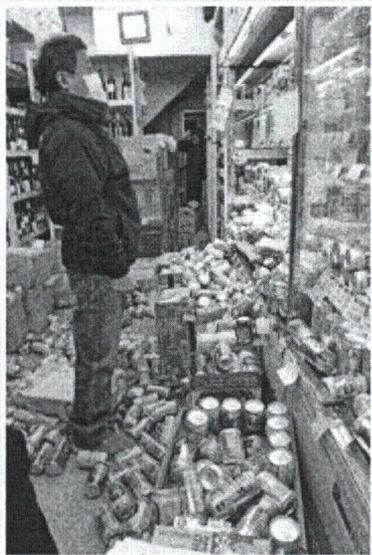


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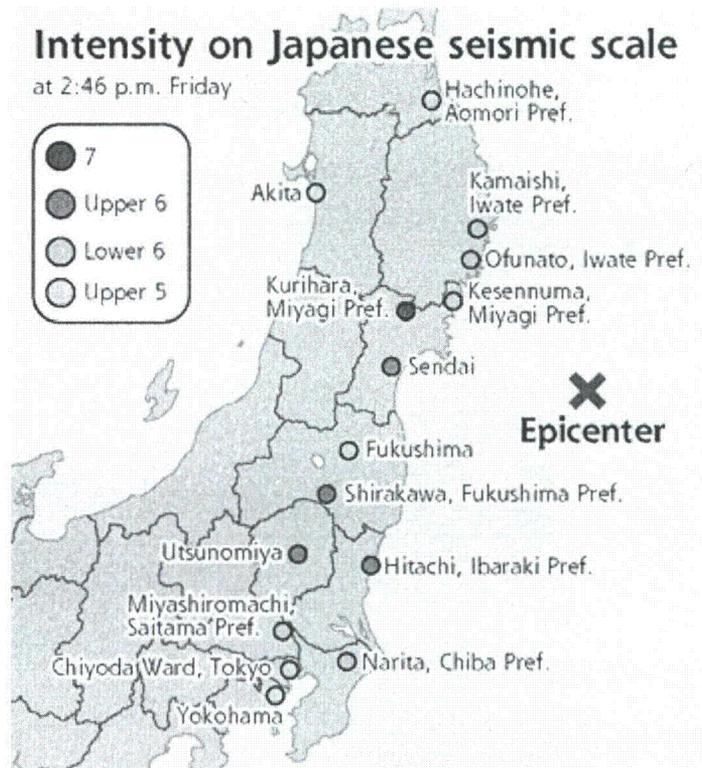
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Caponiti, Kathleen

From: Mitchell, Matthew *NER*
Sent: Tuesday, March 22, 2011 12:34 PM
To: Cusumano, Victor
Subject: FOIA E-mail #2

From: Mitchell, Matthew *NER*
Sent: Friday, March 11, 2011 2:05 PM
To: Hardies, Robert
Subject: FYI

<http://www.tepco.co.jp/en/press/corp-com/release/11031204-e.html>

19/32

Pires, Jose

From: Pires, Jose
Sent: Tuesday, March 15, 2011 11:32 AM
To: Kammerer, Annie; Ake, Jon
Cc: Graves, Herman; Hogan, Rosemary; Candra, Hernando; Munson, Clifford
Subject: RE: Japanese Earthquake Questions -= Table of BWRs Mark I

We will do. We had a project review meeting at NSIR this morning but will start with this now. We will coordinate among ourselves to avoid sending you scattered information.

If you happen to need strong motion information, please let me know. Rasool has been looking at that with a few seismologists that he knows and is getting information (some of it a bit different from ShakeCast).

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

From: Kammerer, Annie
Sent: Tuesday, March 15, 2011 11:23 AM
To: Pires, Jose; Ake, Jon
Cc: Graves, Herman; Hogan, Rosemary; Candra, Hernando; Munson, Clifford
Subject: RE: Japanese Earthquake Questions -= Table of BWRs Mark I

Jose et al:

Can you guys look at some of the engineering questions and help us out. We got back the responses from the folks tasked with helping and they answered 70% of the questions.. "see GDC 2" not very helpful.

Please just look at the unanswered questions and pick the ones most suited to you (and especially those which Cliff, Jon and I would be challenged to answer).

Please provide 2 responses (1) high level answer for the public (2) additional technical or sensitive info for in-house staff only. There are some examples in the document.

Track changes and please email to cliff and me whatever you can produce today. We are doing a daily update.

Thanks,
Annie

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

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

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

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

A/33

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

Thanks,

Jose.

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

From: Ake, Jon

Sent: Monday, March 14, 2011 11:06 PM

To: Pires, Jose; Kammerer, Annie

Cc: Graves, Herman; Hogan, Rosemary; Candra, Hernando

Subject: RE: Japanese Earthquake Questions -- Table of BWRs Mark I

Jose et al.,

here is a another sheet to have if needed, it has summary of CEUS plants with OBE, SSE, IPEEE review level spectra etc,

cheers-

jon

From: Pires, Jose

Sent: Monday, March 14, 2011 3:46 PM

To: Pires, Jose; Kammerer, Annie; Ake, Jon

Cc: Graves, Herman; Hogan, Rosemary; Candra, Hernando

Subject: RE: Japanese Earthquake Questions -- Table of BWRs Mark I

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

From: Pires, Jose

Sent: Monday, March 14, 2011 3:32 PM

To: Pires, Jose; Kammerer, Annie; Ake, Jon

Cc: Graves, Herman; Hogan, Rosemary; Candra, Hernando

Subject: RE: Japanese Earthquake Questions -- Table of BWRs Mark I

With the table.

From: Pires, Jose

Sent: Monday, March 14, 2011 3:28 PM

To: Pires, Jose; Kammerer, Annie; Ake, Jon

Cc: Graves, Herman; Hogan, Rosemary; Candra, Hernando

Subject: RE: Japanese Earthquake Questions -- Table of BWRs Mark I

Annie,

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

Thanks,

Jose.

From: Pires, Jose

Sent: Monday, March 14, 2011 2:29 PM

To: Kammerer, Annie; Ake, Jon
Cc: Graves, Herman; Hogan, Rosemary
Subject: RE: Japanese Earthquake Questions

Annie,

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

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

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

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

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

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

Thanks,

Jose.

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

Pat,

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

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

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

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

Annie

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

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

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

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

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

What kind of experts do you have?

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

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

Caponiti, Kathleen

From: Mitchell, Matthew
Sent: Tuesday, March 22, 2011 12:35 PM
To: Cusumano, Victor
Subject: FOIA E-mail #3

From: Mitchell, Matthew, *NAR*
Sent: Friday, March 11, 2011 2:39 PM
To: Widrevitz, Dan; Audrain, Margaret
Subject: FYI - Japan

The place to get your info about the Japanese NPPs is the Tokyo Electric Power Company website.

A134

Wegner, Mary

From: Wegner, Mary
Sent: Friday, March 11, 2011 9:35 AM
To: Thomas, Eric; Beasley, Benjamin; Criscione, Lawrence; Breskovic, Clarence
Subject: TEPCO Impact
Attachments: TEPCO Impact.docx

(Mar 11,2011)

Impact to TEPCO's Facilities due to Miyagiken-Oki Earthquake (as of 9PM)

Below is major impact to TEPCO's facilities due to the Miyagiken-Oki Earthquake that occurred today at 2:46PM.

[Nuclear Power Station]

Fukushima Daiichi Nuclear Power Station:

Units 1 to 3: shutdown due to earthquake

Units 4 to 6: outage due to regular inspection

Fukushima Daini Nuclear Power Station:

Units 1 to 4: shutdown due to earthquake

Kashiwazaki Kariwa Nuclear Power Station:

Units 1, 5, 6, 7: normal operation

Units 2 to 4: outage due to regular inspection

* Survey data on radiation by exhaust stack monitors and monitoring cars have indicated no departure from normal level for all nuclear power stations.

[Thermal Power Station]

Hirono Thermal Power Station Units 2 and 4: shutdown due to earthquake

Hitachinaka Thermal Power Station Unit 1: shutdown due to earthquake

Kashima Thermal Power Station Units 2, 3, 5, 6: shutdown due to earthquake

Chiba Thermal Power Station Unit 2 Axis 1: shutdown due to earthquake

Ohi Thermal Power Station Units 2, 3: shutdown due to earthquake

Goi Thermal Power Station Unit 4: shutdown due to earthquake

[Hydro Power Station]

14 stations in Fukushima Prefecture, 4 stations in Tochigi Prefecture, 4 stations in Yamanashi Prefecture were shutdown due to earthquake.

[Transmission System, etc.]

Eight substations shown below have been shutdown:

- Naka Substation
- Shin Mogi Substation
- Joban Substation
- Ibaraki Substation
- Ishioka Substation
- Nishi Mito Substation
- Kawachi Substation
- Haga Substation

[Blackout in TEPCO's Service Area]

Total of about 3.8 million households are out of power.

Tokyo: 102,359

Kanagawa Pref.: 1,135,827

Tochigi Pref.: 568,807

Chiba Pref.: 347,609

Saitama Pref: 342,878

Gunma Pref.: 225,524

Ibaraki Pref: 823,404

Yamanashi Pref: 145,009

Shizuoka Pref: 113,051 (east of Fuji River)

[Supply and Demand Status within TEPCO's Service Area to Secure Stable Power Supply]

Backup supply from Shinshinano Conversion Station: 600MW

Backup supply from Sakuma Conversion Station: 300MW
Backup supply from Higashi Shimizu Conversion Station: 100MW

Because TEPCO's facilities have been seriously damaged, power shortage may occur.
TEPCO appreciates customers' cooperation in reducing electricity usage by avoiding using unnecessary lighting and electrical equipment.
We are also making requests to some large-scale customers with contracts to partially suspend operation to suppress usage of power.

We are taking all measures to restore power, however, we expect extremely challenging situation in power supply for tomorrow as well.
We kindly ask our customers to cooperate with us in reducing usage of power.

Please do NOT touch cut-off electric wires.
A temporary small fire occurred at a service building in Fukushima Daini Nuclear Power Station. However, it was extinguished at 4:07 PM today.

Mar 11,2011)

Impact to TEPCO's Facilities due to Miyagiken-Oki Earthquake (as of 10PM)

Below is major impact to TEPCO's facilities due to the Miyagiken-Oki Earthquake that occurred today at 2:46PM.
*new items are underlined

[Nuclear Power Station]

Fukushima Daiichi Nuclear Power Station:

Units 1 to 3: shutdown due to earthquake

Units 4 to 6: outage due to regular inspection

*Evacuation has been instructed by the national government to the local residents within 3 km radius of Fukushima Daiichi Nuclear Power Station

Fukushima Daini Nuclear Power Station:

Units 1 to 4: shutdown due to earthquake

Kashiwazaki Kariwa Nuclear Power Station:

Units 1, 5, 6, 7: normal operation

Units 2 to 4: outage due to regular inspection

* Survey data on radiation by exhaust stack monitors and monitoring cars have indicated no departure from normal level for all nuclear power stations.

[Thermal Power Station]

Hirono Thermal Power Station Units 2 and 4: shutdown due to earthquake

Hitachinaka Thermal Power Station Unit 1: shutdown due to earthquake

Kashima Thermal Power Station Units 2, 3, 5, 6: shutdown due to earthquake

Chiba Thermal Power Station Unit 2 Axis 1: shutdown due to earthquake

Ohi Thermal Power Station Units 2, 3: shutdown due to earthquake

Goi Thermal Power Station Unit 4: shutdown due to earthquake

[Hydro Power Station]

14 stations in Fukushima Prefecture, 4 stations in Tochigi Prefecture, 4 stations in Yamanashi Prefecture were shutdown due to earthquake.

[Transmission System, etc.]

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- Shin Mogi Substation
- Joban Substation
- Ibaraki Substation
- Ishioka Substation
- Nishi Mito Substation
- Kawachi Substation
- Haga Substation

[Blackout in TEPCO's Service Area]

Total of about 3.44 million households are out of power.

Tokyo: 78,273

Kanagawa Pref.: 813,203

Tochigi Pref.: 567,925

Chiba Pref.: 347,609

Saitama Pref: 328,165

Gunma Pref.: 225,524

Ibaraki Pref: 823,255

Yamanashi Pref: 145,009

Shizuoka Pref: 113,051 (east of Fuji River)

[Supply and Demand Status within TEPCO's Service Area to Secure Stable Power Supply]

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Backup supply from Sakuma Conversion Station: 300MW

Backup supply from Higashi Shimizu Conversion Station: 100MW

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A temporary small fire occured at a service building in Fukushima Daini Nuclear Power Station. However, it was extinguished at 4:07 PM today.

(Mar 11,2011)

Impact to TEPCO's Facilities due to Miyagiken-Oki Earthquake (as of 11PM)

Below is major impact to TEPCO's facilities due to the Miyagiken-Oki Earthquake that occurred today at 2:46PM.

*new items are underlined

[Nuclear Power Station]

Fukushima Daiichi Nuclear Power Station:

Units 1 to 3: shutdown due to earthquake
Units 4 to 6: outage due to regular inspection
*Evacuation has been instructed by the national government to the local residents within 3 km radius of Fukushima Daiichi Nuclear Power Station

Fukushima Daini Nuclear Power Station:
Units 1 to 4: shutdown due to earthquake

Kashiwazaki Kariwa Nuclear Power Station:
Units 1, 5, 6, 7: normal operation
Units 2 to 4: outage due to regular inspection
* Survey data on radiation by exhaust stack monitors and monitoring cars have indicated no departure from normal level for all nuclear power stations.

[Thermal Power Station]
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Kashima Thermal Power Station Units 2, 3, 5, 6: shutdown due to earthquake
Chiba Thermal Power Station Unit 2 Axis 1: shutdown due to earthquake
Ohi Thermal Power Station Units 2, 3: shutdown due to earthquake
Goi Thermal Power Station Unit 4: shutdown due to earthquake
Higashi-Ohgishima Thermal Power Station Unit 1: shutdown due to earthquake

[Hydro Power Station]
14 stations in Fukushima Prefecture, 4 stations in Tochigi Prefecture,
4 stations in Yamanashi Prefecture were shutdown due to earthquake..

[Transmission System, etc.]
Eight substations shown below have been shutdown:
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- Shin Mogi Substation
- Joban Substation
- Ibaraki Substation
- Ishioka Substation
- Nishi Mito Substation
- Kawachi Substation
- Haga Substation

[Blackout in TEPCO's Service Area]
Total of about 2.97 million households are out of power.
Tokyo: 78,273
Kanagawa Pref.: 463,121
Tochigi Pref.: 567,925
Chiba Pref.: 347,609
Saitama Pref: 310,772
Gunma Pref.: 225,524
Ibaraki Pref: 735,892
Yamanashi Pref: 123,925
Shizuoka Pref: 113,051 (east of Fuji River)

[Supply and Demand Status within TEPCO's Service Area to Secure Stable Power Supply]
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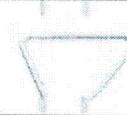
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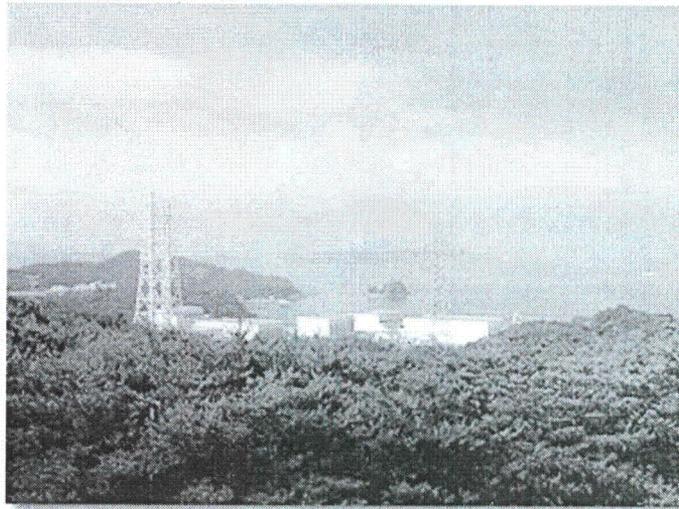
Wegner, Mary

From: Wegner, Mary
Sent: Friday, March 11, 2011 9:57 AM
To: Thomas, Eric
Subject: Info on Tohoku plants
Attachments: Tohoku.docx



Onagawa Nuclear Power Station

Onagawa-cho, Osika-gun and Ishinomaki City, Miyagi Prefecture



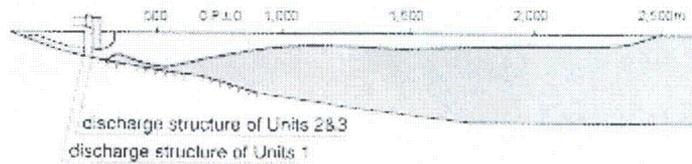
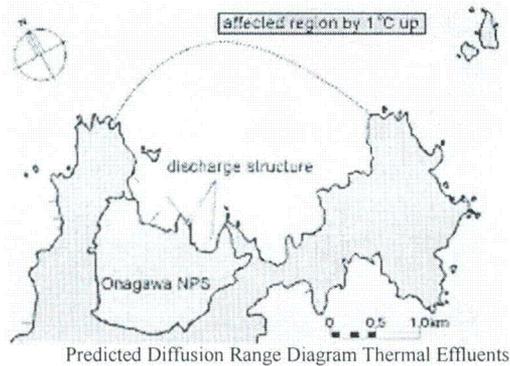
A Profile of the Nuclear Power Station

The onagawa nuclear power station is located in both Onagawa-cho and Ishinomaki City, along the coast of the Pacific Ocean, 70 km to the north of the Sendai City. The site area is about 1,730,000 sq. meters. The site was excavated to place the buildings of the station on deep rigid bed-rocks and artificial rocks. From the beginning, the main buildings of the Onagawa Station, such as the reactor buildings, the turbine buildings and the control building, have been arranged in consideration of nature. In January of 2001, the facilities obtained ISO14001 certification, an international standard related to the environment.

Unit No.	Capacity (MW)	Reactor Type	Commercial Operation	Main Contractor
1	524	BWR	Jun. 1984	Toshiba
2	825	BWR	Jul. 1995	Toshiba
3	825	BWR	Jan. 2002	Toshiba/ Hitachi

Features

-Thermal Effluent Countermeasures-
Cooling seawater, after passing through the main condenser, is discharged into the sea as thermal effluents about 7°C warmer than ambient water at the outlet. An underwater outlet, about 10 meters below the surface, is used for discharging thermal effluents to reduce their influence on the ecosystem of the neighboring sea area.



Cross Section of the Predicted Diffusion Range Diagram

Locality

The power station is located on the Oshika Peninsula near Matsushima, one of the three best scenic places in Japan. The peninsula, jutting out into the Pacific, contains Minami Sanriku Kinkazan Quasi-National Park where visitors can enjoy a magnificent view of the Cobalt Line road, a 30-km-long Rias coast. Off the tip of the peninsula is Kinkazan Islet which is known as the site of the first gold mine in Japan. The islet is covered with virgin forests, so visitors can enjoy watching herds of wild deer and monkeys and a scenic view of white rocks and the blue sea.

[Nuclear Power](#)

[Top Page](#)

 東北電力
TOHOKU ELECTRIC POWER CO., INC.

Higashidori Nuclear Power Station

Higashidori Nuclear Power Station

Higashidori-mura, Shimokita-gun, Aomori Prefecture



A Profile of the Nuclear Power Station

The Higashidori Nuclear Power Station is located in Higashidori-mura, looking out onto the Pacific Ocean, on the eastern side of the Shimokita Peninsula in Aomori Prefecture. The site area is about 3,580,000sq. meters. The Unit 1 is a boiling water reactor with the output of 1,100 MW. This nuclear power station consists mainly of a reactor building, a turbine building, a service building, and a seawater heat exchanger building. Higashidori Nuclear Power Station started construction in December, 1998 and started commercial operation in December, 2005.

Unit No.	Capacity(MW)	Reactor Type	Commercial Operation	Main Contractor
1	1100	BWR	Dec.2005	Toshiba

Features

Main Features of the Higashidori Nuclear Power Station Unit 1

Higashidori Unit 1 adopted BWR5, a tried and trusted design for many years, and largely follows a successful design pattern set by the Onagawa Unit 3 (Tohoku EPCO's another nuclear asset).

Design characteristics underpinning the Higashidori Unit 1 are an advanced Mark-I reactor vessel and seawater-based heat exchanger building, among others.

-Advanced Mark-I reactor vessel-

With its bell shape, an enhanced Mark-I reactor vessel allows greater

maneuverability for inspection and maintenance than a conventional conical flask-shaped Mark-I vessel does. This design improves efficiency of intra-vessel activity as experienced with the Onagawa Unit 3.

-Detached structure for seawater-based heat exchanger-

A building, separated and apart from the reactor containment structure, is dedicated specifically for housing the heat exchange system based on seawater to provide primary coolant for the plant. This design shortens the total length of the seawater pipes, cutting down on the time and effort spent on anti-corrosion and other maintenance activities, as with the case of the Onagawa Unit 3.

-Condensed water storage incorporated into the containment structure-

To utilize the space otherwise occupied by the seawater pipes, the reactor containment building now houses a condensed water storage tank, following the Onagawa pattern.

-100-percent steam bypassing mechanism-

A 100-percent bypass system can divert all the main steam to a condenser in the event of electrical or mechanical failure of non-critical nature, in order to avoid an automatic shutdown. Once the fault has been corrected, the bypass system restores in no time the normal steam flow to turbines to generate electricity.

-Tontu Village (PR Facilities)-



Tontu Village was opened in October 1999. Operated jointly with Tokyo Electric Power Co., this village is dedicated to promoting the intercommunication of man and nature. The village consists of facilities where visitors can learn about harmony between energy development and nature in the natural environment of the Higashidori-mura rural community.

Locality

The Higashidori Nuclear Power Station is sited in Higashidori-mura, facing the Pacific Ocean, on the eastern side of the Shimokita Peninsula in Aomori Prefecture. To the north of Higashidori-mura is Cape Shiriyazaki on the northeastern tip of the main island of Japan. This cape is a part of the Shimokita Peninsula National Park. It commands a fine view of a white lighthouse, a green grassy plain and a blue expanse of ocean. On the Pacific side of Higashidori-mura are as many as twenty-four lakes and marshes

formed by the natural damming by dune sand. These lakes and marshes form one of the most important wildlife habitats in Japan. Lake Sakyō, among others, is well known as a habitat for small green algae belonging to the genus *Cladophora*.

[Nuclear Power](#)

[Top Page](#)

Caponiti, Kathleen

From: Mitchell, Matthew
Sent: Tuesday, March 22, 2011 12:35 PM
To: Cusumano, Victor
Subject: FOIA E-mail #4

From: Mitchell, Matthew *MR*
Sent: Saturday, March 12, 2011 8:05 AM
To: Hardies, Robert
Subject: RE: FYI

I've seen that as well.

Secondary containment buildings aren't all that robust, but still...

Apparently no change in the ex-primary containment radiation levels, however, after the explosion.

From: Hardies, Robert *MR*
Sent: Saturday, March 12, 2011 5:12 AM
To: Mitchell, Matthew
Subject: RE: FYI

My dog woke me up to go out. I turned on CNN. They had breaking video they could not explain. To me it looked like a containment building disappearing in an explosive cloud. WTF.

From: Mitchell, Matthew *MR*
Sent: Friday, March 11, 2011 2:05 PM
To: Hardies, Robert
Subject: FYI

<http://www.tepco.co.jp/en/press/corp-com/release/11031204-e.html>

A/37

Wegner, Mary

From: Wegner, Mary
Sent: Friday, March 11, 2011 10:25 AM
To: Thomas, Eric
Subject: DB Quake

What is the design basis earthquake for Diablo Canyon? I am guessing it would be the highest in the US.

Wegner, Mary

From: Wegner, Mary
Sent: Friday, March 11, 2011 11:19 AM
To: Thomas, Eric
Subject: Info on Tohoku Plants

Onagawa nuclear power plant

Unit 1: Online, reactor automatically scrammed

Unit 2: Reactor starting up from periodic inspection, reactor automatically scrammed

Unit 3: Online, reactor automatically scrammed

Higashi Dori nuclear power plant

Unit 1 : Shut down in the midst of periodic inspection

Caponiti, Kathleen

From: Mitchell, Matthew
Sent: Tuesday, March 22, 2011 12:35 PM
To: Cusumano, Victor
Subject: FOIA E-mail #5

From: Mitchell, Matthew *NRR*
Sent: Saturday, March 12, 2011 9:13 AM
To: Hardies, Robert
Subject: RE: FYI

Upon further review, it sounds like that probably had a hydrogen leak from the turbine-generator's cooling system which allowed hydrogen to build up in the secondary containment building and be set off by a spark.

That scenario at least makes sense to me.

From: Hardies, Robert, *NRR*
Sent: Saturday, March 12, 2011 5:12 AM
To: Mitchell, Matthew
Subject: RE: FYI

My dog woke me up to go out. I turned on CNN. They had breaking video they could not explain. To me it looked like a containment building disappearing in an explosive cloud. WTF.

From: Mitchell, Matthew, *NRR*
Sent: Friday, March 11, 2011 2:05 PM
To: Hardies, Robert
Subject: FYI

<http://www.tepco.co.jp/en/press/corp-com/release/11031204-e.html>

A140

Wegner, Mary

From: Wegner, Mary
Sent: Friday, March 11, 2011 11:46 AM
To: Thomas, Eric
Subject: FW: Japan Update: Evcuations ordered around Fukushima

From: Breskovic, Clarence
Sent: Friday, March 11, 2011 11:38 AM
To: Breskovic, Clarence
Subject: Japan Update: Evcuations ordered around Fukushima

Contents

[Japan Orders Evacuation of Residents Near N-plant](#)

[Kyodo: Gsdf Sent To Area Near Fukushima Nuke Plant To Assist Evacuation](#)

[3,000 Ordered To Evacuate Near Quake-hit Fukushima Nuclear Plant](#)

[Fukushima Pref. Warns of Radiation Leak at N-plant](#)

Japan Orders Evacuation of Residents Near N-plant

Tokyo, March 11 (Jiji Press) -- The government on Friday ordered evacuation of residents in a 3-kilometer radius from a quake-hit Tokyo Electric Power Co. nuclear power plant in Fukushima Prefecture, northern Japan, citing a possible radiation leak.

The government, however, has confirmed no radiation leak so far. The evacuation order was issued after the 8.8-magnitude quake hit northern Japan to have all the three reactors at the power plant shut down automatically.

Chief Cabinet Secretary Yukio Edano said at a news conference that the government called for preemptive evacuation, urging the 5,862 residents to stay calm in following the order.

The government also instructed 45,345 residents living outside the area but in a 10-kilometer radius to stay at home.

According to the Nuclear and Industrial Safety Agency of the Ministry of Economy, Trade and Industry, cooling functions of the No. 2 reactor at the plant have stopped working, affected by a power outage caused by the quake.

The agency is unable to confirm cooling water levels at the reactor and the No.1 reactor. The plant's emergency diesel power generation equipment has stopped working, leading the company to dispatch power supply cars, according to the agency.

As the power supply cars have reached the plant, the company is proceeding with work to resupply electricity to restore cooling functions.

The Fukushima prefectural government has reported that cooling water levels at the No.2 reactor are dropping and warned that continued decline would expose nuclear fuel rods to air to generate radiation.

Reactors were also automatically shut down at the company's Fukushima No. 2 nuclear power station, with emergency supply of cooling water starting at one of them.

The nuclear safety agency said sufficient cooling water is supplied at the reactor, but tsunami prevented the agency from confirming whether pumps taking in sea water for two other reactors are working properly.

Kyodo: Gsdf Sent To Area Near Fukushima Nuke Plant To Assist Evacuation

Tokyo, March 12 Kyodo -- A total of around 160 Ground Self-Defense Force personnel and a number of large vehicles have been dispatched to an area near the Fukushima No. 1 nuclear plant in Fukushima Prefecture to help evacuate local residents, a senior SDF officer said late Friday.

More than 100 members of a GSDF special unit trained to deal with chemical disasters have been advancing toward the area, SDF chief Ryoichi Oriki said at a news conference at the Defense Ministry.

Some 3,000 residents near the nuclear plant have been ordered to evacuate due to a problem with a cooling system detected at one of the six reactors at the Tokyo Electric Power Co. plant.

Meanwhile, liaison officers from U.S. Forces Japan were being sent to the ministry to coordinate the disaster response of the SDF and U.S. forces, he added.

Around 300 aircraft and about 40 vessels of the SDF have been dispatched or are being prepared for dispatch to deal with the disaster, according to the ministry.

3,000 Ordered To Evacuate Near Quake-hit Fukushima Nuclear Plant

Tokyo, March 11 Kyodo -- (EDS: ADDING GOV'T SPOKESMAN'S COMMENTS) Japan declared a state of atomic power emergency Friday after the country, which has about 50 nuclear power reactors, was hit by a powerful earthquake, instructing around 3,000 residents near the Fukushima No. 1 plant to evacuate.

Japan's top government spokesman Yukio Edano told an evening press conference, "We have a situation where one of the reactors (of the plant) cannot be cooled down." But the chief Cabinet secretary said the evacuation instruction was only precautionary.

"No radiation has leaked outside the reactor. The incident poses no danger to the environment at the moment," Edano said.

The post-quake situation prompted the Vienna-based International Atomic Energy Agency to scramble for details from contacts with Japan's industry ministry, while saying in a statement that at least four nuclear power plants "closest to the quake have been safely shut down" after the 2:46 p.m. quake.

Tokyo Electric Power Co., the operator of the Fukushima plant, reported that the level of the water surrounding the fuel rods was going down in the reactor.

Radioactive materials could be emitted if part of a rod is exposed to the air.

But officials of the prefectural government dismissed a view that the plant is in any critical situation, saying the top of the water is 3.4 meters above the fuel rods at the troubled No. 2 reactor.

The evacuation advisory was issued for people living within a 3-kilometer radius of the plant, while those living within a 10-kilometer radius were asked to stay home, Edano said.

Prime Minister Naoto Kan declared the emergency even though no radiation leak has been detected after the magnitude 8.8 quake so that authorities can easily implement emergency relief measures, Edano said.

Japanese Defense Minister Toshimi Kitazawa ordered the Self-Defense Forces to act in response to the state of atomic power emergency. Also, the Defense Ministry dispatched a chemical corps of the Ground Self-Defense Force to the plant.

Motohisa Ikeda, senior vice industry minister, also left Tokyo for Fukushima on Friday evening by an SDF helicopter.

According to the industry ministry, a total of 11 nuclear reactors were automatically shut down at the Onagawa plant, Fukushima No. 1 and No. 2 plants and Tokai No. 2 plant after the biggest-magnitude quake in the country's modern history.

At the Onagawa plant in Miyagi Prefecture, a fire started at a building housing the turbine, the operator, Tohoku Electric Power Co., said, denying it detected any signs of radiation leaks.

Water spilled from pools containing fuel rods at the Kashiwazaki-Kariwa plant on the Sea of Japan coast in Niigata Prefecture and the Onagawa plant, the operators said, saying they saw no signs suggesting radiation leaks.

Hokkaido Electric Power Co. reported no problems at its Tomari No. 1, No. 2 and No. 3 plants on the northernmost main island.

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

Fukushima Pref. Warns of Radiation Leak at N-plant

Fukushima, March 11 (Jiji Press) -- The Fukushima prefectural government on Friday warned that water levels dropped at a reactor of a quake-hit Tokyo Electric Power Co. <9501> nuclear power plant, posing a threat of a radiation leak.

If the water levels at the No.2 reactor at the Fukushima No. 1 nuclear power station of the company keep falling, nuclear fuel rods would be exposed to air to generate radiation, according to the prefecture.

The prefecture urged residents in a 2-kilometer radius from the reactor to immediately evacuate.

Caponiti, Kathleen

From: Mitchell, Matthew
Sent: Tuesday, March 22, 2011 12:36 PM
To: Cusumano, Victor
Subject: FOIA E-mail #8

From: Mitchell, Matthew *NR*
Sent: Monday, March 14, 2011 11:48 AM
To: Taylor, Robert, *NR*
Subject: Kyodo News Story

I assume you all are getting this:

<http://english.kyodonews.jp/news/2011/03/77870.html>

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

TOKYO, March 14, Kyodo

Fuel rods at the quake-hit Fukushima (Dai-ichi) 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

Wegner, Mary

From: Wegner, Mary
Sent: Friday, March 11, 2011 1:17 PM
To: Beasley, Benjamin
Subject: FW: Radiation Level Rising in Fukushima Nuclear Plant Turbine Building - emergency generators dispatched

From: Breskovic, Clarence
Sent: Friday, March 11, 2011 1:14 PM
To: Breskovic, Clarence
Subject: Radiation Level Rising in Fukushima Nuclear Plant Turbine Building - emergency generators dispatched

Radiation Level Rising in Fukushima Nuclear Plant Turbine Building

Fukushima, Japan, March 12 Kyodo -- The radiation level is rising in the building housing a turbine of the No. 1 reactor of the Fukushima No. 1 nuclear power plant following Friday's powerful earthquake, the operator Tokyo Electric Power Co. said Saturday.

The company also said monitoring data suggested the air pressure level has also soared inside the container of the reactor.

State of Emergency Declared at Fukushima Plant

Tokyo Asahi Shimbun Online 1733 GMT 11 Mar 11

Friday's devastating earthquake in the Tohoku region may have created a dangerous situation at two nuclear reactors in Fukushima Prefecture.

Officials of the Nuclear and Industrial Safety Agency were informed by Tokyo Electric Power Co. that the emergency core cooling system was not working at two reactors.

In addition, another mechanism that had been used to send water to the core also stopped at 8:30 p.m.

If the cores are not sufficiently cooled, there is a danger of a possible core meltdown.

At a news conference Friday night, Chief Cabinet Secretary Yukio Edano said a state of emergency at a nuclear facility was declared at 4:36 p.m.

It is the first time such a state of emergency has been declared.

According to NISA officials, although the reactor core stopped operations after the earthquake hit, water had to be inserted to the core to cool it because heat continued to be emitted from the nuclear fuel.

Although workers had to initiate emergency core cooling system procedures, the lack of an external power source and the failure of an emergency generator crippled the system that circulates water to the core to cool it.

TEPCO officials dispatched 51 generator vehicles to the reactors in an attempt to restore power. One vehicle

reached one of the nuclear reactors late Friday and some of that reactor's power was restored.

At 9:23 p.m., the central government issued an evacuation instruction for residents living within a 3-kilometer radius of the No. 1 Fukushima nuclear power plant as well as an instruction to residents living within a radius of between 3 and 10 kilometers to remain indoors.

Edano said no radiation leakage had been detected.

The company issued an emergency evacuation order for the two reactors at the No. 1 Fukushima nuclear power plant. Officials from local communities gathered at a special monitoring facility in Okuma to oversee the cooling of the cores.

There was also the possibility that seawater pumps for cooling purposes may have stopped at two reactors at the No. 2 Fukushima nuclear power plant.

If those pumps remain inoperational, it could affect the emergency core cooling systems at those reactors as well.

Wegner, Mary

From: Wegner, Mary
Sent: Friday, March 11, 2011 1:21 PM
To: Breskovic, Clarence
Subject: RE: Radiation Level Rising in Fukushima Nuclear Plant Turbine Building - emergency generators dispatched

GE hired me in 1974 and I worked at Browns Ferry, Hatch, Brunswick and Dresden, so I am familiar with boilers as they used to be. I have also followed some of the power upgrades. I will try to translate the jargon for you, if you like – note that to me it is the lingo I used at the plants and may not realize that it is unfamiliar to others.

From: Breskovic, Clarence
Sent: Friday, March 11, 2011 1:14 PM
To: Breskovic, Clarence
Subject: Radiation Level Rising in Fukushima Nuclear Plant Turbine Building - emergency generators dispatched

Radiation Level Rising in Fukushima Nuclear Plant Turbine Building

Fukushima, Japan, March 12 Kyodo -- The radiation level is rising in the building housing a turbine of the No. 1 reactor of the Fukushima No. 1 nuclear power plant following Friday's powerful earthquake, the operator Tokyo Electric Power Co. said Saturday.

The company also said monitoring data suggested the air pressure level has also soared inside the container of the reactor.

State of Emergency Declared at Fukushima Plant

Tokyo [Asahi Shimbun Online](#) 1733 GMT 11 Mar 11

Friday's devastating earthquake in the Tohoku region may have created a dangerous situation at two nuclear reactors in Fukushima Prefecture.

Officials of the Nuclear and Industrial Safety Agency were informed by Tokyo Electric Power Co. that the emergency core cooling system was not working at two reactors.

In addition, another mechanism that had been used to send water to the core also stopped at 8:30 p.m.

If the cores are not sufficiently cooled, there is a danger of a possible core meltdown.

At a news conference Friday night, Chief Cabinet Secretary Yukio Edano said a state of emergency at a nuclear facility was declared at 4:36 p.m.

It is the first time such a state of emergency has been declared.

According to NISA officials, although the reactor core stopped operations after the earthquake hit, water had to be inserted to the core to cool it because heat continued to be emitted from the nuclear fuel.

Although workers had to initiate emergency core cooling system procedures, the lack of an external power source and the failure of an emergency generator crippled the system that circulates water to the core to cool it.

TEPCO officials dispatched 51 generator vehicles to the reactors in an attempt to restore power. One vehicle reached one of the nuclear reactors late Friday and some of that reactor's power was restored.

At 9:23 p.m., the central government issued an evacuation instruction for residents living within a 3-kilometer radius of the No. 1 Fukushima nuclear power plant as well as an instruction to residents living within a radius of between 3 and 10 kilometers to remain indoors.

Edano said no radiation leakage had been detected.

The company issued an emergency evacuation order for the two reactors at the No. 1 Fukushima nuclear power plant. Officials from local communities gathered at a special monitoring facility in Okuma to oversee the cooling of the cores.

There was also the possibility that seawater pumps for cooling purposes may have stopped at two reactors at the No. 2 Fukushima nuclear power plant.

If those pumps remain inoperational, it could affect the emergency core cooling systems at those reactors as well.

Wegner, Mary

From: Wegner, Mary
Sent: Friday, March 11, 2011 4:44 PM
To: Breskovic, Clarence
Subject: RE: Op Center

THEY HAVEN'T GOT AROUND TO ME YET. What a ridiculous position – people can get BS from the press but not real info from you.

From: Breskovic, Clarence
Sent: Friday, March 11, 2011 4:27 PM
To: Wegner, Mary; Thomas, Eric
Subject: RE: Op Center

Yes. In fact I was told to supply information ONLY to the ops center from now on which I think is misguided. They should let people decide what kind and how many emails they want to receive instead of locking everyone out. I have other choice comments to make on this decision but I will not commit them to email.

From: Wegner, Mary
Sent: Friday, March 11, 2011 3:16 PM
To: Thomas, Eric; Breskovic, Clarence
Subject: Op Center

Just a thought – are you providing info to the Op Center?

Hogan, Rosemary

From: Pires, Jose
Sent: Friday, March 11, 2011 7:38 AM
To: Kammerer, Annie; Hogan, Rosemary
Subject: RE: M8.9 NEAR THE EAST COAST OF HONSHU, JAPAN

I understand that there have 'nuclear emergencies' declared at two plants, Fushima (TEPCO) and Onagawa (Tohoku Power). The last I heard about Onagawa is that cooling was not as anticipated. There are multiple reactors at each of these sites. Other plants were also safely shutdown.

I am certain that the NRC will be preparing a team to collect data and information from these plants. I would be very much interested in participating.

Thanks,

Jose.

From: Kammerer, Annie
Sent: Friday, March 11, 2011 7:34 AM
To: RES_DE_SGSEB; Case, Michael; Richards, Stuart; Chokshi, Nilesh; Munson, Clifford; Karas, Rebecca; Markley, Michael; Manoly, Kamal; Sheron, Brian; Uhle, Jennifer; Cook, Christopher; Bagchi, Goutam; Khanna, Meena
Subject: FW: M8.9 NEAR THE EAST COAST OF HONSHU, JAPAN

FYI. This is from the working version of our beta ShakeCAST system

From: ISSC-Notification@iaea.org [mailto:ISSC-Notification@iaea.org]
Sent: Friday, March 11, 2011 4:38 AM
To: ISSC-Notification@iaea.org
Cc: Kammerer, Annie
Subject: M8.9 NEAR THE EAST COAST OF HONSHU, JAPAN

The following New Earthquake occurred:

Location	NEAR THE EAST COAST OF HONSHU, JAPAN
Magnitude	8.9
Time	2011-03-11 06:46:23
Lat	38.322
Lon	142.369

ISSC ShakeCast Notification System
IAEA

=====

A/46

Release

Hogan, Rosemary

From: Kammerer, Annie
Sent: Friday, March 11, 2011 7:34 AM
To: RES_DE_SGSEB; Case, Michael; Richards, Stuart; Chokshi, Nilesh; Munson, Clifford; Karas, Rebecca; Markley, Michael; Manoly, Kamal; Sheron, Brian; Uhle, Jennifer; Cook, Christopher; Bagchi, Goutam; Khanna, Meena
Subject: FW: M8.9 NEAR THE EAST COAST OF HONSHU, JAPAN
Attachments: ISSC_Notification_Report.pdf

FYI. This is from the working version of our beta ShakeCAST system

From: ISSC-Notification@iaea.org [mailto:ISSC-Notification@iaea.org]
Sent: Friday, March 11, 2011 4:38 AM
To: ISSC-Notification@iaea.org
Cc: Kammerer, Annie
Subject: M8.9 NEAR THE EAST COAST OF HONSHU, JAPAN

The following New Earthquake occurred:

Location	NEAR THE EAST COAST OF HONSHU, JAPAN
Magnitude	8.9
Time	2011-03-11 06:46:23
Lat	38.322
Lon	142.369

ISSC ShakeCast Notification System
IAEA

=====

A/47

Magnitude 8.9 - NEAR THE EAST COAST OF HONSHU, JAPAN

Version 4

Time: 2011-03-11 05:46:23 GMT

Created: 2011-03-11 09:37:54 GMT

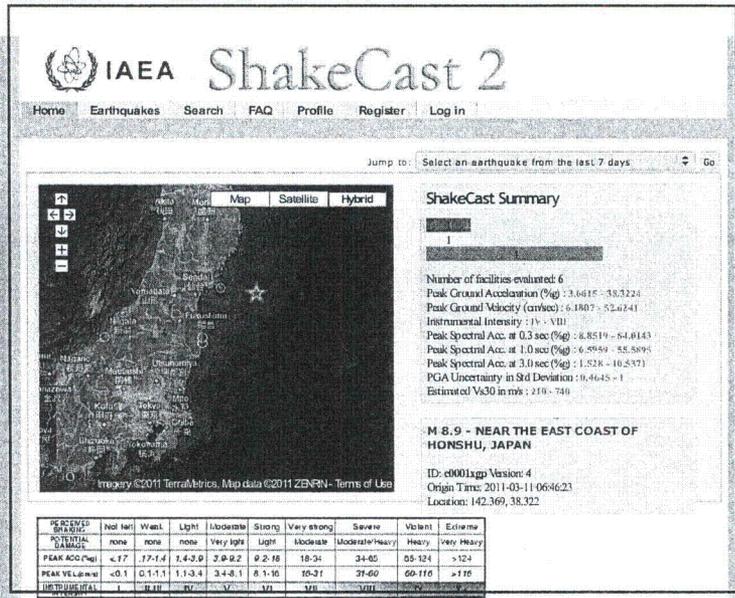
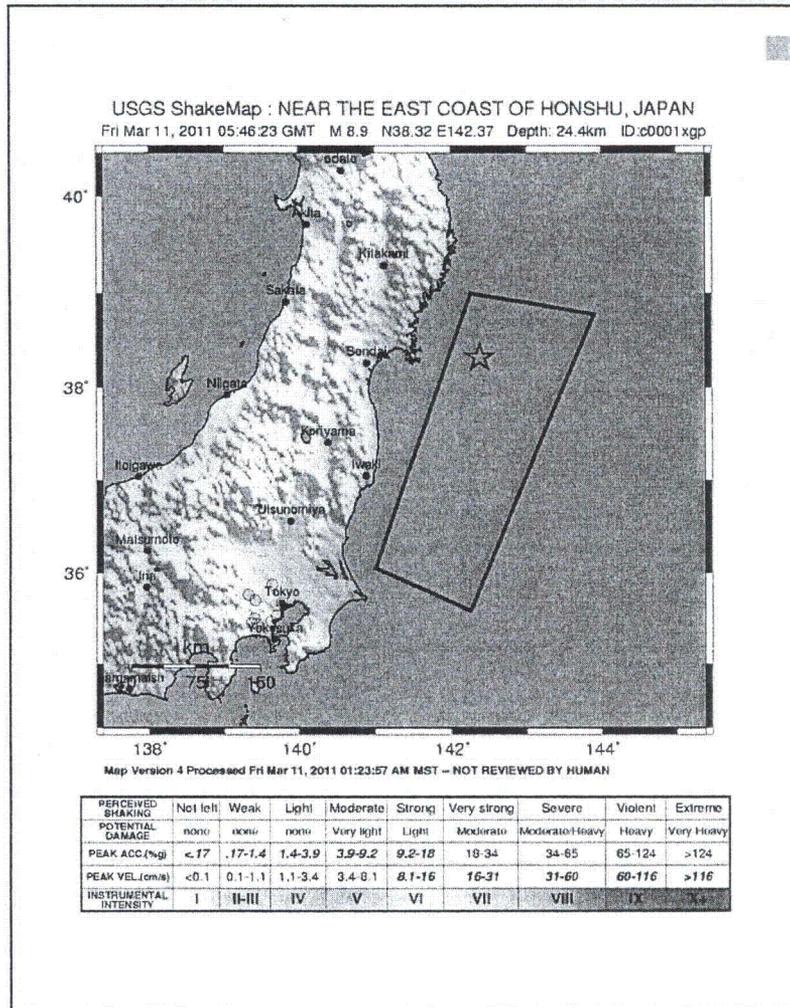
Location: 38.32 N/ 142.37 E

For more information and latest version see

Depth: 24.4 km

<http://earthquake.usgs.gov/shakemap>

These results are from an automated system and users should consider the preliminary nature of this information when making decisions relating to public safety. ShakeCast results are often updated as additional or more accurate earthquake information is reported or derived.



- ### Recent significant earthquakes in the region
- M7.7 Miyagi-Oki, Japan at 6/12/1978 8:14
 - M7.4 NEAR THE EAST COAST OF HONSHU, JAPAN at 11/1/1989 18:25
 - M7.2 Miyagi-Oki, Japan at 8/16/2005 2:46
 - M7 NEAR THE EAST COAST OF HONSHU, JAPAN at 1/18/1981 18:11
 - M7 Miyagi-Oki, Japan at 5/26/2003 9:24

FACILITY TYPE	FACILITY ID	FACILITY NAME	LATITUDE	LONGITUDE	DAMAGE LEVEL	MMI	PGA	PGV	PSA03	PSA10	PSA30
NPP	JPN1	Fukushima Daiichi	37.4215	141.034	RED	7.72	25.8708	35.5119	57.8466	37.5128	7.4042
NPP	JPN2	Fukushima Daini	37.3163	141.025	RED	7.76	26.6768	36.4785	59.5783	38.5339	7.5874
NPP	JPN10	Onagawa	38.3998	141.501	RED	7.34	23.483	27.6412	52.4778	29.1987	5.7565
NPP	JPN4	Hamaoka	34.6242	138.14	GREEN	4.96	6.5016	10.322	15.3754	10.9036	2.4143
NPP	JPN7	Kashiwazaki - Kariwa	37.4317	138.598	YELLOW	5.53	8.5166	13.0735	19.9327	13.8102	2.9935
NPP	JPN15	Tokai	36.4654	140.607	RED	7.72	25.8298	35.4623	57.7583	37.4606	7.3948

* - MMI level extends beyond map boundary, actual population exposure may be much larger

** - Some facilities may not appear on the map due to space restriction

Lon	142.369
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ISSC ShakeCast Notification System
IAEA

=====

Hogan, Rosemary

From: Kammerer, Annie
Sent: Friday, March 11, 2011 7:42 AM
To: Pires, Jose; Hogan, Rosemary
Subject: RE: M8.9 NEAR THE EAST COAST OF HONSHU, JAPAN

Yes, I'm sure that this will be a hot topic today.

From: Pires, Jose
Sent: Friday, March 11, 2011 7:38 AM
To: Kammerer, Annie; Hogan, Rosemary
Subject: RE: M8.9 NEAR THE EAST COAST OF HONSHU, JAPAN

I understand that there have 'nuclear emergencies' declared at two plants, Fushima (TEPCO) and Onagawa (Tohoku Power). The last I heard about Onagawa is that cooling was not as anticipated. There are multiple reactors at each of these sites. Other plants were also safely shutdown.

I am certain that the NRC will be preparing a team to collect data and information from these plants. I would be very much interested in participating.

Thanks,

Jose.

From: Kammerer, Annie
Sent: Friday, March 11, 2011 7:34 AM
To: RES_DE_SGSEB; Case, Michael; Richards, Stuart; Chokshi, Nilesh; Munson, Clifford; Karas, Rebecca; Markley, Michael; Manoly, Kamal; Sheron, Brian; Uhle, Jennifer; Cook, Christopher; Bagchi, Goutam; Khanna, Meena
Subject: FW: M8.9 NEAR THE EAST COAST OF HONSHU, JAPAN

FYI. This is from the working version of our beta ShakeCAST system

From: ISSC-Notification@iaea.org [mailto:ISSC-Notification@iaea.org]
Sent: Friday, March 11, 2011 4:38 AM
To: ISSC-Notification@iaea.org
Cc: Kammerer, Annie
Subject: M8.9 NEAR THE EAST COAST OF HONSHU, JAPAN

The following New Earthquake occurred:

Location	NEAR THE EAST COAST OF HONSHU, JAPAN
Magnitude	8.9
Time	2011-03-11 06:46:23
Lat	38.322

X

Siu, Nathan

From: Siu, Nathan
Sent: Wednesday, March 23, 2011 10:54 AM
To: Deavers, Ron
Subject: Fukushima information

Ron –

I apologize for the non-informative subject line in my previous message.

By the way, looking at a bit dated OECD/NEA report (NEA/CSNI/R(2007)12: "Use and Development of Probabilistic Safety Assessment"), it appears that there was not a Fukushima-specific seismic PRA at least back in 2006. The NEA is in the process of updating the report so I don't know if things have changed.

Nathan

Do not include [unclear] [unclear]

A/189

Gibson, Kathy

From: Gibson, Kathy
Sent: Friday, March 11, 2011 5:51 PM
To: Lee, Richard
Cc: Voglewede, John
Subject: Re: Press Release: NRC Continues to Track Earthquake and Tsunami Issues

That doesn't sound good. I really feel for them and all they are dealing with.

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

From: Lee, Richard
To: Gibson, Kathy
Cc: Voglewede, John
Sent: Fri Mar 11 17:48:34 2011
Subject: RE: Press Release: NRC Continues to Track Earthquake and Tsunami Issues

Kathy:

Dr. Akihide Hidaka (the Japanese researcher who is participating in our peer review of the revised NUREG-1465 for HBU and MOX fuel) told me that at the Fukushima No. 1 NPP, the fuel could have been broken because iodine concentration in air began to be increased at the site boundary. Containment Venting is imminent.

I am not sure what he meant by "broken." I asked him whether the dose at the site boundaries are within regulatory limits. I have not received any answers yet.

Akihide is on loan to the Japanese Nuclear Safety Commission (NSC) from JAEA. Last night, all NSC staff slept in the office because all transportation in Toyko was shutdown.

Richard

From: Gibson, Kathy
Sent: Friday, March 11, 2011 4:29 PM
To: RES_DSA
Subject: Fw: Press Release: NRC Continues to Track Earthquake and Tsunami Issues

From: Sheron, Brian
To: Bonaccorso, Amy; Calvo, Antony; Case, Michael; Coe, Doug; Correia, Richard; Dion, Jeanne; Gibson, Kathy; Lui, Christiana; Richards, Stuart; Rini, Brett; Sangimino, Donna-Marie; Uhle, Jennifer; Valentin, Andrea
Sent: Fri Mar 11 16:27:08 2011
Subject: FW: Press Release: NRC Continues to Track Earthquake and Tsunami Issues

From: OPA Resource
Sent: Friday, March 11, 2011 4:26 PM

To: Ash, Darren; Barkley, Richard; Batkin, Joshua; Bell, Hubert; Belmore, Nancy; Bergman, Thomas; Bollwerk, Paul; Bonaccorso, Amy; Borchardt, Bill; Bozin, Sunny; Brenner, Eliot; Brock, Terry; Brown, Boris; Bubar, Patrice; Burnell, Scott; Burns, Stephen; Carpenter, Cynthia; Chandrathil, Prema; Clark, Theresa; Collins, Elmo; Couret, Ivonne; Crawford, Carrie; Cutler, Iris; Dacus, Eugene; Dapas, Marc; Davis, Roger; Dean, Bill; Decker, David; Dricks, Victor; Droggitis, Spiros; Flory, Shirley; Franovich, Mike; Gibbs, Catina; Haney, Catherine; Hannah, Roger; Harbuck, Craig; Harrington, Holly; Hasan, Nasreen; Hayden, Elizabeth; Holahan, Gary; Holahan, Patricia; Holian, Brian; Jacobssen, Patricia; Jaczko, Gregory; Jasinski, Robert; Jenkins, Verlyn; Johnson, Michael; Jones, Andrea; Kock, Andrea; Kotzalas, Margie; Ledford, Joey; Lee, Samson; Leeds, Eric; Lepre, Janet; Lew, David; Lewis, Antoinette; Loyd, Susan; Magwood, William; McCrary, Cheryl; McGrady-Finneran, Patricia; McIntyre, David; Mensah, Tanya; Mitlyng, Viktoria; Monninger, John; Montes, David; Nieh, Ho; Ordaz, Vonna; Ostendorff, William; Owen, Lucy; Powell, Amy; Quesenberry, Jeannette; Reddick, Darani; Regan, Christopher; Reyes, Luis; Riddick, Nicole; RidsSecyMailCenter Resource; Riley (OCA), Timothy; Rohrer, Shirley; Samuel, Olive; Satorius, Mark; Schaaf, Robert; Schmidt, Rebecca; Scott, Catherine; Screnci, Diane; Shaffer, Vered; Shane, Raeann; Sharkey, Jeffry; Sheehan, Neil; Sheron, Brian; Siurano-Perez, Osiris; Steger (Tucci), Christine; Svinicki, Kristine; Tabatabai, Omid; Tannenbaum, Anita; Taylor, Renee; Temp, WDM; Thomas, Ann; Uhle, Jennifer; Uselding, Lara; Vietti-Cook, Annette; Virgilio, Martin; Virgilio, Rosetta; Walker-Smith, Antoinette; Weaver, Doug; Weber, Michael; Weil, Jenny; Werner, Greg; Wiggins, Jim; Williams, Evelyn; Zimmerman, Roy; Zorn, Jason
Subject: Press Release: NRC Continues to Track Earthquake and Tsunami Issues

The attached to be issued and posted in approximately 15 minutes.

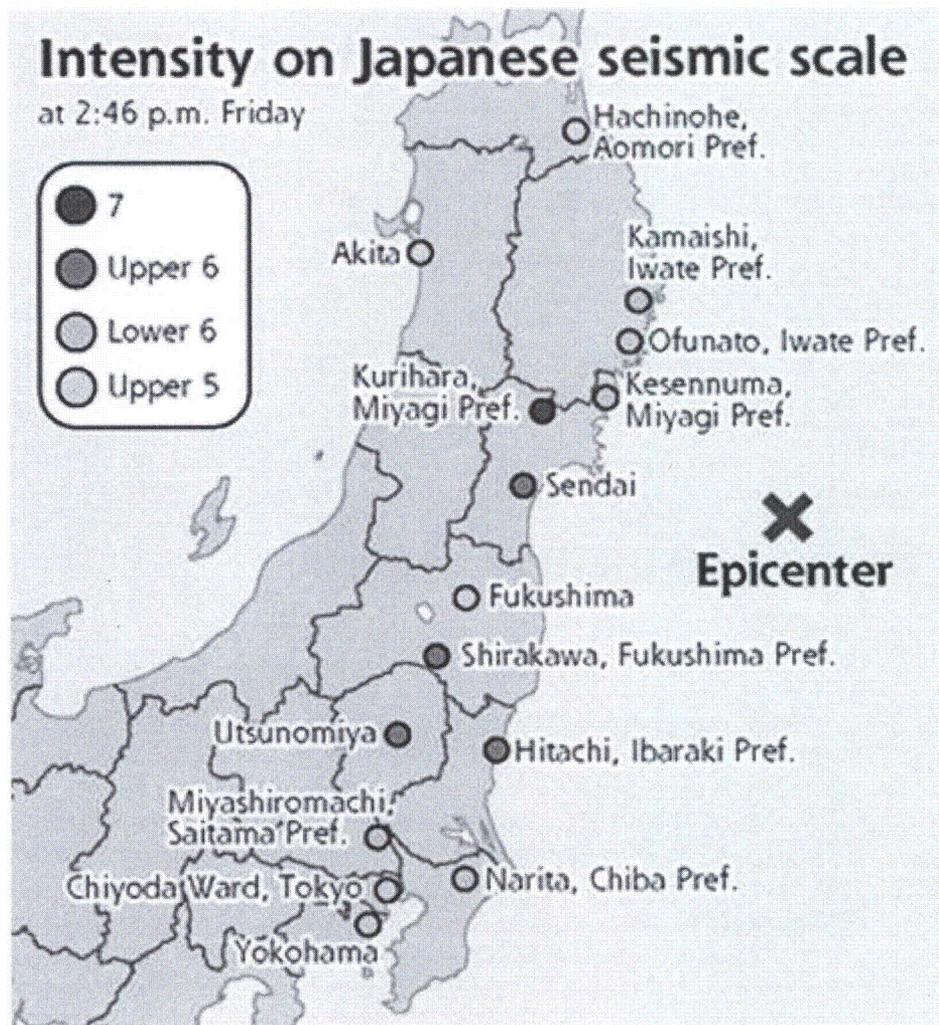
Office of Public Affairs
US Nuclear Regulatory Commission
301-415-8200
opa.resource@nrc.gov

Cartwright, William

From: Thorp, John *NRR*
Sent: Friday, March 11, 2011 11:29 AM
To: Thomas, Eric; Brown, Frederick
Cc: NRR_DIRS_IOEB Distribution
Subject: Epicenter Map

Pasting this separately into this e-mail, so it doesn't get lost in all the other traffic. My apologies if you've already gotten this via other sources.

John



Heida, Bruce

From: Mitman, Jeffrey
Sent: Friday, March 11, 2011 11:32 AM
To: Ferrante, Fernando; Circle, Jeff; Zoulis, Antonios; Huffman, Chad; Vail, James; Chung, Donald
Subject: FW: More Info about the quake
Follow Up Flag: Follow up
Flag Status: Flagged

First decent info I've seen on what's going on with the nuclear units in Japan!

Jeff

[http://www.world-nuclear-news.org/RS Massive earthquake hits Japan 11031111.html](http://www.world-nuclear-news.org/RS_Massive_earthquake_hits_Japan_11031111.html)

Cartwright, William

From: Nelson, Robert, *NR*
Sent: Friday, March 11, 2011 12:05 PM
To: Thomas, Eric, *NR*
Subject: FW: U.S. delivers coolant to Japan nuclear plant: Clinton/ Plant Being Cooled

NELSON

From: Breskovic, Clarence *1010*
Sent: Friday, March 11, 2011 12:02 PM
To: Breskovic, Clarence
Subject: U.S. delivers coolant to Japan nuclear plant: Clinton/ Plant Being Cooled

WASHINGTON | Fri Mar 11, 2011 11:05am EST
WASHINGTON (Reuters) - The United States has transported coolant to a Japanese nuclear plant affected by a massive earthquake and will continue to assist Japan, Secretary of State Hillary Clinton said on Friday.
"We just had our Air Force assets in Japan transport some really important coolant to one of the nuclear plants," Clinton said at a meeting of the President's Export Council.
"You know Japan is very reliant on nuclear power and they have very high engineering standards but one of their plants came under a lot of stress with the earthquake and didn't have enough coolant," Clinton said.

Japan Reactor Being Cooled

LONDON, March 11 (Reuters) - The World Nuclear Association, the main nuclear industry body, said on Friday that it understood the situation at Japan's Fukushima plant after a massive earthquake was under control, and water was being pumped into its cooling system.
"We understand this situation is under control," an analyst at the association told Reuters.
The Japanese government had declared an emergency situation around the plant as a precaution and evacuated residents, saying a cooling system was not working.
The analyst said he understood that a back-up battery power system had been brought online after about an hour, and begun pumping water back into the cooling system, where the water level had been falling.

Manoly, Kamal

From: Manoly, Kamal *NR*
Sent: Friday, March 11, 2011 12:17 PM
To: Hiland, Patrick *NR*
Cc: McGinty, Tim; Leeds, Eric; Couret, Ivonne
Subject: RE: Reply Requested Media Inquiry - Seismic Issues

I am in touch with Ivonne for the interview with the reporter.

From: Hiland, Patrick *NR*
Sent: Friday, March 11, 2011 12:16 PM
To: Couret, Ivonne
Cc: Manoly, Kamal; McGinty, Tim; Leeds, Eric
Subject: RE: Reply Requested Media Inquiry - Seismic Issues

Kamal Manoly is our point of contact from NRR.

From: Couret, Ivonne *OP*
Sent: Friday, March 11, 2011 8:40 AM
To: Hiland, Patrick
Subject: Reply Requested Media Inquiry - Seismic Issues
Importance: High

Pat,
Who is and will be available as staff to discuss seismic issues today for reporters writing stories on US implications from Japan's earthquake. Please advise. Ivonne

Ivonne L. Couret
Public Affairs Officer
Office of Public Affairs



(301) 415-8205
ivonne.couret@nrc.gov

Visit our online photo gallery. Incorporate graphics and photographs to tell your story!
<http://www.nrc.gov/reading-rm/photo-gallery/>

2010-2011 Information Digest - Where you can find NRC Facts at a Glance
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1350/>

NRC Employees can read interesting insight on the OPA Blog
<http://portal.nrc.gov/OCM/opa/blog/default.aspx>

Please consider the environmental impact before printing this email.

Cohen, Shari

From: Leeds, Eric, *NR*
Sent: Friday, March 11, 2011 12:22 PM
To: Astwood, Heather
Subject: RE: Japan: Fukushima 1 & 2 cooling system problems

Thanks for keeping them coming!

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

From: Astwood, Heather, *NR*
Sent: Friday, March 11, 2011 8:30 AM
To: Leeds, Eric; Boger, Bruce; McGinty, Tim; Valentine, Nicholee; Titus, Brett; Susco, Jeremy; Roquecruz, Carla; Nguyen, Quynh; Meighan, Sean; Heida, Bruce; Fields, Leslie; Cusumano, Victor; Cartwright, William; Azeem, Almas
Cc: Cullingford, Michael; Hopkins, Jon; Quinones, Lauren; Regan, Christopher; Rodriguez, Veronica
Subject: FW: Japan: Fukushima 1 & 2 cooling system problems

FYI

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

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

A/SS

Cartwright, William

From: Breskovic, Clarence *OW*
Sent: Friday, March 11, 2011 12:26 PM
To: Breskovic, Clarence
Subject: Japan Update: Water levels at Fukushima; Onagawa fire extinguished

Update9: 3,000 Ordered To Evacuate Near Quake-hit Fukushima Nuclear Plant

Tokyo, March 12 Kyodo -- (EDS: ADDING FIRE EXTINGUISHED AT ONAGAWA PLANT) Japan declared a state of atomic power emergency Friday after the country, which has about 50 nuclear power reactors, was hit by a magnitude 8.8 earthquake, instructing around 3,000 residents near the Fukushima No. 1 plant to evacuate.

Top government spokesman Yukio Edano told an evening press conference, "We have a situation where one of the reactors (of the plant) cannot be cooled down." But the chief Cabinet secretary said the evacuation instruction was only precautionary.

Edano said, "No radiation has leaked outside the reactor. The incident poses no danger to the environment at the moment." He also said early Saturday in Tokyo the incident was under control.

The post-quake situation prompted the Vienna-based International Atomic Energy Agency to scramble for details from contacts in Japan's industry ministry, while saying in a statement that at least four nuclear power plants "closest to the quake have been safely shut down" after the 2:46 p.m. quake.

Tokyo Electric Power Co., the operator of the Fukushima plant, reported that the water level around fuel rods was falling in the reactor. Radioactive materials could be emitted if part of a fuel rod is exposed to the air.

But officials of the prefectural government dismissed the view that the plant is in a critical situation, saying the top of the water is 3.4 meters above the fuel rods at the troubled No. 2 reactor.

The evacuation advisory was issued for people living within a 3-kilometer radius of the plant, while those living within a 10-kilometer radius were asked to stay home, Edano said.

Prime Minister Naoto Kan declared the emergency, the first in the quake-prone country, so that authorities can easily implement emergency relief measures, Edano said. Defense Minister Toshimi Kitazawa ordered the Self-Defense Forces to act in response to the declaration.

The Defense Ministry dispatched a chemical corps of the Ground Self-Defense Force to the plant and Motohisa Ikeda, senior vice industry minister, also left for Fukushima by an SDF helicopter.

According to the industry ministry, a total of 11 nuclear reactors automatically shut down at the Onagawa plant, the Fukushima No. 1 and No. 2 plants and the Tokai No. 2 plant after the strongest recorded earthquake in the country's history.

A fire started at a building housing the turbine of the Onagawa plant in Miyagi at 3:30 p.m. but was put out before 11 p.m., the operator, Tohoku Electric Power Co., said, denying it had detected any signs of radiation leaks.

Water spilled from pools containing fuel rods at the Kashiwazaki-Kariwa plant on the Sea of Japan coast in Niigata Prefecture and the Onagawa plant, the operators said, saying they saw no signs suggesting radiation leaks.

Manoly, Kamal

From: Manoly, Kamal *NRK*
Sent: Friday, March 11, 2011 12:25 PM
To: Hiland, Patrick *NRK*
Subject: FW: quick Summary of the Hongshu earthquake in Japan
Attachments: Summary of earthquake in eastern Japan.doc

FYI

From: Li, Yong *NRK*
Sent: Friday, March 11, 2011 12:16 PM
To: Manoly, Kamal; Hawkins, Kimberly
Subject: FW: quick Summary of the Hongshu earthquake in Japan

Some updates

The following is based on the telephone call between the JNES staff and his office in Japan, and still they are considered preliminary information.

Onagawa Nuclear power plant had a fire in the basement. Ground motion recorded at the site is around 0.5 g. Fukushima Unit 1 had a cooling system failure and residents within 2 or 5 (I forgot) km radius were asked to evacuate.

You can find the location of the plants in the attached map.

Besides, US Diablo Canyon power plant in CA was expecting a 1 meter tsunami at 10:30 AM.

From: Li, Yong *NRK*
Sent: Friday, March 11, 2011 8:22 AM
To: Chokshi, Nilesh; Munson, Clifford
Cc: Cook, Christopher; Karas, Rebecca
Subject: quick Summary of the Hongshu earthquake in Japan

03/28/2011

Summary of 3/11/2011 Honshu earthquake in Japan

An earthquake with a magnitude 8.8 (M_w, USGS) struck the east coast of Japan on 3/11/2011, at 2:46PM local time, 3/11/2011 12:46 AM Eastern Standard Time. The epicenter of the main shock (38.322°N, 142.369°E) is located about 373 km North-East of Tokyo, Japan. The earthquake occurred at the depth of 24 km, according to the USGS.

The earthquake occurred as a result of thrust faulting near the subduction zone between the Pacific and North American Plates. The main shock was preceded by a series of large foreshocks over the previous two days beginning on March 9th with a 7.2 event approximately 40 km from the March 11 earthquake. The main shock was also followed by a series of strong aftershocks. The earthquake triggered tsunami swept across coastal area in Japan. US National Weather Service issued a tsunami warning for at least 50 countries and territories.

Four nuclear power plants closest to the quake were safely shut down, according to the U.N. nuclear watchdog agency. But The Japanese government declared a state of emergency at the Fukushima No. 1 power plant after its cooling system failed during the earthquake. About 2000 residents near the nuclear power plant were being told to evacuate, based on Kyodo News. MMI intensity value is about 7 for the three nuclear power plants closest to the epicenter (see attached figure).

There were at least 50 deaths related to the earthquake and more casualties will be expected. Several fires were also reported.

Manoly, Kamal

From: Li, Yong *ML*
Sent: Friday, March 11, 2011 12:28 PM
To: Manoly, Kamal
Subject: Coolant story

From: Devlin, Stephanie *ML*
Sent: Friday, March 11, 2011 12:13 PM
To: Li, Yong
Subject: RE: FYI: JNES-NRC bi-lateral co-operation meeting is happening now...

thanks Yong!

i found this article earlier that it interesting:

<http://www.reuters.com/article/2011/03/11/us-japan-quake-nuclear-clinton-idUSTRE72A4LR20110311?feedType=RSS&feedName=domesticNews> ,

The United States has transported coolant to a Japanese nuclear plant affected by a massive earthquake and will continue to assist Japan, Secretary of State Hillary Clinton said on Friday.

"We just had our Air Force assets in Japan transport some really important coolant to one of the nuclear plants," Clinton said at a meeting of the President's Export Council.

"You know Japan is very reliant on nuclear power and they have very high engineering standards but one of their plants came under a lot of stress with the earthquake and didn't have enough coolant," Clinton said.

stephanie

From: Li, Yong
Sent: Friday, March 11, 2011 12:08 PM
To: NRO_DSER_RGS1 Distribution; NRO_DSER_RGS2 Distribution
Subject: RE: FYI: JNES-NRC bi-lateral co-operation meeting is happening now...

Hi,

just a quick update on nuclear power plant impact.

They are based on the telephone call between the JNES staff and his office in Japan, and still they are considered preliminary information.

Onagawa Nuclear power plant had a fire in the basement. Ground motion recorded at the site is around 0.5 g. Fukushima Unit 1 had a cooling system failure and residents within 2 or 5 (I forgot) km radius were asked to evacuate.

You can find the location of the plants in the attached map.

Besides, US Diablo Canyon power plant in CA was expecting a 1 meter tsunami at 10:30 AM.

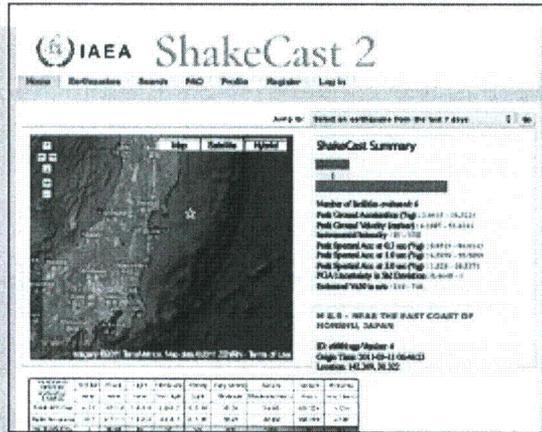
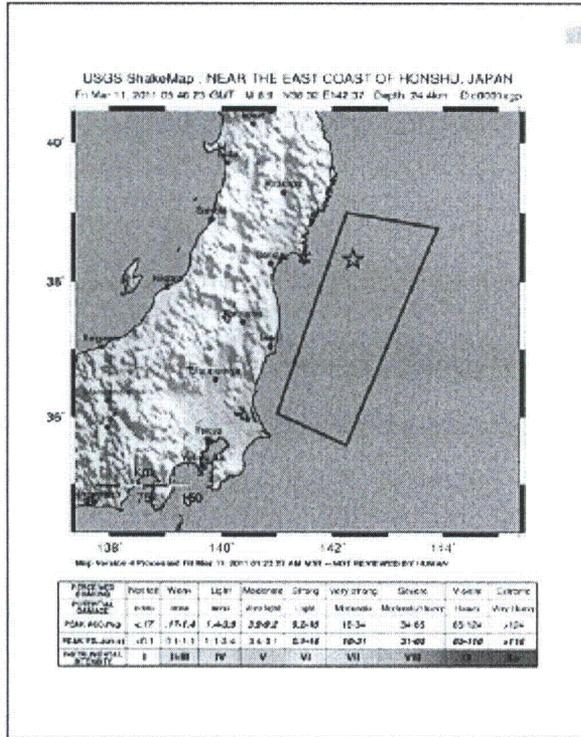


ShakeCast Report



Magnitude 8.9 - NEAR THE EAST COAST OF HONSHU, JAPAN **Version 4**
 Time: 2011-03-11 05:46:23 GMT Created: 2011-03-11 09:37:54 GMT
 Location: 38.32 N/ 142.37 E For more information and latest version see
 Depth: 24.4 km <http://earthquake.usgs.gov/shakemap>

These results are from an automated system and users should consider the preliminary nature of this information when making decisions relating to public safety. ShakeCast results are often updated as additional or more accurate earthquake information is reported or derived.



Recent significant earthquakes in the region

- M7.7 Miyagi-Oki, Japan at 6/12/1978 8:14
- M7.4 NEAR THE EAST COAST OF HONSHU, JAPAN at 11/1/1989 18:25
- M7.2 Miyagi-Oki, Japan at 8/16/2005 2:46
- M7 NEAR THE EAST COAST OF HONSHU, JAPAN at 1/18/1981 18:11
- M7 Miyagi-Oki, Japan at 5/26/2003 9:24

FACILITY TYPE	FACILITY ID	FACILITY NAME	LATITUDE	LONGITUDE	DAMAGE LEVEL	MMI	PGA	PGV	PSA03	PSA10	PSA30
NPP	JPN1	Fukushima Daiichi	37.4215	141.034	RED	7.72	25.8708	35.5119	57.8466	37.5128	7.4042
NPP	JPN2	Fukushima Dams	37.3163	141.025	RED	7.76	26.6768	36.4785	59.5783	38.5339	7.5874
NPP	JPN10	Onagawa	38.3998	141.501	RED	7.34	23.483	27.6412	52.4778	29.1987	5.7565
NPP	JPN4	Hamaoka	34.6242	138.14	GREEN	4.96	6.5016	10.322	15.3754	10.9056	2.4143
NPP	JPN7	Kashiwazaki - Kashiwa	37.4317	138.598	YELLOW	5.53	8.5166	13.0735	19.9327	13.8102	2.9935
NPP	JPN15	Tokai	36.4654	140.607	RED	7.72	25.8298	35.4623	57.7583	37.4606	7.3948

Heida, Bruce

From: Rodriguez, Veronica / NRU
Sent: Friday, March 11, 2011 12:48 PM
To: Chung, Donald; Circle, Jeff; Ferrante, Fernando; Mitman, Jeffrey; Stambaugh, Margaret; Vail, James; Wong, See-Meng; Zoulis, Antonios
Subject: Japan
Attachments: NPP_Japan_map2011.pdf
Follow Up Flag: Follow up
Flag Status: Flagged

Folks here are some news articles from the earthquake from this morning. Recent info can be found in the IAEA web page.
<http://www.iaea.org/newscenter/news/2011/tsunamiupdate.html>

--Veronica

Japan initiates emergency protocol after earthquake
 11 March 2011

Nuclear Engineering International

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

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

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

A minister in its controlling organisation, the Ministry of Economy, Trade and Industry, notifies the prime minister's office. The central nuclear emergency response headquarters (NERHQ) of the national government issues a nuclear emergency declaration, which also includes instructions about preventative measures. It receives technical advice from the Nuclear Safety Commission. The NERHQ sends a specialist and the NSC sends a commissioner to the site.

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

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

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

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

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

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

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

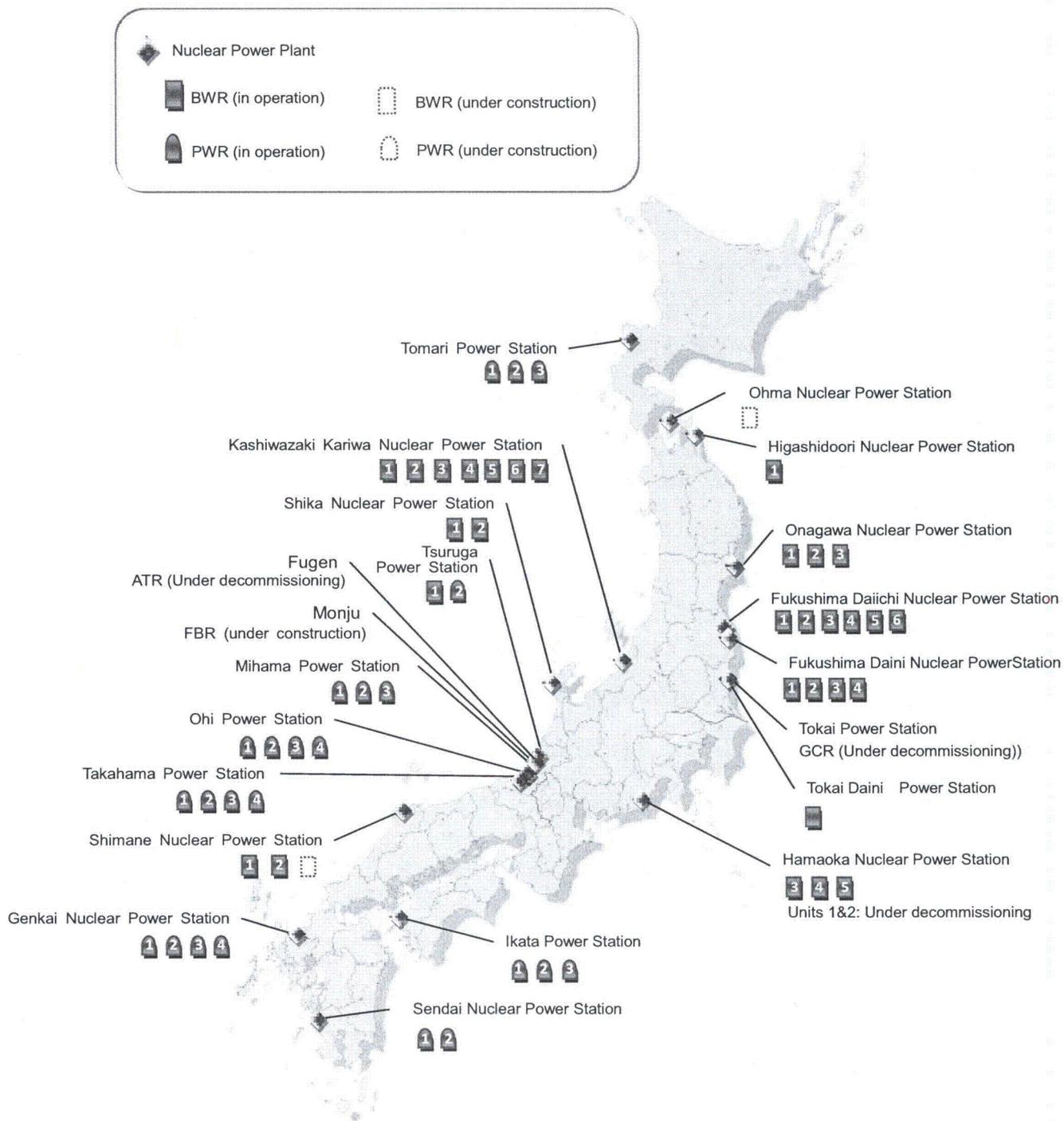


Fig. A-2 Locations of Nuclear Installations

Miller, Ed

From: Banovac, Kristina *NMSS*
Sent: Friday, March 11, 2011 1:09 PM
To: Miller, Ed
Subject: RE: Japan Update: Evacuations ordered around Fukushima

Absolutely devastating to think of all of that destruction to people and property.... So sad....

From: Miller, Ed *ME*
Sent: Friday, March 11, 2011 1:04 PM
To: Banovac, Kristina
Subject: RE: Japan Update: Evacuations ordered around Fukushima

It's pretty impressive. Have you seen the pictures?

From: Banovac, Kristina *NMSS*
Sent: Friday, March 11, 2011 12:16 PM
To: Miller, Ed
Subject: FW: Japan Update: Evacuations ordered around Fukushima

FYI.

From: Weaver, Doug *NMSS*
Sent: Friday, March 11, 2011 12:03 PM
To: NMSS_DSFST Distribution
Subject: FW: Japan Update: Evacuations ordered around Fukushima

FYI on Japan reactor situation. Sounds like they have their hands full. I apologize if you get this directly.

Doug

From: Breskovic, Clarence *CB*
Sent: Friday, March 11, 2011 11:38 AM
To: Breskovic, Clarence
Subject: Japan Update: Evcuations ordered around Fukushima

Contents

- Japan Orders Evacuation of Residents Near N-plant 1
- Kyodo: Gsdf Sent To Area Near Fukushima Nuke Plant To Assist Evacuation. 1
- 3,000 Ordered To Evacuate Near Quake-hit Fukushima Nuclear Plant 2
- Fukushima Pref. Warns of Radiation Leak at N-plant 3

Japan Orders Evacuation of Residents Near N-plant

Tokyo, March 11 (Jiji Press) -- The government on Friday ordered evacuation of residents in a 3-kilometer radius from a quake-hit Tokyo Electric Power Co. nuclear power plant in Fukushima Prefecture, northern Japan, citing a possible radiation leak.

The government, however, has confirmed no radiation leak so far. The evacuation order was issued after the 8.8-magnitude quake hit northern Japan to have all the three reactors at the power plant shut down automatically.

Chief Cabinet Secretary Yukio Edano said at a news conference that the government called for preemptive evacuation, urging the 5,862 residents to stay calm in following the order.

The government also instructed 45,345 residents living outside the area but in a 10-kilometer radius to stay at home.

According to the Nuclear and Industrial Safety Agency of the Ministry of Economy, Trade and Industry, cooling functions of the No. 2 reactor at the plant have stopped working, affected by a power outage caused by the quake.

The agency is unable to confirm cooling water levels at the reactor and the No.1 reactor. The plant's emergency diesel power generation equipment has stopped working, leading the company to dispatch power supply cars, according to the agency.

As the power supply cars have reached the plant, the company is proceeding with work to resupply electricity to restore cooling functions.

The Fukushima prefectural government has reported that cooling water levels at the No.2 reactor are dropping and warned that continued decline would expose nuclear fuel rods to air to generate radiation.

Reactors were also automatically shut down at the company's Fukushima No. 2 nuclear power station, with emergency supply of cooling water starting at one of them.

The nuclear safety agency said sufficient cooling water is supplied at the reactor, but tsunami prevented the agency from confirming whether pumps taking in sea water for two other reactors are working properly.

Kyodo: Gsdf Sent To Area Near Fukushima Nuke Plant To Assist Evacuation

Tokyo, March 12 Kyodo -- A total of around 160 Ground Self-Defense Force personnel and a number of large vehicles have been dispatched to an area near the Fukushima No. 1 nuclear plant in Fukushima Prefecture to help evacuate local residents, a senior SDF officer said late Friday.

More than 100 members of a GSDF special unit trained to deal with chemical disasters have been advancing toward the area, SDF chief Ryoichi Oriki said at a news conference at the Defense Ministry.

Some 3,000 residents near the nuclear plant have been ordered to evacuate due to a problem with a cooling system detected at one of the six reactors at the Tokyo Electric Power Co. plant.

Meanwhile, liaison officers from U.S. Forces Japan were being sent to the ministry to coordinate the disaster response of the SDF and U.S. forces, he added.

Around 300 aircraft and about 40 vessels of the SDF have been dispatched or are being prepared for dispatch to deal with the disaster, according to the ministry.

3,000 Ordered To Evacuate Near Quake-hit Fukushima Nuclear Plant

Tokyo, March 11 Kyodo -- (EDS: ADDING GOV'T SPOKESMAN'S COMMENTS) Japan declared a state of atomic power emergency Friday after the country, which has about 50 nuclear power reactors, was hit by a powerful earthquake, instructing around 3,000 residents near the Fukushima No. 1 plant to evacuate.

Japan's top government spokesman Yukio Edano told an evening press conference, "We have a situation where one of the reactors (of the plant) cannot be cooled down." But the chief Cabinet secretary said the evacuation instruction was only precautionary.

"No radiation has leaked outside the reactor. The incident poses no danger to the environment at the moment," Edano said.

The post-quake situation prompted the Vienna-based International Atomic Energy Agency to scramble for details from contacts with Japan's industry ministry, while saying in a statement that at least four nuclear power plants "closest to the quake have been safely shut down" after the 2:46 p.m. quake.

Tokyo Electric Power Co., the operator of the Fukushima plant, reported that the level of the water surrounding the fuel rods was going down in the reactor.

Radioactive materials could be emitted if part of a rod is exposed to the air.

But officials of the prefectural government dismissed a view that the plant is in any critical situation, saying the top of the water is 3.4 meters above the fuel rods at the troubled No. 2 reactor.

The evacuation advisory was issued for people living within a 3-kilometer radius of the plant, while those living within a 10-kilometer radius were asked to stay home, Edano said.

Prime Minister Naoto Kan declared the emergency even though no radiation leak has been detected after the magnitude 8.8 quake so that authorities can easily implement emergency relief measures, Edano said.

Japanese Defense Minister Toshimi Kitazawa ordered the Self-Defense Forces to act in response to the state of atomic power emergency. Also, the Defense Ministry dispatched a chemical corps of the Ground Self-Defense Force to the plant.

Motohisa Ikeda, senior vice industry minister, also left Tokyo for Fukushima on Friday evening by an SDF helicopter.

According to the industry ministry, a total of 11 nuclear reactors were automatically shut down at the Onagawa plant, Fukushima No. 1 and No. 2 plants and Tokai No. 2 plant after the biggest-magnitude quake in the country's modern history.

At the Onagawa plant in Miyagi Prefecture, a fire started at a building housing the turbine, the operator, Tohoku Electric Power Co., said, denying it detected any signs of radiation leaks.

Water spilled from pools containing fuel rods at the Kashiwazaki-Kariwa plant on the Sea of Japan coast in Niigata Prefecture and the Onagawa plant, the operators said, saying they saw no signs suggesting radiation leaks.

Hokkaido Electric Power Co. reported no problems at its Tomari No. 1, No. 2 and No. 3 plants on the northernmost main island.

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

Fukushima Pref. Warns of Radiation Leak at N-plant

Fukushima, March 11 (Jiji Press) -- The Fukushima prefectural government on Friday warned that water levels dropped at a reactor of a quake-hit Tokyo Electric Power Co. <9501> nuclear power plant, posing a threat of a radiation leak.

If the water levels at the No.2 reactor at the Fukushima No. 1 nuclear power station of the company keep falling, nuclear fuel rods would be exposed to air to generate radiation, according to the prefecture.

The prefecture urged residents in a 2-kilometer radius from the reactor to immediately evacuate.

Cartwright, William

From: Breskovic, Clarence ^{OID}
Sent: Friday, March 11, 2011 1:14 PM
To: Breskovic, Clarence
Subject: Radiation Level Rising in Fukushima Nuclear Plant Turbine Building - emergency generators dispatched

Radiation Level Rising in Fukushima Nuclear Plant Turbine Building

Fukushima, Japan, March 12 Kyodo -- The radiation level is rising in the building housing a turbine of the No. 1 reactor of the Fukushima No. 1 nuclear power plant following Friday's powerful earthquake, the operator Tokyo Electric Power Co. said Saturday.

The company also said monitoring data suggested the air pressure level has also soared inside the container of the reactor.

State of Emergency Declared at Fukushima Plant

Tokyo Asahi Shimbun Online 1733 GMT 11 Mar 11

Friday's devastating earthquake in the Tohoku region may have created a dangerous situation at two nuclear reactors in Fukushima Prefecture.

Officials of the Nuclear and Industrial Safety Agency were informed by Tokyo Electric Power Co. that the emergency core cooling system was not working at two reactors.

In addition, another mechanism that had been used to send water to the core also stopped at 8:30 p.m.

If the cores are not sufficiently cooled, there is a danger of a possible core meltdown.

At a news conference Friday night, Chief Cabinet Secretary Yukio Edano said a state of emergency at a nuclear facility was declared at 4:36 p.m.

It is the first time such a state of emergency has been declared.

According to NISA officials, although the reactor core stopped operations after the earthquake hit, water had to be inserted to the core to cool it because heat continued to be emitted from the nuclear fuel.

Although workers had to initiate emergency core cooling system procedures, the lack of an external power source and the failure of an emergency generator crippled the system that circulates water to the core to cool it.

TEPCO officials dispatched 51 generator vehicles to the reactors in an attempt to restore power. One vehicle reached one of the nuclear reactors late Friday and some of that reactor's power was restored.

At 9:23 p.m., the central government issued an evacuation instruction for residents living within a 3-kilometer radius of the No. 1 Fukushima nuclear power plant as well as an instruction to residents living within a radius of between 3 and 10 kilometers to remain indoors.

Edano said no radiation leakage had been detected.

A/61

The company issued an emergency evacuation order for the two reactors at the No. 1 Fukushima nuclear power plant. Officials from local communities gathered at a special monitoring facility in Okuma to oversee the cooling of the cores.

There was also the possibility that seawater pumps for cooling purposes may have stopped at two reactors at the No. 2 Fukushima nuclear power plant.

If those pumps remain inoperational, it could affect the emergency core cooling systems at those reactors as well.

Manoly, Kamal

From: Ross-Lee, MaryJane, *NRR*
Sent: Friday, March 11, 2011 1:25 PM
To: Thomas, Eric; McGinty, Tim; Thorp, John, *NRR*
Cc: Brown, Frederick; Hiland, Patrick; Manoly, Kamal
Subject: RE: Action (I hope)

Eric - I think what the chairman is referring to is an effort that we did for hurricanes. Someone in DORL (I think?) made a chart of all the "design" features of US plants. Things like wind speed, flood height, seismic....

I'll send you my files on the earthquake. I have what our talking points were in 2007.

Giitter, Joseph

From: Giitter, Joseph *MR*
Sent: *NR* Friday, March 11, 2011 1:40 PM
To: Hall, Randy; Polickoski, James; Nelson, Robert; Markley, Michael
Subject: For what it's worth...

<http://www.reuters.com/article/2011/03/11/us-japan-quake-usa-nuclear-idUSTRE72A3M720110311>

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

A/63

Heida, Bruce

NRP
From: Ferrante, Fernando, *NRP*
Sent: Friday, March 11, 2011 1:46 PM
To: Rodriguez, Veronica; Chung, Donald; Circle, Jeff; Mitman, Jeffrey; Stambaugh, Margaret; Vail, James; Wong, See-Meng; Zoulis, Antonios
Subject: RE: Japan

Follow Up Flag: Follow up
Flag Status: Flagged

More details here:

<http://www.nytimes.com/2011/03/12/world/asia/12nuclear.html?src=mv&ref=world>

From: Rodriguez, Veronica, *NRP*
Sent: Friday, March 11, 2011 12:48 PM
To: Chung, Donald; Circle, Jeff; Ferrante, Fernando; Mitman, Jeffrey; Stambaugh, Margaret; Vail, James; Wong, See-Meng; Zoulis, Antonios
Subject: Japan

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11 March 2011

Nuclear Engineering International

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

A minister in its controlling organisation, the Ministry of Economy, Trade and Industry, notifies the prime minister's office. The central nuclear emergency response headquarters (NERHQ) of the national government issues a nuclear emergency declaration, which also includes instructions about preventative measures. It receives technical advice from the Nuclear Safety Commission. The NERHQ sends a specialist and the NSC sends a commissioner to the site.

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

Recipient

Read

Booncher, Veronica

Read: 3/11/2011 1:47 PM

Chung, Donald

Read: 3/11/2011 1:47 PM

Circle, Jeff

Read: 3/11/2011 10:53 PM

Mitman, Jeffrey

Read: 3/11/2011 10:53 PM

Stambaugh, Margaret

Read: 3/11/2011 2:05 PM

Vail, James

Read: 3/11/2011 2:05 PM

Wong, See-Meng

Zoulis, Antonios

Caponiti, Kathleen

From: Klein, Paul *NRK*
Sent: Friday, March 11, 2011 2:13 PM
To: Lehning, John *NRK*
Subject: RE: Airlifted Coolant

<http://e.nikkei.com/e/fr/tnks/Nni20110311D11JF351.htm>

From: Lehning, John *NRK*
Sent: Friday, March 11, 2011 1:00 PM
To: Klein, Paul
Subject: RE: Airlifted Coolant

Yeah, no kidding. It also looks like externally, the Lochbaums and Lyman are being quoted versus officials, since official sources can't or won't comment.

Another site says this:

Kyodo news agency quoted the company as saying that the radiation level was rising in the turbine building and the pressure had risen to 1.5 times the designed capacity.

I hope that's not correctly interpreted as 1.5x design pressure of the RPV...

From: Klein, Paul *NRK*
Sent: Friday, March 11, 2011 12:54 PM
To: Lehning, John
Subject: RE: Airlifted Coolant

I was hoping we would send out an internal email about this event. Isn't that why we get test messages during drills?

From: Lehning, John *NRK*
Sent: Friday, March 11, 2011 12:53 PM
To: Klein, Paul
Subject: Airlifted Coolant

Wonder about the details of how this played out. I still see stories talking about the primary pressure rising, now going on 13 hours after the event initiated.

Quote from:

<http://ecocentric.blogs.time.com/2011/03/11/japan-quake-causes-nuclear-fears/>

Later on Friday Hillary Clinton said the U.S. had assisted in the emergency by sending coolant to the plant. "We just had our Air Force assets in Japan transport some really important coolant to one of the nuclear plants," Clinton said, according to Reuters. "You know Japan is very reliant on nuclear power and they have very high engineering standards but one of their plants came under a lot of stress with the earthquake and didn't have enough coolant."

Hopkins, Jon

From: Astwood, Heather / *NRP*
Sent: Friday, March 11, 2011 8:32 AM
To: Leeds, Eric; Boger, Bruce; McGinty, Tim; Valentine, Nicholee; Titus, Brett; Susco, Jeremy; Roquecruz, Carla; Nguyen, Quynh; Meighan, Sean; Heida, Bruce; Fields, Leslie; Cusumano, Victor; Cartwright, William; Azeem, Almas
Cc: Cullingford, Michael; Hopkins, Jon; Quinones, Lauren; Regan, Christopher; Rodriguez, Veronica
Subject: FW: Japan initiates emergency protocol after earthquake

FYI

From: Breskovic, Clarence / *OP*
Sent: Friday, March 11, 2011 6:39 AM
To: Breskovic, Clarence
Subject: Japan initiates emergency protocol after earthquake

Japan initiates emergency protocol after earthquake

11 March 2011

Nuclear Engineering International

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A/66

A minister in its controlling organisation, the Ministry of Economy, Trade and Industry, notifies the prime minister's office. The central nuclear emergency response headquarters (NERHQ) of the national government issues a nuclear emergency declaration, which also includes instructions about preventative measures. It receives technical advice from the Nuclear Safety Commission. The NERHQ sends a specialist and the NSC sends a commissioner to the site.

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

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

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

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

Hopkins, Jon

From: Hopkins, Jon *NRK*
Sent: Friday, March 11, 2011 2:15 PM
To: Boger, Bruce
Cc: Regan, Christopher; Cullingford, Michael; Astwood, Heather; Quinones, Lauren; McGinty, Tim; Blount, Tom; Foggie, Kirk; Ramsey, Jack; Schwartzman, Jennifer; Brown, Frederick; Thomas, Eric; Burnell, Scott
Subject: INFO: UCS statement re Japan earthquake

Bruce,

FYI. Statement from UCS.

"...scientists said they needed to do more to ensure that future quakes don't risk the kind of reactor impact that Japan is now grappling with. We do not believe the safety standards for U.S. nuclear reactors are enough to protect the public today," Edwin Lyman, senior scientist, global security programs, at the Union of Concerned Scientists, told Reuters...."

<http://www.comcast.net/articles/news-science/20110311/SCIENCE-US-JAPAN-QUAKE-USA-NUCLEAR/>

Jon

Cartwright, William

From: Bernardo, Robert *NR*
Sent: Friday, March 11, 2011 2:24 PM
To: Thomas, Eric *NR*

4) MAGNITUDE 8.9 EARTHQUAKE OFF THE COAST OF JAPAN

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. IOEB will continue to follow these events.

1. A magnitude 8.9 earthquake occurred approximately 80 km east of Onagawa NPP and 150 km NE of Fukushima Daichi. 5 aftershocks measuring between 6.2 and 7.1 on the Richter Scale have been reported.
2. Based on stack monitoring, no radiation releases have occurred from any nuclear facilities.
3. 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.
4. 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.
5. The NRC is in the Monitoring Response Mode as of 0946 on 3/11/11. Region IV will take the lead for U.S. sites and HQ for international sites to provide assistance in response to the earthquake in Japan and any adverse affects from a tsunami. This response mode change is NOT associated with event number 46668.

From the Region IV morning phone call

Diablo Canyon: Both units remain at power (100%). Licensee declared a notice of unusual event (NOUE) due to potential tsunami impacts from Japan's earthquake, earlier today. At this time the alert is strictly a precautionary measure. Site access limited to essential personnel only. Several high risk maintenance activities have been suspended.

SONGS: Both units remain at power, unit 2 (100%), unit 3 (98%).

Bob Bernardo
Reactor Systems Engineer
US Nuclear Regulatory Commission
NRR/DIRS/IOEB
Mail Stop: O-7C02A
301-415-2621
Robert.Bernardo@nrc.gov

Cohen, Shari

From: Leeds, Eric, *NRR*
Sent: Friday, March 11, 2011 2:28 PM
To: Borchardt, Bill, *EDO*
Cc: Weber, Michael; Virgilio, Martin
Subject: Update

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

Giitter, Joseph

From: Giitter, Joseph *NRXL*
Sent: Friday, March 11, 2011 2:38 PM
To: Mamish, Nader *EDO*
Cc: Polickoski, James; Hall, Randy; Nelson, Robert; Vegel, Anton
Subject: Latest TEPCO reports

Looks like the LOCA report at Fukushima Daini was a false alarm.
<http://www.tepco.co.jp/en/press/corp-com/release/11031203-e.html>

Concern is keeping the reactors at Fukushima Daiichi cooled and covered

<http://www.tepco.co.jp/en/press/corp-com/release/11031204-e.html>

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

A/70

Bano, Mahmooda

From: Scott, Michael
Sent: Friday, March 25, 2011 5:39 AM
To: Monninger, John; Foggie, Kirk; Dorman, Dan
Subject: TALKING POINTS 3/25/11

1. Dialogue with NISA and TEPCO continues to get better each day.
2. NRC shared our view of importance of common understanding of core condition (ex-vessel or not) so that any recommendations we make will be based on correct status.
3. TEPCO provided answers to several questions NRC had asked the previous day, so follow-up is good. NRC is continuing to follow up on some information requests, and has provided a draft set of recommendations for next steps in ensuring safe cooldown and water inventory recovery for Units 1 through 3, and spent fuel pools for units 1 through 4. NRC hopes to have a dialogue with NISA on those recommendations in the next several days.

Hopkins, Jon

From: Hopkins, Jon *NR*
Sent: Friday, March 11, 2011 2:53 PM
To: *NR* ← Boger, Bruce; McGinty, Tim; Brown, Frederick
Cc: Thomas, Eric; Regan, Christopher; Cullingford, Michael; Astwood, Heather; Quinones, Lauren; Schwartzman, Jennifer; Foggie, Kirk; Ramsey, Jack
Subject: INFO: Japan NPP - US supplies coolant

“The US Air Force has delivered coolant to a Japanese nuclear plant which was jolted by the biggest earthquake in Japan's history, US Secretary of State Hillary Clinton said Friday.

"We just had our Air Force assets in Japan transport some really important coolant to one of the nuclear plants," Clinton said in Washington.

"You know Japan is very reliant on nuclear power, and they have very high engineering standards, but one of their plants came under a lot of stress with the earthquake and didn't have enough coolant," the chief US diplomat said."

<http://www.industryweek.com/articles/u-s-delivers-coolant-to-japanese-nuclear-reactor-24111.aspx>

4/1

Hopkins, Jon

From: Astwood, Heather *MAK*
Sent: Friday, March 11, 2011 2:55 PM
To: Valentine, Nicholee; Titus, Brett; Susco, Jeremy; Roquecruz, Carla; Nguyen, Quynh; Meighan, Sean; Heida, Bruce; Fields, Leslie; Cusumano, Victor; Cartwright, William; Azeem, Almas
Cc: Cullingford, Michael; Hopkins, Jon; Quinones, Lauren; Regan, Christopher; Rodriguez, Veronica
Subject: FW: Radiation Level Rising in Fukushima Nuclear Plant Turbine Building - emergency generators dispatched

From: Breskovic, Clarence *DK*
Sent: Friday, March 11, 2011 1:13 PM
To: Breskovic, Clarence
Subject: Radiation Level Rising in Fukushima Nuclear Plant Turbine Building - emergency generators dispatched

Radiation Level Rising in Fukushima Nuclear Plant Turbine Building

Fukushima, Japan, March 12 Kyodo -- The radiation level is rising in the building housing a turbine of the No. 1 reactor of the Fukushima No. 1 nuclear power plant following Friday's powerful earthquake, the operator Tokyo Electric Power Co. said Saturday.

The company also said monitoring data suggested the air pressure level has also soared inside the container of the reactor.

State of Emergency Declared at Fukushima Plant

Tokyo Asahi Shimbun Online 1733 GMT 11 Mar 11
Friday's devastating earthquake in the Tohoku region may have created a dangerous situation at two nuclear reactors in Fukushima Prefecture.

Officials of the Nuclear and Industrial Safety Agency were informed by Tokyo Electric Power Co. that the emergency core cooling system was not working at two reactors.

In addition, another mechanism that had been used to send water to the core also stopped at 8:30 p.m.

If the cores are not sufficiently cooled, there is a danger of a possible core meltdown.

At a news conference Friday night, Chief Cabinet Secretary Yukio Edano said a state of emergency at a nuclear facility was declared at 4:36 p.m.

It is the first time such a state of emergency has been declared.

According to NISA officials, although the reactor core stopped operations after the earthquake hit, water had to be inserted to the core to cool it because heat continued to be emitted from the nuclear fuel.

Although workers had to initiate emergency core cooling system procedures, the lack of an external power source and the failure of an emergency generator crippled the system that circulates water to the core to cool it.

A/73

TEPCO officials dispatched 51 generator vehicles to the reactors in an attempt to restore power. One vehicle reached one of the nuclear reactors late Friday and some of that reactor's power was restored.

At 9:23 p.m., the central government issued an evacuation instruction for residents living within a 3-kilometer radius of the No. 1 Fukushima nuclear power plant as well as an instruction to residents living within a radius of between 3 and 10 kilometers to remain indoors.

Edano said no radiation leakage had been detected.

The company issued an emergency evacuation order for the two reactors at the No. 1 Fukushima nuclear power plant. Officials from local communities gathered at a special monitoring facility in Okuma to oversee the cooling of the cores.

There was also the possibility that seawater pumps for cooling purposes may have stopped at two reactors at the No. 2 Fukushima nuclear power plant.

If those pumps remain inoperational, it could affect the emergency core cooling systems at those reactors as well.

Hopkins, Jon

From: Hopkins, Jon, *NRR*
Sent: Friday, March 11, 2011 3:00 PM
To: Astwood, Heather, *NRR*
Subject: RE: INFO Japan: Radioactive Steam Could Be Released From Troubled Plant

Difficult to be here and not at the plant. You really want to be there, so you can do something.

Jon

From: Astwood, Heather, *NRR*
Sent: Friday, March 11, 2011 2:56 PM
To: Boger, Bruce; Valentine, Nicholee; Titus, Brett; Susco, Jeremy; Roquecruz, Carla; Nguyen, Quynh; Meighan, Sean; Heida, Bruce; Fields, Leslie; Cusumano, Victor; Cartwright, William; Azeem, Almas
Cc: Cullingford, Michael; Hopkins, Jon; Quinones, Lauren; Regan, Christopher; Rodriguez, Veronica
Subject: INFO Japan: Radioactive Steam Could Be Released From Troubled Plant

FYI

From: Breskovic, Clarence, *OIP*
Sent: Friday, March 11, 2011 1:56 PM
To: Breskovic, Clarence
Subject: Japan: Radioactive Steam Could Be Released From Troubled Plant

Radioactive Steam Could Be Released From Troubled Plant

Tokyo *Kyodo World Service* 1819 GMT 11 Mar 11
Tokyo, March 12 Kyodo -- Japanese authorities are nearing a decision to release radioactive steam from a troubled nuclear reactor, industry minister Benri Kaieda said Saturday.

Kaieda was referring to the rising pressure inside the No. 1 reactor of the Fukushima No. 1 plant, which was hit by a powerful earthquake Friday.

43

Hopkins, Jon

From: Schwartzman, Jennifer, OIP
Sent: Friday, March 11, 2011 2:57 PM
To: Hopkins, Jon, NRR
Subject: RE: INFO: Japan NPP

Yes, we are in the ops center. Lots going on. Too early to tell how it will turn out.

From: Hopkins, Jon, NRR
Sent: Friday, March 11, 2011 2:56 PM
To: Boger, Bruce; McGinty, Tim; Brown, Frederick
Cc: Thomas, Eric; Regan, Christopher; Cullingford, Michael; Astwood, Heather; Quinones, Lauren; Schwartzman, Jennifer; Foggie, Kirk; Ramsey, Jack
Subject: INFO: Japan NPP

"The temperature in one reactor's nuclear fuel rods has built up to 50% above normal levels since the six-reactor facility was shut down following the most powerful earthquake on record in the island nation, the Nuclear and Industrial Safety Agency reported."

<http://www.chicagotribune.com/news/nationworld/la-fgw-japan-quake-nuclear-20110312.0.6581307.story>

A/75

44

Hopkins, Jon

From: Rodriguez, Veronica *NRK*
Sent: Friday, March 11, 2011 3:28 PM
To: Astwood, Heather; Boger, Bruce; Cullingford, Michael; Hopkins, Jon; Quinones, Lauren; Regan, Christopher
Subject: RE: INFO Japan: Radioactive Steam Could Be Released From Troubled Plant
Attachments: Status_of_Fukushima_Daiichi_NPP_1830_03112011[1].pdf

FYI – see attached.

From: Astwood, Heather *NRK*
Sent: Friday, March 11, 2011 2:56 PM
To: Boger, Bruce; Valentine, Nicholee; Titus, Brett; Susco, Jeremy; Roquecruz, Carla; Nguyen, Quynh; Meighan, Sean; Heida, Bruce; Fields, Leslie; Cusumano, Victor; Cartwright, William; Azeem, Almas
Cc: Cullingford, Michael; Hopkins, Jon; Quinones, Lauren; Regan, Christopher; Rodriguez, Veronica
Subject: INFO Japan: Radioactive Steam Could Be Released From Troubled Plant

FYI

From: Breskovic, Clarence *OIP*
Sent: Friday, March 11, 2011 1:56 PM
To: Breskovic, Clarence
Subject: Japan: Radioactive Steam Could Be Released From Troubled Plant

Radioactive Steam Could Be Released From Troubled Plant

Tokyo *Kyodo World Service* 1819 GMT 11 Mar 11

Tokyo, March 12 Kyodo -- Japanese authorities are nearing a decision to release radioactive steam from a troubled nuclear reactor, industry minister Benri Kaieda said Saturday.

Kaieda was referring to the rising pressure inside the No. 1 reactor of the Fukushima No. 1 plant, which was hit by a powerful earthquake Friday.

A/76



INCIDENT AND EMERGENCY CENTRE

Subject: Status of the Fukushima Daiichi nuclear power plant

The Incident and Emergency Centre (IEC) is continuing to monitor the status of the nuclear power plants in Japan following the earthquake earlier today. At 18:30 UTC on March 11, 2011 the IEC spoke to its counterparts in Japan the Nuclear and Industrial Safety Agency (NISA) and Ministry of Education, Culture, Sports, Science and Technology (MEXT).

NISA and MEXT confirmed the following information about the three reactor units at the Fukushima Daiichi nuclear power plant:

Unit 1

The reactor is being maintained shutdown. However there is no information regarding the status of the supply of power to Unit 1. The reactor water level is reported to be oscillating. At 15:30 UTC the reactor water was approximately 130 cm above the top of the core. Containment is intact in Unit 1, however due to an increase of pressure within containment the decision has been made to perform a limited controlled venting to avoid over pressurization of the containment.

Unit 2

The reactor is being maintained shutdown. There is currently no supply of power to Unit 2. Work is currently being undertaken to restore power. At 15:30 UTC the reactor water level is reported to be at approximately 350 cm above the top of the core. Containment is intact in Unit 2.

Unit 3

The reactor is being maintained shutdown. Power is being supplied to Unit 3. At 13:00 UTC the reactor water level is reported to be at approximately 450 cm above the top of the core. Containment is intact in Unit 3.

A mobile power generator has arrived at the site of the Fukushima Daiichi nuclear power plant.

Florian Baciu
Emergency Response Manager
11-March-2011 19:45 UTC

Cohen, Shari

From: Leeds, Eric, *NRK*
Sent: Friday, March 11, 2011 4:05 PM
To: Borchardt, Bill, *EDO*
Cc: Weber, Michael; Virgilio, Martin
Subject: More info

The chairman will participate in a deputies mEeting with the white house via vtc from the white flint 1 scif at 5:30. We are preparing a package for him. The limited info we've received from various sources indicates potential serious issues with two of the japanese units. One seems to be in extremis - release possible

We are also setting up shifts through the night for the op center. Mike and I are the current St

Cartwright, William

From: Breskovic, Clarence (010)
Sent: Friday, March 11, 2011 7:28 PM
To: Breskovic, Clarence
Subject: Tokyo Electric Power To Release Reactor Pressure

Tokyo Electric Power To Release Reactor Pressure

Tokyo, March 12 (Jiji Press) -- Tokyo Electric Power Co. has decided to release the pressure from reactors of a quake-hit nuclear power plant in Fukushima Prefecture, northern Japan, to prevent them from breaking down, company sources said Saturday.

Releasing the pressure from the company's Fukushima No. 1 nuclear power plant by opening their valves may let a small amount of radioactive substances leak out into the atmosphere, according to Tokyo Electric Power.

The safety of nearby residents will be ensured as all the residents in a 10-kilometer radius from the power plant have been evacuated or instructed by the government to stay at home, according to the sources.

Immediately after the 8.8-magnitude quake hit northeastern Japan, all the three operating reactors at the power plant stopped automatically.

Internal pressure is feared to have risen at all the reactors. The pressure in the No. 1 reactor increased to 600 kilopascals from the normal level of 400 kilopascals.

Meantime, Tokyo Electric Power is striving to restore the No. 2 reactor's cooling system, which stopped working because the quake caused a power outage and emergency diesel power generation equipment broke down.

While the reactor's cooling water levels are still kept at about 3.5 meters above the top of its nuclear fuel rods, the level's decline would force the fuel rods exposed to air to generate radiation.

Radiation Could Already Have Leaked at Nuke Plant

Tokyo, March 12 Kyodo -- Radioactive substances could already have leaked at the Fukushima No. 1 nuclear power plant after a magnitude 8.8 earthquake hit northern Japan, the operator Tokyo Electric Power Co. said Saturday.

The amount of radiation reached around 1,000 times the normal level in the control room of the No. 1 reactor of the plant, the Nuclear and Industrial Safety Agency also said. The discovery suggests radioactive steam could spread around the facility.

The agency also said radiation has been more than eight times the normal level at a monitoring post near the main gate of the plant.

The authorities expanded the evacuation area for residents in the vicinity of the plant from a 3-kilometer radius to 10 km on the orders of Prime Minister Naoto Kan, who plans to visit the facility later Saturday.

Balarabe, Sarah

From: Ruland, William *WR*
Sent: Saturday, March 12, 2011 10:07 PM
To: Mendiola, Anthony
Subject: Re: Sea Water and Boron

We have had repeated contacts with GE and Exelon (Dresden/Quad) which has similar designs.

Bill
Bill Ruland, from
USNRC Blackberry

From: Mendiola, Anthony *AM*
To: Ruland, William
Sent: Sat Mar 12 22:02:10 2011
Subject: RE: Sea Water and Boron

Spoke with Paul.

He feels that the near term strategy is to keep the core covered, deal with the consequences of the use of borated sea water later.

I asked him about the fuel and sea water. The fuel components should be fine for the near term if subjected to sea water. Zr should be very resistant.

He is concerned that the NRC folks following this issue outside of the Op center can't really tell what is going on and thus may offer less than perfect suggestions of what is going on in Japan. He suggests that some of the licensing and operational departments of some of the domestic BWRs may have better knowledge and understanding than we do, so we should consider be asking them for information. As an aside, I heard that GEH had over 70 employees onsite at the time of the quake, so there maybe some info there in Wilmington. Also, we may have additional BWR system experts on the staff that management is not aware of that may lend additional advice.

Tony

From: Ruland, William *WR*
Sent: Saturday, March 12, 2011 9:46 PM
To: Mendiola, Anthony
Subject: Re: Sea Water and Boron

Thanks!
Bill Ruland, from
USNRC Blackberry

From: Mendiola, Anthony *AM*
To: Ruland, William
Sent: Sat Mar 12 20:56:26 2011
Subject: Sea Water and Boron

Bill,

Have discussed with Tony A. From a neutronic point of view, boron and sea water work together to reduce Keff, boron as it is a poison and sea water as it is contaminated with impurities that disrupt the neutron process. Chemically, you can only get so much boron in solution in "room temperature" sea water, so the use of sea water improves the shutdown neutronics.

I haven't raised Len yet to get the precipitation point of view. From our previous discussions, there are concerns with what could be formed (particulates) within the core environment, as well as other precipitation that could occur. The concerns are for long term core cooling, maintenance for cool able geometry, and corrosion effects on core internals. Generally, GSI 191 stuff.

Our recommendations – minimize the amount of borated sea water injected if possible and restore the injection of pure water when possible to flush the core systems from impurities.

That's what we have for now. I will follow-up with any other input from Len when I reach him.

Tony

Balarabe, Sarah

From: Clifford, Paul *MCR*
Sent: Saturday, March 12, 2011 10:25 PM
To: Ruland, William
Cc: Ward, Leonard
Subject: RE: Zirconium Corrosion Properites in Salt Water

I do know about B4C precipitation. Need to contact Len. I tries the local yellow pages, unsuccessful.

But if flow is minimal, its always best to keep core covered. Decontainment Factor/ Partition Factor (iodine scrubbing) greater than 100 when submerged.

From: Ruland, William *MCR*
Sent: Saturday, March 12, 2011 10:11 PM
To: Clifford, Paul
Cc: Voglewede, John; Einziger, Robert
Subject: Re: Zirconium Corrosion Properites in Salt Water

It's only the precip question since we had a report of decreased cooling flow from a pump (unknown which pump).
Bill Ruland, from
USNRC Blackberry

From: Clifford, Paul
To: Ruland, William
Cc: Voglewede, John; Einziger, Robert
Sent: Sat Mar 12 22:04:37 2011
Subject: Zirconium Corrosion Properites in Salt Water

In general, zirconium alloys are highly corrosion resistant. A brief search of corrosion properites in sea water reveals low sensitivity. And that makes sense since zirconium is used in hip/knee replacements (which need to be hyper sensitive).

So, I do not see an immediate threat of sea water interacton with zirconium.

John/Bob: Any feedback???

Case, Michael

From: Case, Michael
Sent: Saturday, March 12, 2011 8:40 AM
To: Kammerer, Annie
Subject: Good Morning

I turned over your name and number to Dave Skeen. Good luck today. I think there will be more questions today! (As opposed to the mid shift) Sent from Blackberry Michael Case.

Sydnor, Russell

From: Sydnor, Russell
Sent: Saturday, March 12, 2011 10:42 AM
To: Hardin, Leroy
Subject: RE: IEC

Plan on returning Friday, but it seems likely there will be another 2 or 3 week CR to extend funding, so check in next thursday.

re: Japan

There has been some brief announcements and the Op Center was manned. Detailed info is sparse. The TV news is all more sensational than factual. Disturbing report this morning about an explosion that was caught on video. Some of the JNES delegation were still here Friday from the RIC.

Russ

From: Hardin, Leroy
Sent: Friday, March 11, 2011 5:58 PM
To: Sydnor, Russell
Subject: IEC

Hi,

I just wanted to check with you. It does look like it may be a good idea for me to try and stay Friday (leaving Saturday) if the budget situation allows. I don't even know if I can arrange things here (flight and hotel) though. But I just want to try to be at as much of the FPGA meeting as I can.

By the way, has there been any discussion about the Japanese earthquake and the NPP issues at the office?

Thanks,

Roy

Case, Michael

From: Case, Michael
Sent: Saturday, March 12, 2011 1:39 PM
To: Kammerer, Annie; Hogan, Rosemary
Cc: Richards, Stuart
Subject: Re: I'm at the op center....FYI

Thanks for your help on this. The TV seems to still be focused on what happened over there and not so much on what do we do here. It's coming! Meanwhile it good to work ahead a little.

Sent from Blackberry
Michael Case.

From: Kammerer, Annie
To: Hogan, Rosemary
Cc: Richards, Stuart; Case, Michael
Sent: Sat Mar 12 12:46:05 2011
Subject: I'm at the op center....FYI

Rosemary, I have been working for the op center (last night from home until about 11pm) and today I was called in. Just to let you know....

Mike is aware of last night as he came in as I was checking out and going to bed...

Wegner, Mary

From: Wegner, Mary
Sent: Saturday, March 12, 2011 3:58 PM
To: Beasley, Benjamin; Criscione, Lawrence; King, Mark; Thomas, Eric; Breskovic, Clarence; Bernardo, Robert; Sigmon, Rebecca; Sigmon, Rebecca
Subject: Address for info directly from TEPCO

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

Wegner, Mary

From: Wegner, Mary
Sent: Saturday, March 12, 2011 3:59 PM
To: Tabatabai, Omid
Subject: FW: Address for info directly from TEPCO

From: Wegner, Mary
Sent: Saturday, March 12, 2011 3:58 PM
To: Beasley, Benjamin; Criscione, Lawrence; King, Mark; Thomas, Eric; Breskovic, Clarence; Bernardo, Robert; Sigmon, Rebecca; Sigmon, Rebecca
Subject: Address for info directly from TEPCO

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

Wegner, Mary

From: Wegner, Mary
Sent: Saturday, March 12, 2011 4:05 PM
To: Beasley, Benjamin; Criscione, Lawrence; King, Mark; Thomas, Eric; Breskovic, Clarence; Bernardo, Robert; Sigmon, Rebecca; Sigmon, Rebecca; Tabatabai, Omid
Subject: NISA in English

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

Caponiti, Kathleen

From: Taylor, Robert *NRK*
Sent: Tuesday, March 15, 2011 1:02 PM
To: Harrington, Holly *OPA*
Subject: Potential OPA Questions.docx
Attachments: Potential OPA Questions.docx

Here are the responses I drafted to the questions Dave thought up. I added the last one regarding travel to Asia based on the email you sent me. I really don't think it is our place to speak regarding foreign travel. Your thoughts?

I plan to maintain this bank of questions and add as anyone from OPA deems necessary.

Questions and Answers for Potential OPA Questions:

1. Can this happen here?

The events that have occurred in Japan are the result of a combination of highly unlikely natural disasters. It is extremely unlikely that a similar event could occur in the United States.

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

U.S. nuclear power plants are built to withstand environmental hazards, including earthquakes and tsunamis. Even those plants that are located outside of areas with extensive seismic activity are designed for safety in the event of such a natural disaster. The NRC requires that safety-significant structures, systems, and components be designed to take into account the most severe natural phenomena historically reported for the site and surrounding area. The NRC is confident that the robust design of these plants makes it extremely unlikely that a similar event could occur in the U.S.

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

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

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

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

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

The NRC has taken a number of actions:

- a. Since the beginning of the event, the NRC has continuously manned its Operations Center in Rockville, MD in order to gather and examine all available information as part of the effort to analyze the event and understand its implications both for Japan and the United States.
- b. A team of 11 officials from the 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.
- c. The Nuclear Regulatory Commission has spoken with its counterpart agency in Japan, offering the assistance of U.S. technical experts.
- d. The NRC is coordinating its actions with other Federal agencies as part of the U.S. government response.

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

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

7. What else can go wrong?

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

8. What is the worst-case scenario?

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

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

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

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

In response to nuclear emergencies, the NRC works with other U.S. agencies to monitor radioactive releases and predict their path. The NRC continues to monitor information regarding wind patterns near the Japanese nuclear power plants. Nevertheless, given the thousands of miles between the two countries, Hawaii, Alaska, the U.S. Territories and the U.S. West Coast are not expected to experience any harmful levels of radioactivity.

11. Is the US Government tracking the radiation released from the Japanese plants?

See response to Question 10.

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

All U.S. nuclear power plants have existing monitoring stations with the ability to measure and track external radiation sources. However, should the federal government decide that additional monitoring stations are needed, the NRC will support that effort.

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

See response to Question 10.

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

No protective measures are necessary in the United States. We do not expect any U.S. states or territories to experience harmful levels of radioactivity.

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

The NRC supports the states with making protective measure recommendations for their residents. The NRC is not recommending any protective measures to the states as a result of the events in Japan. United States citizens in Japan are encouraged to follow the protective measures recommended by the Japanese government. These measures appear to be consistent with steps the United States would take.

16. What are the risks to my children?

See response to Question 15.

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

The NRC does not believe that the events in Japan warrant any travel restrictions within the United States or its territories.

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

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

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

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

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

Gibson, Kathy

From: Gibson, Kathy
Sent: Saturday, March 12, 2011 1:36 PM
To: Sheron, Brian; Uhle, Jennifer
Subject: Fw: ***NRC IS RESPONDING TO AN EMERGENCY OUTSIDE OF THE UNITED STATES**

For your awareness that staff had been asked to report to Ops center. Tony is the only person I have heard from. I believe the Japanese use MELCOR and a host of their own codes - I doubt they need help from us or Sandia. I did hear from Mirela that Dana Powers is going to Japan apparently requested by DOE.

From: Huffert, Anthony
To: Gibson, Kathy
Sent: Sat Mar 12 09:12:30 2011
Subject: RE: ***NRC IS RESPONDING TO AN EMERGENCY OUTSIDE OF THE UNITED STATES**

My information would be outdated since 9 hours have past since I left the Ops Ctr - there was supposed to be a hi-level coordination meeting this morning among Federal agencies to discuss status and next steps. My understanding was that (projected) dose assessment information was to play a role in the information exchange.

From: Gibson, Kathy
Sent: Saturday, March 12, 2011 7:42 AM
To: Huffert, Anthony
Subject: Re: ***NRC IS RESPONDING TO AN EMERGENCY OUTSIDE OF THE UNITED STATES**

Thanks Tony. Do you have any information about the Japanese plants that you can share? Status of reactors and releases?

From: Huffert, Anthony
To: Gibson, Kathy
Cc: Scott, Michael; Bush-Goddard, Stephanie; Sheron, Brian
Sent: Sat Mar 12 07:39:20 2011
Subject: FW: ***NRC IS RESPONDING TO AN EMERGENCY OUTSIDE OF THE UNITED STATES**

Kathy,

Yesterday afternoon, I was directed to report to the Ops Center to fill the position of Dose Assessment Analyst for the Protective Measures Team. For this first shift, I was the only Dose Assessment Analyst and worked with members from other teams (no other PMT red team members). We completed all assigned tasks before handing off our work products to a second, more fully staffed, shift before midnight.

Past PMT training and exercise participation proved to be very useful.

Tony

From: Operations Center Bulletin
Sent: Friday, March 11, 2011 3:03 PM
To: Operations Center Bulletin
Subject: ***NRC IS RESPONDING TO AN EMERGENCY OUTSIDE OF THE UNITED STATES**

THIS IS NOT A DRILL.

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

Two important reminders:

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

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

No response to this message is required.

THIS IS NOT A DRILL

Bano, Mahmooda

From: Scott, Michael
Sent: Friday, March 25, 2011 5:44 AM
To: Gibson, Kathy; Lee, Richard; Voglewede, John; Santiago, Patricia
Subject: QUESTION FROM JAPAN

I seem to remember someone sending out a slide show on hydrogen since I've been in RES. I can't remember who our expert was, but I need to get a copy of the slide show he or she had developed on the subject. Can any of you recall?

Thanks

Mike

A/89

Gibson, Kathy

From: Gibson, Kathy
Sent: Saturday, March 12, 2011 4:41 PM
To: Gavrilas, Mirela
Subject: Re: Have you heard who is going to japan?

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

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

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

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

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

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

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

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

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

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

Giitter, Joseph

From: Giitter, Joseph *MRK*
Sent: Saturday, March 12, 2011 12:50 AM
To: Weber, Michael *EDO*
Subject: Fw: Two comments from tonight

Mike- Please see the second item.

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

Joe,

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

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

"Fukushima Daini Nuclear Power Station:

Units 1 to 4: shutdown due to earthquake

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

* At present, we have decided to prepare implementing measures to reduce the pressure of the reactor containment vessel (partial discharge of air containing radioactive materials) in order to fully secure safety.

These measures are considered to be implemented in Units 1 to 4 and accordingly, we have reported and/or noticed the government agencies concerned."

This is the second major call without the awareness level.

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

A/91

Thanks for listening,
Jim

Balarabe, Sarah

From: Grobe, Jack *Jack*
Sent: Sunday, March 13, 2011 11:03 PM
To: Cohen, Shari; Schwarz, Sherry
Cc: Leeds, Eric; Boger, Bruce; Ruland, William; Lubinski, John; Cheok, Michael; Hiland, Patrick; Giitter, Joseph; McGinty, Tim; Brown, Frederick; Givvines, Mary; Holian, Brian
Subject: Coverage in the Ops Center

Shari and Sherry

I will be covering the 3pm to 11pm shift in the Ops Center at least early this week. I will likely not be in early tomorrow, but will be a little later. Thanks.

Jack Grobe, Deputy Director, NRR

Wegner, Mary

From: Wegner, Mary
Sent: Sunday, March 13, 2011 9:30 AM
To: Thomas, Eric
Subject: Japan

I suppose you get everything I do and more, but if you want any information from TEPCO or Tohoku or NISA, I am tracking all of them.

Jimenez, Juan

From: Jimenez, Juan
Sent: Friday, March 25, 2011 8:05 AM
To: Candelario, Luisette

<http://newsblogged.com/live-video-japan-nhk-tv-news-stream-english>

Juan Jiménez

Electrical Engineer (EIT)
RES/DSA/CDB
U.S. Nuclear Regulatory Commission
301-251-7903 (office)
Office: 03C25
Mail: 3a07M

A194

Caponiti, Kathleen

From: Taylor, Robert *MRR*
Sent: Tuesday, March 15, 2011 12:33 PM
To: Harrington, Holly; Decker, David; Brenner, Eliot; Burnell, Scott *OPA*
Cc: Droggitis, Spiros; McIntyre, David
Subject: RE: Radiation Detection/Monitoring

Dave McIntyre and I are talking to Spiros right now about this. We are awaiting info from the White House that should clarify the rest of the governments roles and responsibilities. We promised to provide that as soon as we get it

From: Harrington, Holly *OPA*
Sent: Tuesday, March 15, 2011 12:29 PM
To: Decker, David; Brenner, Eliot; Burnell, Scott
Cc: Taylor, Robert
Subject: RE: Radiation Detection/Monitoring

Right now—I believe Rob is the keeper of the Q&As.

Rob – can you address?

From: Decker, David *OCA*
Sent: Tuesday, March 15, 2011 11:44 AM
To: Brenner, Eliot; Harrington, Holly; Burnell, Scott
Subject: Radiation Detection/Monitoring

Eliot, Holly and Scott,

This bullet in the latest version of the "Talking Points" aspect has been one we've had a bunch of questions on from congressional staffers. Are the other agencies mentioned below DOD/DOE/EPA? The staffers real focus, however, seems to be on which US agency is responsible for monitoring domestic radiation danger. All we've said so far on the domestic monitoring is that DOE/EPA are involved in that (and mentioned the EPA RadNet program). Have you had any questions like this that we can tag on to? Thanks.

- The NRC is working with other U.S. agencies to monitor radioactive releases from Japan and to predict their path.

Gibson, Kathy

From: Gibson, Kathy
Sent: Sunday, March 13, 2011 1:36 PM
To: 't7o3y1o@docomo.ne.jp'
Subject: Good to hear from you!

Toyo,
John forwarded your message to those of us who have met and worked with you. Thank you for letting us know you and your family and colleagues are well. We are praying for you and the people of Japan during this horrible disaster. Please let us know if there is anything we can do to help.

Best wishes,

Kathy

Gibson, Kathy

From: Gibson, Kathy
Sent: Sunday, March 13, 2011 1:48 PM
To: Voglewede, John
Subject: Re: From Tokai, Japan

Thanks for passing this on John. Its so annoying the little information available even through our own agency. I wonder if the fuels meeting scheduled for May in Japan will be moved.

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

From: Voglewede, John
To: Gibson, Kathy
Cc: Lee, Richard; Scott, Harold; Flanagan, Michelle; Raynaud, Patrick; Uhle, Jennifer
Sent: Sun Mar 13 07:58:13 2011
Subject: FW: From Tokai, Japan

A bit of personal news from Japan. Toyo seems to be okay.

I wonder how he managed to get on the Internet.

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

From: t7o3y1o@docomo.ne.jp [<mailto:t7o3y1o@docomo.ne.jp>]
Sent: Sunday, March 13, 2011 5:46 AM
To: billone@anl.com; martin.zimmermann@psi.ch; David.Schrire@vattenfall.com; Voglewede, John
Subject: From Tokai, Japan

Dear all,

It was a really disastrous event, but my family and I, and as far as I know, JAEA colleagues and their families are all OK.

No power, no water supply in Tokai area for the moment, but we are surviving anyway.

We know about the events in NPPs only from mobile TVs.

Best regards,

Toyo

Gibson, Kathy

From: Gibson, Kathy
Sent: Sunday, March 13, 2011 2:21 PM
To: Gavrilas, Mirela
Subject: Re: Tony Ulses is one of the folk going to Japan. Hope you're feeling better. (eom)

I am, thanks. John V got a message from Toyo Fuketa - he and his family are ok as well as JAEA colleagues.

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

From: Gavrilas, Mirela
To: Gibson, Kathy
Sent: Sun Mar 13 14:14:11 2011
Subject: Tony Ulses is one of the folk going to Japan. Hope you're feeling better. (eom)

Gibson, Kathy

From: Gibson, Kathy
Sent: Sunday, March 13, 2011 3:53 PM
To: Uises, Anthony
Subject: Godspeed!

Tony,

I heard you are one of the NRC experts going to Japan for assistance. I want to wish you well and safe journey.

Best wishes,
Kathy

Heida, Bruce

From: Circle, Jeff *nr*
Sent: Sunday, March 13, 2011 2:41 PM
To: Mitman, Jeffrey *nr*
Subject: Flooding

Jeff,

I've been at the Ops Center throughout the weekend on this tsunami. As we understand it, the tsunami-induced site flood that followed the earthquake was the event that gave them the SBO. Although people here are talking about the GSI-199 implications of this event, I feel that we should be revisiting external flooding in the future.

Not only dams but, ocean cooled plants. Imagine a sustained SBO at a PWR!

Have a good trip to Wilmington.

Jeff.

Caponiti, Kathleen

From: Taylor, Robert *NR*
Sent: Sunday, March 13, 2011 5:43 PM
To: Harrington, Holly *DP*
Subject: Seismic Info

From PR#3

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

Wengert, Thomas

From: Beltz, Terry, *NRR*
Sent: Sunday, March 13, 2011 11:36 AM
To: NRR_DORL Distribution
Subject: Update on Japan Situation
Attachments: ANS Japan Backgrounder.pdf

fyi

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

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

3/12/2011 5:22 PM EST

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

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

What happened?

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

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

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

Can it happen here in the US?

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

Is a nuclear reactor "meltdown" a catastrophic event?

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

What is the ANS doing?

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

ANS has established an incident communications response team.

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

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

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

Case, Michael

From: Case, Michael
Sent: Monday, March 14, 2011 6:43 AM
To: Csontos, Aladar; Richards, Stuart; Tregoning, Robert
Subject: RE: ANS Japan Backgrounder

You're right. Pretty nice.

From: Csontos, Aladar
Sent: Sunday, March 13, 2011 9:45 PM
To: Case, Michael; Richards, Stuart; Tregoning, Robert
Subject: ANS Japan Backgrounder

I know you probably already know or got this, but, it's a nice synopsis of the Japan events.

Aladar A. Csontos, Ph.D
Chief, Component Integrity Branch
Division of Engineering
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
21 Church Street M/S 0507M
Rockville, MD 20852

Office: (301) 251-7640
Fax: (301) 251-7425
Email: aladar.csontos@nrc.gov

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Case, Michael

From: Case, Michael
Sent: Monday, March 14, 2011 7:34 AM
To: Murphy, Andrew
Subject: FW: ANS Japan Backgrounder
Attachments: ANS Japan Backgrounder.pdf

Can't remember if I sent it or not.

From: Csontos, Aladar
Sent: Sunday, March 13, 2011 9:45 PM
To: Case, Michael; Richards, Stuart; Tregoning, Robert
Subject: ANS Japan Backgrounder

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Aladar A. Csontos, Ph.D
Chief, Component Integrity Branch
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Fax: (301) 251-7425
Email: aladar.csontos@nrc.gov

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

3/12/2011 5:22 PM EST

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- 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).

Gibson, Kathy

From: Gibson, Kathy
Sent: Monday, March 14, 2011 8:16 AM
To: Gibson, Raymond
Subject: Fw: Japan's Nuclear Plant Status

The website below and NEI website have the best info.

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

From: Gibson, Kathy
To: Scott, Michael; RES_DSA
Sent: Mon Mar 14 08:08:13 2011
Subject: Re: Japan's Nuclear Plant Status

Here's the NISA website:

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

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

From: Gibson, Kathy
To: Scott, Michael; RES_DSA
Sent: Mon Mar 14 08:03:22 2011
Subject: Re: Japan's Nuclear Plant Status

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

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

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

Good morning.

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

<http://ansnuclearcafe.org/>

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

Mike

Balarabe, Sarah

From: Beall, James *ink*
Sent: Monday, March 14, 2011 9:23 AM
To: Bailey, Stewart
Subject: Excellent NYT graphic

<http://www.nytimes.com/interactive/2011/03/13/world/asia/satellite-photos-japan-before-and-after-tsunami.html?hp>

Give it a few seconds, but a vertical line will appear in each photo. You can "grab" the line and move it to see Before and after.

Balarabe, Sarah

From: Lehning, John *1/10/11*
Sent: Monday, March 14, 2011 9:34 AM
To: Klein, Paul
Subject: Link to Japan Nuke Plant Status Table

http://www.neimagazine.com/journals/Power/NEI/April_2011/attachments/110314fukushima_event-status-1.pdf

	BWR-3	BWR-4	BWR-4	BWR-4	BWR-4	BWR-5
Take occur	Service	Service	Service	Outage	Outage	Outage
	Damaged	Not Damaged	Damaged	Not Damaged	Not Damaged	Not Damaged
	Not Damaged	Not Damaged	Not Damaged	Not Damaged	Not Damaged	Not Damaged
	Not Functional	Not Functional	Not Functional	Not necessary	Not necessary	Not necessary
	Not Functional	RCIC Working	Not Functional	Not necessary	Not necessary	Not necessary
	Damaged	Not Damaged	Damaged	Not Damaged	Not Damaged	Not Damaged
	Radiation monitor detect radiation increase in the environment (NPS boarder: 20 μ Sv/h at 11:44AM)					
	Unknown	Above the top	Unknown	Safe	Safe	Safe
	Stable	Stable	Stable	Safe	Safe	Safe
	Stable	Stable	Stable	Safe	Safe	Safe
	Suspended	To be decided	Done	Not necessary	Not necessary	Not necessary
	Done	Preparing	Done	Not necessary	Not necessary	Not necessary
	20km from NPS					
	Level 4 (estimated by NISA)					

	Fukushima #2 Nuclear Power Station			
	1	2	3	4
	1100	1100	1100	1100
	BWR-5	BWR-5	BWR-5	BWR-5
id	Service	Service	Service	Service
	Not Damaged	Not Damaged	Not Damaged	Not Damaged
	Not Damaged	Not Damaged	Not Damaged	Not Damaged
	Functioning	Not Functional	Functioning	Not Functional
	Not necessary	Functioning	Not necessary	Functioning
	Not Damaged	Not Damaged	Not Damaged	Not Damaged
	Stable (NPS boarder: 0.038 μ Sv/h at 8AM)			
	(No info)	(No info)	(No info)	(No info)
	(No info)	(No info)	(No info)	(No info)
	(No info)	Increase	(No info)	Increase
	Not necessary	to be decided	Not necessary	to be decided
	Not necessary	to be decided	Not necessary	to be decided
	10km from NPS			
	(No Info)			

quarters: News Release (10:30), Press conference (11:45)

fety Agency): News Release (7:30)

Release (6:01, 8:00), Press Conference (12:10)

Balarabe, Sarah

From: Lehning, John *incc*
Sent: Monday, March 14, 2011 9:41 AM
To: Klein, Paul
Subject: ABC News Video from Sunday night

<http://abcnews.go.com/WNT/video/japans-nuclear-crisis-quake-reactor-crisis-tsunami-13128984?tab=9482930§ion=1206853&playlist=1363340&page=1>

Includes Pietrangelo clip, BWR Mark I U.S. map, as well as the nuclear policy expert Cirincione, who identified the TMI event as occurring in 1971 on Saturday.

- John L.

Balarabe, Sarah

From: Smith, Stephen *inke*
Sent: Monday, March 14, 2011 11:31 AM
To: Lehning, John
Cc: Bailey, Stewart
Subject: RE: Link to Japan Nuke Plant Status Table

Thanks John. This is a good summary. I am forwarding to Stew. They should update this periodically.

Steve

From: Lehning, John *inke*
Sent: Monday, March 14, 2011 11:23 AM
To: Smith, Stephen
Subject: FW: Link to Japan Nuke Plant Status Table

Some info on plant status.

From: Lehning, John
Sent: Monday, March 14, 2011 9:34 AM
To: Klein, Paul
Subject: Link to Japan Nuke Plant Status Table

http://www.neimagazine.com/journals/Power/NEI/April_2011/attachments/110314fukushima_event-status-1.pdf

Balarabe, Sarah

From: Smith, Stephen *MLR*
Sent: Monday, March 14, 2011 11:53 AM
To: Lehning, John; Klein, Paul
Subject: RE: Update

I had heard that the rods were uncovered for some time period. I have not heard anything about a reactor or containment leak at either plant. Not sure where the quoted physicist got the info.

Steve

From: Lehning, John *MLR*
Sent: Monday, March 14, 2011 11:44 AM
To: Klein, Paul; Smith, Stephen
Subject: Update

Now, reading from abc news that Unit 3 has a leak in the bottom (not sure of what)...? Don't know if credible, but the explosion appeared stronger than the first one based on the plume.

<http://abcnews.go.com/International/japan-earthquake-fukushima-nuclear-reactors-deteriorate-explosions-fuel/story?id=13131123>

A few stories also mention the rods were uncovered to a great extent at units 2 and 3 – maybe when they were blowing down with the SRVs to prepare to inject seawater via the fire trucks...?

- John L.

Titus, Brett

From: Dennig, Robert *ink*
Sent: Monday, March 14, 2011 12:09 PM
To: Bettie, Jerome; Karipineni, Nageswara; Lee, Brian; Lobel, Richard; Raval, Janak; Sallman, Ahsan; Torres, Roberto; Walker, Harold
Subject: RE: Japan

Thanks, Jerry. NRC is manning the Ops Center 24/7 through at least Friday. Tony Ulses and Jim Trapp were the two experts sent to Japan. A team of 6 is being formed to also go (none of us.) Commissioners are down on the Hill Wednesday for a budget hearing. Please make sure that any external questions are coordinated through the Ops Center.

From: Bettie, Jerome *ink*
Sent: Monday, March 14, 2011 11:44 AM
To: Dennig, Robert; Karipineni, Nageswara; Lee, Brian; Lobel, Richard; Raval, Janak; Sallman, Ahsan; Torres, Roberto; Walker, Harold
Subject: RE: Japan

Some information that looks like a reasonable summary.
http://www.world-nuclear-news.org/RS_Venting_at_Fukushima_Daiichi_3_1303111.html

From: Dennig, Robert
Sent: Monday, March 14, 2011 8:24 AM
To: Bettie, Jerome; Karipineni, Nageswara; Lee, Brian; Lobel, Richard; Raval, Janak; Sallman, Ahsan; Torres, Roberto; Walker, Harold
Subject: Japan
Importance: High

Please get up to speed on the unfolding situation in Japan re: explosions, alleged containment failure. Thanks.

Al

Balarabe, Sarah

From: Smith, Stephen *INRR*
Sent: Monday, March 14, 2011 12:14 PM
To: Lehning, John; Klein, Paul; Bailey, Stewart
Subject: RE: Link to Japan Nuke Plant Status Table

One more potentially good link.

<http://www.iaea.org/>

Steve

From: Lehning, John *INRR*
Sent: Monday, March 14, 2011 12:04 PM
To: Smith, Stephen; Bailey, Stewart
Cc: Klein, Paul
Subject: RE: Link to Japan Nuke Plant Status Table

Oh, here is an updated version – current as of 7:30 this morning:

http://www.jaif.or.jp/english/news/2011/110314fukushima_event-status-2.pdf

This is the mother site that may have updates: <http://www.jaif.or.jp/english/>

From: Smith, Stephen
Sent: Monday, March 14, 2011 11:36 AM
To: Lehning, John; Bailey, Stewart
Subject: RE: Link to Japan Nuke Plant Status Table

John and Stew,

Here is the source. The chart is on the main web page along with some news about the Japanese reactors. If you click on the top story there is a link on the next page that sends you to a readable copy of the chart. It hasn't been updated since the one that John sent out.

<http://www.neimagazine.com/>

Steve

From: Lehning, John
Sent: Monday, March 14, 2011 11:23 AM
To: Smith, Stephen
Subject: FW: Link to Japan Nuke Plant Status Table

Some info on plant status.

From: Lehning, John
Sent: Monday, March 14, 2011 9:34 AM

To: Klein, Paul

Subject: Link to Japan Nuke Plant Status Table

http://www.neimagazine.com/journals/Power/NEI/April_2011/attachments/110314fukushima_event-status-1.pdf

Balarabe, Sarah

From: Lehning, John *MLC*
Sent: Monday, March 14, 2011 2:04 PM
To: Klein, Paul
Cc: Smith, Stephen
Subject: Fukushima video

Can't find the Chairman / former Chairman videos yet, but here's a pretty good video of Fukushima -- including some footage (core spray testing?) during startup testing. Also interesting theory from the Japanese expert -- I had read elsewhere Unit 1 was a BWR/4, but actually I read today it is a BWR/3, with an isolation condenser -- in some sense a better system than RCIC for station blackout, much like today's passive plants. So this seems a good question / theory on loss of inventory. It shows the containment being filled with seawater (as I originally thought), versus only the vessel as some other stories suggest. I still don't know what they did for sure.

<http://www.cnn.com/video/#/video/world/2011/03/14/dnt.japan.reactor.explainer.nhk?hpt=C2>

Balarabe, Sarah

From: Smith, Stephen *MSR*
Sent: Monday, March 14, 2011 3:43 PM
To: Klein, Paul; Bailey, Stewart; Lehning, John
Subject: Earthquakes in the Last 7 Days

See attached from the USGS. The 8.9 is way down the list. I think this is all earthquakes in the last 7 days greater than Magnitude 5. Almost all near Japan. Pretty interesting.

http://earthquake.usgs.gov/earthquakes/recenteqsww/Quakes/quakes_big.php

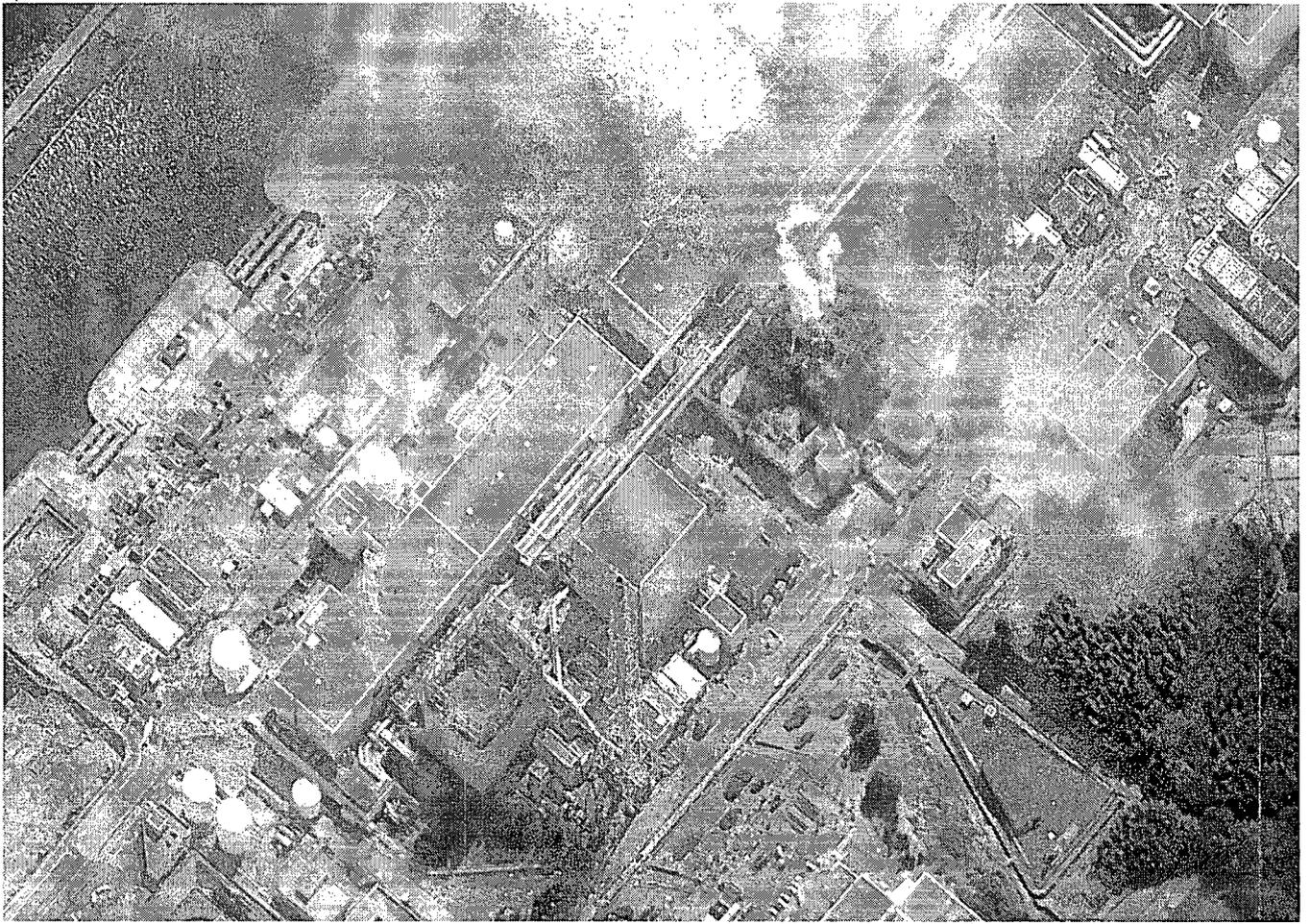
Steve
415-3190

Balarabe, Sarah

From: Lehning, John *MLK*
Sent: Monday, March 14, 2011 5:40 PM
To: Klein, Paul; Smith, Stephen
Subject: Satellite Site Photos - Before and After
Attachments: Post event large.jpg; Pre-event XL.jpg

Actually, a fair amount of stuff survived at the site considering the total destruction in some other areas. I was trying to look for the diesels – perhaps they are housed on the sheltered side of the reactor/turbine building? Couldn't tell due to lack of expertise / difficulty in seeing given the resolution and damage.

- John L.





Balarabe, Sarah

From: NRR_HIGNFY Resource
Sent: Monday, March 14, 2011 6:01 PM
To: NRR Distribution
Subject: Special Edition HIGNFY - Response to Recent Events in Japan - Maintain Effective Communication and Coordination

- March 14, 2011 -

*** SPECIAL EDITION ***

Have I Got News For You!

Office of Nuclear Reactor Regulation Mission Statement

NRR supports the NRC mission to protect public health, safety, and the environment by developing and implementing rulemaking, licensing, oversight, and incident response programs for reactors. We conduct these activities in a manner that develops trust and is consistent with the NRC organizational values.

Response to Recent Events in Japan
Maintain Effective Communication and Coordination

As you are all aware from the Agency wide e-mails, the NRC Operations Center is being manned 24 hours a day to support monitoring of the situation in Japan. Many of your NRR colleagues are involved with this effort.

Here in NRR, we can look forward in the coming days and months to many questions about the situation in Japan and the relevance to domestic nuclear facilities. The staff in the Operations Center has already been working on these types of questions and answers. It will be important to maintain effective communication and coordination between the work done in the Office, and the work done in the Operations Center.

In an effort to minimize disruption of Operations Center activities, NRR has designated Eric Thomas (eric.thomas@nrc.gov) in NRR's Operating Experience Branch to be the focused single point of contact for information requests that NRR staff may have for the Reactor Safety and Preventative Measures Teams in the Operations Center.

If you are assigned a task involving event questions and answers, please let Eric know so that he can coordinate with the Operations Center to ensure that we are providing consistent responses. If you are contacted directly by staff in the Operations Center, please respond to the request promptly, and provide an electronic copy of your response to Eric so that he can maintain the response for future use by others.

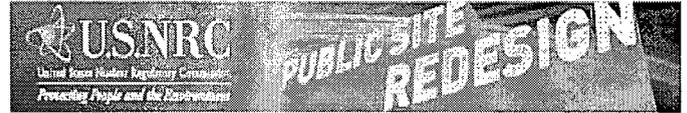
Thanks for your cooperation and assistance!

A/116

Balarabe, Sarah

From: NRC Announcement
Sent: Monday, March 14, 2011 10:00 PM
To: NRC Announcement
Subject: Daily: 5 New Items from Monday, March 14, 2011

NRC Daily Announcements



Monday March 14, 2011 -- Headquarters Edition

- » **Employee Resources: Rotational Opportunity - NRO/NPLS, Team Leader for Design Center Support, GG-14/15**
- » **General Interest: Call for Veterans' Success Stories**
- » **Security/Safety: Japan Earthquake and Tsunami Disaster Fake Web Sites, E-mail Scams, Fake Antivirus and Phishing Attack Warning**
- » **Employee Resources: Do You Know Your EAP?**
- » **Employee Resources: Rotational Opportunity - RES/SPB, Management Analyst, GG-9/11/12 - Two Positions**

Employee Resources: Rotational Opportunity - NRO/NPLS, Team Leader for Design Center Support, GG-14/15

The **Office of New Reactors, Division of New Reactor Licensing, Planning and Scheduling Branch** has a 3- to 4-month rotational opportunity for **GG-14 or GG-15** employees interested in an assignment as the **Team Leader for Design Center Support**:

Detailed information is available on the [NRC internal Web page](#).

If you have difficulty accessing a Web link in this announcement, contact the [NRC Announcement Coordinator](#), Beverly Martin, ADM/DAS, 301-492-3674.

[TOP](#)

(2011-03-14 00:00:00.0)

[View item in a new window](#)

General Interest: Call for Veterans' Success Stories

Attention NRC Military Veterans

Do you have an interesting story to tell about your conversion from military service to civilian service with the NRC? If so, please visit the [Office of Personnel Management Website](#) to learn more about how to submit your story to inspire others to continue or pursue a career in Federal service. Selected stories will be posted on the Website, and could be chosen for an upcoming video focusing on veterans in Federal service.

For assistance or more information, please contact [Len Carsley](#).

[TOP](#)

(2011-03-14 00:00:00.0)

[View item in a new window](#)

A/117

Security/Safety: Japan Earthquake and Tsunami Disaster Fake Web Sites, E-mail Scams, Fake Antivirus and Phishing Attack Warning

NRC has learned of incorrect information relating to the disaster in Japan being released to the public via Web sites using the NRC logo. Per the March 13th news release, the NRC will **not** provide information on the status of Japan's nuclear power plants. For the latest information on NRC actions see the NRC's [Web site](#) or [blog](#).

Also, US-CERT has warned users of potential email scams, fake antivirus scams, and phishing attacks that use the Japan earthquake and the tsunami disasters to potentially redirect users to malicious sites or otherwise target them. These e-mail scams may contain links or attachments which may direct users to phishing or malware-laden websites. Fake antivirus attacks may come in the form of pop-ups that flash security warnings and ask the user for credit card information.

Phishing emails and bogus Websites requesting donations for charitable organizations commonly appear after these types of natural disasters.

The following recommendations are provided to assist users in avoiding these types of malicious attacks:

- Do not follow unsolicited web links or attachments in e-mail messages.
- Review the US-CERT [Recognizing Fake Antivirus](#) document for additional information on recognizing fake antivirus.
- Refer to the US-CERT [Avoiding Social Engineering and Phishing Attacks](#) document for additional information on social engineering attacks.
- Refer to the US-CERT [Recognizing and Avoiding E-mail Scams \(pdf\)](#) document for additional information on avoiding e-mail scams.
- Review the Federal Trade Commission's [Charity Checklist](#).
- Verify the legitimacy of the email by contacting the organization directly through a trusted contact number. Trusted contact information can be found on the Better Business Bureau [National Charity Report Index](#).

If you suspect that a Web site or e-mail is not legitimate or appears to be suspicious in nature, please **do not** open it, reply to it, or click on any links/files found. Instead, forward the information as an attachment to the [Computer Security Incident Response Team](#) for analysis or call 301-415-6666.

TOP

(2011-03-14 00:00:00.0)

[View item in a new window](#)

Employee Resources: Do You Know Your EAP?

Do you know your EAP?

Most employees and managers think that NRC's Employee Assistance Program (EAP) only provides counseling for personal problems. It does. However, when you ask these folks if they were aware of other services offered by the EAP such as legal, financial, childcare and eldercare assistance for both employees and their dependants, the majority answer a resounding no. Additionally, beside these highlighted services offered by your EAP, you may be unaware of others such as management consultation, training, and coaching for employees and work groups.

Promoting Work/Life Balance through Training, Consultation and Coaching

The EAP staff want you to know that the EAP Program is part of NRC's work-life balance strategy to improve organizational effectiveness and to integrate work and personal life. By promoting such balance, the EAP helps make NRC "the best place to work" among all Federal Agencies, and has done so for several years. It does this by offering help in those areas that affect you both on-and-off-the job.

Accessing Services

By now you should have received a mailing of our EAP brochure and wallet card which highlights the many services offered by your EAP program. EAP Consultants, Inc. (EAPC) is NRC EAP contractor. You may also visit [EAPC Website](#). Go to member access and click on EAP Employee Orientation. The NRC passcode is "nuclear". You may call the EAP 24 hours a day, 7 days a week at 1-800-869-0276.

Future Events

Please look for upcoming articles and a listing of our lunch and learn discussion series on various work-life topics.

[TOP](#)

(2011-03-14 00:00:00.0)

[View item in a new window](#)

Employee Resources: Rotational Opportunity - RES/SPB, Management Analyst, GG-9/11/12 - Two Positions

The **Office of Nuclear Regulatory Research, Division of Systems Analysis, Special Projects Branch**, has two rotational opportunities for a **Management Analyst GG-09/11/12**. The primary SPB project requiring support is the State-of-the-Art Reactor Consequence Analyses conducted with two power plant licensees. Each rotation will last for 4-6 months, beginning in March 2011.

Detailed information is available on the [NRC internal Web page](#).

If you have difficulty accessing a Web link in this announcement, contact the [NRC Announcement Coordinator](#), Beverly Martin, ADM/DAS, 301-492-3674.

[TOP](#)

(2011-03-14 00:00:00.0)

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The latest Announcements are always on the [NRC@WORK Home Page](#).

[Announcements by Date](#) | [Announcements by Category](#)

Search Announcements: term term [Go]

[Frequently Asked Questions About the NRC Daily Announcements Email](#)

Titus, Brett

From: Shoop, Undine *mk*
Sent: Monday, March 14, 2011 9:59 PM
To: Dennig, Robert
Cc: Burnell, Scott
Subject: FW: For tuesday morning

Follow Up Flag: Follow up
Flag Status: Completed

Bob,

Help! We have a short turnaround to get responses to these questions for Borchardt. Question 2 is the old issue about mark I containments so would you be able to have one of your experts talk to Scott Burnell so we can get a response to Borchardt?

Thanks for your help with this! I'm just asking instead of Scott because I had the mistake of opening my e-mail tonight.

Undine

From: Harrington, Holly *LOPA*
Sent: Monday, March 14, 2011 8:26 PM
To: Burnell, Scott; Shoop, Undine; Droggitis, Spiros
Subject: For tuesday morning

See the information below. Can one of you begin working on this first thing Tuesday morning, if at all possible? This is for OCA. Check with Spiros in the LT room for where it should be sent

Thank you,

Holly

The White House is coordinating an interagency briefing for Senate and House leadership and committee staff Tuesday, March 14th, at 1pm; Bill Borchardt is going down with Becky Schmidt for that. There are four questions that OCA have received, which we would like to have answers for, if possible, the Tuesday briefing and the Wednesday hearing. The first question we believe most critical to have an answer for.

1. **What are US plants required to have for backup power? More than what the Japanese reactors did?**
2. Some in the media and in Hill briefings are suggesting that Mark 1 containment is flawed. What are the concerns about this type of containment? Are the US plants with this safe?
3. Any quick-hit info about how the Southeast Reactors performed during Katrina? What damage did the flood water do? Any power loss?
4. With NRC moving to design certification, at what point is seismic capability tested – during design or modified to be site-specific? If in design, what strength seismic event must these be built to withstand?

Balarabe, Sarah

From: Dudley, Richard *NR*
Sent: Monday, March 14, 2011 2:11 PM
To: Baval, Rochelle
Cc: Helton, Shana; Collins, Timothy; Quay, Theodore; Ruland, William; Dinsmore, Stephen; Tregoning, Robert; Landry, Ralph
Subject: March 24 Commission meeting
Importance: High

Our March 24 meeting on 50.46a appears to be the first one we will have since the problems in Japan. Is SECY making plans for extra security and do we have contingency plans if there are a lot of demonstrators?

Dick Dudley
301-415-1116

Balarabe, Sarah

From: Leeds, Eric *incc*
Sent: Monday, March 14, 2011 5:17 PM
To: Steger (Tucci), Christine
Cc: Givvines, Mary; Grobe, Jack; Boger, Bruce; Ruland, William; Brown, Frederick; Schwarz, Sherry; McDermott, Brian; Evans, Michele
Subject: ACTION: Please distribute to all NRR staff in a HIGNFY message.

As you are all aware from the Agency wide e-mails, the NRC Operations Center is being manned 24 hours a day to support monitoring of the situation in Japan. Many of your NRR colleagues are involved with this effort.

Here in NRR, we can look forward in the coming days and months to many questions about the situation in Japan and the relevance to domestic nuclear facilities. The staff in the Operations Center has already been working on these types of questions and answers. It will be important to maintain effective communication and coordination between the work done in the Office, and the work done in the Operations Center.

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If you are assigned a task involving event questions and answers, please let Eric know so that he can coordinate with the Operations Center to ensure that we are providing consistent responses. If you are contacted directly by staff in the Operations Center, please respond to the request promptly, and provide an electronic copy of your response to Eric so that he can maintain the response for future use by others.

Thanks for your cooperation and assistance!

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

A/100

Balarabe, Sarah

From: Leeds, Eric *MLC*
Sent: Monday, March 14, 2011 1:19 PM
To: Ruland, William
Subject: RE: Excellent NYT graphic

OMG. Unbelievable – thanks for sending!

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

From: Ruland, William *MLC*
Sent: Monday, March 14, 2011 1:04 PM
To: Leeds, Eric
Subject: FW: Excellent NYT graphic

From: Beall, James
Sent: Monday, March 14, 2011 9:24 AM
To: Ruland, William
Subject: Excellent NYT graphic

<http://www.nytimes.com/interactive/2011/03/13/world/asia/satellite-photos-japan-before-and-after-tsunami.html?hp>

Give it a few seconds, but a vertical line will appear in each photo. You can “grab” the line and move it to see Before and after.

Balarabe, Sarah

From: Cullingford, Michael
Sent: Monday, March 14, 2011 7:57 AM
To: Leeds, Eric; Boger, Bruce; Grobe, Jack; McGinty, Tim; Regan, Christopher; Hopkins, Jon; Astwood, Heather
Cc: Quinones, Lauren; Brown, Frederick; Giitter, Joseph; Cheok, Michael; Hiland, Patrick; Blount, Tom; Ruland, William; Holian, Brian; Lubinski, John
Subject: FW: Status of Nuclear Power Stations in Japan
Attachments: Summary of the News Releases on the earthquake No22.docx

Latest information received.....mc

From: Hidehiko Yamachika [<mailto:yamachika-hidehiko@jnes-usa.org>]
Sent: Monday, March 14, 2011 7:32 AM
To: Emche, Danielle; Foggie, Kirk; Cullingford, Michael
Cc: Michael W. Chinworth; aono-kenjiro@jnes-usa.org
Subject: Status of Nuclear Power Stations in Japan

FYI

Latest Press Release of NISA.

A/120

March 14, 2011

Nuclear and Industrial Safety Agency

Seismic Damage Information(the 22th Release)
(As of 07:30 March 14, 2011)

Nuclear and Industrial Safety Agency (NISA) confirmed the current situation of Onagawa NPS, Tohoku Electric Power Co., Inc; Fukushima Dai-ichi and Fukushima Dai-ni NPSs, Tokyo Electric Power Co., Inc. as follows:

1. The status of operation at Power Stations (Number of automatic shutdown units: 10)

○Fukushima Dai-ichi Nuclear Power Station, Tokyo Electric Power Co., Inc. (TEPCO)
(Okuma-machi and Futaba-machi, Futaba-gun, Fukushima Prefecture)

(1) The status of operation

- Unit 1 (460MWe): automatic shutdown
- Unit 2 (784MWe): automatic shutdown
- Unit 3 (784MWe): automatic shutdown
- Unit 4 (784MWe): in periodic inspection outage
- Unit 5 (784MWe): in periodic inspection outage
- Unit 6 (1,100MWe): in periodic inspection outage

(2) Readings at monitoring posts

The measurement of radioactive materials in the environmental monitoring area near the site boundary by a monitoring car confirmed the increase in the radioactivity compared to the radioactivity at 19:00, March 13.

MP1 (Monitoring at North End of Site Boundary) :
26 microSv/h(18:30 March 13)
→ (Move to MP2)

MP2 (Monitoring at north-northwest of Unit1 and northwest of the
End of Site Boundary for Unit 1) :

450 microSv/h(20:10 March 13)

→680 microSv/h(3:50 March 14)

MP4 (Monitoring Car at North West Site Boundary for Unit 1)

44.0 microSv/h(19:33 March 13)

→56.4 microSv/h(04:08 March 14)

(Surveyed by MP2 as MP1 is in the top of the cliff)

MP6 (Monitoring at the Main Gate)

5.2microSv/h(19:00 March 13)

→66.3 microSv/h(02:50 March 14)

(3) Wind direction/wind speed (as of 00:01, March 14)

Wind direction: North North West

Wind Speed: 0.3 m/s

(4) Report concerning other malfunction

- No fire report notified to NISA
- TEPCO reported to NISA in accordance with Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1,2 and 3. (15:42 March 11)
- TEPCO report to NISA the event in accordance with Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1 and 2.(notified to NISA at 16:36 March 11)
- For Unit 1: Sea water is being injected to the Primary Containment Vessel (PCV) via the Fire Extinguishing System Line (Start up 11:55 March 13)
→Interruption of injection (01:10 March 14)
- For Unit 2: Water Injection Function has been sustained. (14:00 March 13)
- For Unit 3: Fresh water is being injected to the PCV via Fire Extinguishing System Line (FESL) (11:55 March 13)
- For Unit 3: Sea water is being injected to the PCV via FESL(13:12 March 13)
- For Unit 1 and Unit 3: Injection of Sea water injection into PCV is

- interrupted because of the lack of sea water in pit. (01:10 March 14)
- ・ For Unit 3: Injection of Sea water into PCV is restarted(03:20 March 14)
- Fukushima Dai-ni Nuclear Power Station (TEPCO)
(Naraha-machi/Tomioka-machi, Futaba-gun, Fukushima pref.)
- (1) The status of operation
- Unit1 (1,100MWe): automatic shutdown
 - Unit2 (1,100MWe): automatic shutdown
 - Unit3 (1,100MWe): automatic shutdown, cold shut down at 12:15, March 12
 - Unit4 (1,100MWe): automatic shutdown
- (2) Readings at monitoring post etc.
- MP1 (Monitoring at the North End of Site Boundary)
 - 0.036 microSv/h(19:00 March 13)
 - 0.038 microSv/h(05:00 March 14)
 - MP3 (Monitoring at the North/West End of site boundary)
 - 0.038microSv/h(19:00 March 13)
 - 0.037 microSv/h(05:00 March 14)
 - MP4 (Monitoring at the North/West End of Site Boundary)
 - 0.036microSv/h(19:00 March 13)
 - 0.038 microSv/h(05:00 March 14)
 - MP5 (Monitoring at the West End of Site Boundary)
 - 0.04 microSv/h(19:00 March 13)
 - 0.042 microSv/h(05:00 March 14)
- (3) Direction and velocity of wind (As of 05:00, 14 March)
- Direction: South-southwest
 - Velocity: 0.9 m /s
- (4) Report concerning other malfunction
- ・ None of fire report notified to NISA
 - ・ TEPCO reported to NISA in accordance with Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ni, Units 1. (18:08 March 11)
 - ・ As same as above, TEPCO reported to NISA Fukushima Dai-ni Units 2 and 4.(18:33 March 11)

- For Unit 1: Due to Recovery of Residual Heat Removal System(RHR), water in suppression pool is started to cool for cold shut down.(01:24 March 14)

c. Onagawa Nuclear Power Station (Onagawa-cho, Oga-gun and Ishinomaki-shi, Miyagi Prefecture)

(1) The status of operation

Unit 1 (524MWe): automatic shutdown, cold shut down at 0:58, March 12

Unit 2 (825MWe): automatic shutdown

Unit 3 (825MWe): automatic shutdown, cold shut down at 1:17, March 12

(2) Readings of monitoring post

· Reading of monitoring post : Changed

MP2 (Monitoring at the North End of Site Boundary)

Approx. 10,000 nGy/h (as of 13:09 March 13)

→7,200 nGy/h (07:20 March 14)

(3) Report concerning other malfunction

- Fire Smoke on the first basement of the Turbine Building was confirmed extinguished at 22:55 on March 11th.
- Article 10* of Act on Special Measures Concerning Nuclear Emergency Preparedness (Unit No. not identified) (13:09 March 13)

2. Action taken by NISA

(March 11)

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

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

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

18:08: Unit 1 of Fukushima Dai-ichi notified NISA of the situation of the

Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

- 18:33: Units 1,2 and 4 of Fukushima Dai-ni notified NISA of the situation of the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 19:03 : Government declared the state of nuclear emergency (Establishment of Government Nuclear Emergency Response Headquarters and Local Emergency Response Headquarters)
- 20:50: Fukushima Prefecture's Emergency Response Headquarters issued a direction regarding the accident occurred at Fukushima-Dai-ichi Nuclear Power Station, TEPCO, that the residents living in the area of 2km radius from Unit 1 of the Nuclear Power Station must evacuate.(The population of this area is 1,864)
- 21:23: Directives from Prime Minister to the Governor of Fukushima, Mayor of Ookuma and Mayor of Futaba were issued regarding the accident occurred at Fukushima-Dai-ichi Nuclear Power Station, TEPCO, pursuant to Paragraph 3, Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness as follows:
- Residents living in the area of 3km radius from Unit 1 of the Nuclear Power Station must evacuate.
 - Residents living in the area of 10km radius from the Unit 1 must take sheltering.
- 24:00: Mr. Ikeda, Vice Minister of METI, arrived at the Local Emergency Response Headquarters

(March12)

- 05:22 Unit 1 of Fukushima Dai-ni notified NISA of the situation of the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 05:32 Unit 2 of Fukushima Dai-ni notified NISA of the situation of the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 05:44 Residents living in the area of 10km radius from unit 1 of the Nuclear Power Station must evacuate by the Prime Minister Direction.
- 06:07 Regarding of Fukushima Dai-ni NPS, TEPCO reported NISA in accordance with Article 15 of Act for Special Measures Concerning

Nuclear Emergency Preparedness.

- 06:50 According to the article 64, 3 of the Nuclear Regulation Act, government order to control the internal pressure in Fukushima-dai-ichi Units 1 and 2
- 07:45 Directives from Prime Minister to Governor of Fukushima, Mayors of Hirono, Naraha, Tomioka, Ookuma and Futaba were issued regarding the accident occurred at Fukushima-Dai-ni Nuclear Power Station, TEPCO, pursuant to Paragraph 3, Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness as follows:
- Residents living in the area of 3km radius from Fukushima Dai-ni Nuclear Power Station (NPS) must evacuate.
 - Residents living in the area of 10km radius from Fukushima Dai-ni NPS must take sheltering
- 17:00 Notification pursuant to Article 15 of the Act for Special Measure Concerning Nuclear Emergency Preparedness since the radiation level exceeded the acceptable level of Fukushima Dai-ichi NPS.
- 17:39 Prime Minister directed evacuation of the residents living within the 10 km radius from the Fukushima-Dai-ni NPS
- 18:25 Prime Minister directed evacuation of the residents living within the 20km radius from the Fukushima Dai-ichi NPS
- 19:55 Directives from Prime Minister was issued regarding sea water injection to Unit No.1 of Fukushima Dai-ichi NPS.
- 20:05 Based on the directives form Prime Minister and pursuant to Paragraph 3, Article 64 of the Nuclear Regulation Act, the Government issued an order to inject sea water Unit 1 of Fukushima Dai-ichi NPS.
- 20:20 Fukushima Dai-chi NPS, Unit1 started sea water injection.

(March 13)

- 05:38 TEPCO notified NISA of the situation pursuant to the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness that Unit 3 of Fukushima Dai-ichi NPS is in a loss of all coolant injection function. Recovering efforts of the power source and coolant injection function and work on venting are underway.
- 09:08 Pressure suppression in the Containment Vessel and fresh water injection started at Unit 3 of Fukushima Daii-chi NPS.

- 09:20 Opening of Pressure vent valve of Unit 3 of Fukushima Dai-ichi NPS.
- 09:30 NISA directed the Governor of Fukushima Prefecture, the Mayors of Ookuma-machi, Futaba-machi, Tomioka-machi and Namie-machi based on the Act for Special Measures Concerning Nuclear Emergency Preparedness on radioactivity decontamination screening.
- 09:38 TEPCO notified NISA that Unit 1 of Fukushima Dai-ichi NPS reached a situation specified in Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness.
- 13:09 Tohoku Electric notified NISA that Onagawa NPS reached a situation specified in Article 10 of the Act for Special Measures Concerning Nuclear Emergency Preparedness.
- 13:12 Fresh water injection was switched to sea water injection at Unit 3 of Fukushima Dai-ichi NPS.
- 14:25 TEPCO notified NISA that Fukushima Dai-ichi NPS reached a situation specified in Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness.

(March 14)

- 01:10 Sea water injection at unit 1 and unit 3 of Fukushima Dai-ichi NPS were temporary stopped due to decreasing sea water in pool
- 03:20 Sea water injection at unit 3 of Fukushima Dai-ichi NPS was restarted.
- 04:24 TEPCO notified NISA that Fukushima Dai-ichi NPS reached a situation specified in Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness.

<Possible Exposure to Residents>

(1) Case for Travel from Futaba Public Welfare Hospital to Nihonmatsu Man and Woman Symbiosis Center, Fukushima Prefecture

- i) No. of persons to be measured: About 60 persons
- ii) Measured Result: Not yet
- iii) Passage: Exposure could have happened while waiting to be picked up by helicopter at the Futaba high school ground
- iv) Other

Prefectural Response Headquarters judged that there were no exposure to 35 persons who traveled from Futaba Public Welfare Hospital to Kawamata Saiseikai Hospital, Kawamata-machi by the private bus provided by Fukushima Prefecture.

(2) Case for Futaba-machi Residents Evacuated by Buses

- i) No. of Persons: About 100 persons
- ii) Measured Result: 9 persons out of 100 persons

No. of Counts	No. of Persons
18,000cpm	1
30,000-36000cpm	1
40,000cpm	1
little less than 40,000cpm*	1
very small counts	5

*(This results was measured without shoes, though the first measurement exceeded 100,000cpm)

- iii) Passage: Under investigation
- iv) Other

Though persons evacuated in different location outside of the Prefecture (Miyagi Prefecture), all destinations are under confirmation.

<Status of Evacuation (As of 04:30 March 14)>

Ookuma-machi: Evacuation of subject evacuees (about 11,000 persons) completed. (Area of Refuge: Tamura Comprehensive Gymnasium, etc.)

(Contact Person)

Mr. Toshihiro Bannai

Director, International Affairs Office,

NISA/METI

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

Wilhelm, Martha

From: Mathew, Roy *MR*
Sent: Tuesday, March 15, 2011 1:17 PM
To: Hiland, Patrick; Skeen, David; Wilson, George *MR*
Subject: Station Blackout for US plants

Here is a write-up for station blackout, in case somebody is looking for it.

The NRC designated station blackout (SBO), which is a loss of all offsite and onsite ac power concurrent with a turbine trip, as Unresolved Safety Issue A-44 in 1980. In 1988, the Commission concluded that additional SBO regulatory requirements were justified and issued the SBO rule (Title 10 *Code of Federal Regulations* [CFR] Section 50.63 [10 CFR 50.63]) to provide further assurance that a loss of both offsite and onsite emergency ac power systems would not adversely affect public health and safety.

10CFR50.63 Requirement: Loss of all alternating current power.

Each light-water-cooled nuclear power plant licensed to operate must be able to withstand for a specified duration and recover from a station blackout as defined in Sec. 50.2.

As a result of the SBO rule all plants have (1) established SBO coping and recovery procedures; (2) completed training for these procedures; (3) implemented modifications as necessary to cope with an SBO; and (4) ensured a 4- 16 hour coping capability.

There are 44 Units that rely on Battery power to cope with a SBO
There are 60 Units that have opted to use an alternate AC source

The NRC staff reviewed the responses from each licensee and issued a SER accepting the proposed coping methods.

A1/23

Balarabe, Sarah

From: Cullingford, Michael
Sent: Monday, March 14, 2011 8:36 AM
To: Leeds, Eric; Boger, Bruce; Grobe, Jack; Grobe, Jack; McGinty, Tim; Ruland, William; Lubinski, John; Cheok, Michael; Holian, Brian; Brown, Frederick; Giitter, Joseph; Hiland, Patrick
Subject: FW: Seismic Damage Information News Release in English
Importance: High

fyi

--Original Message-----

From: tomita-kazuhide@jnes.go.jp [mailto:tomita-kazuhide@jnes.go.jp]
Sent: Monday, March 14, 2011 12:58 AM
To: tomita-kazuhide@jnes.go.jp
Subject: Seismic Damage Information News Release in English
Importance: High

Dear All

Please find the NISA News Release in English from the NISA HP web as shown below.

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

This is the best way you could obtain the quick official release on the Seismic Damage Information from Japan.

Sincerely Yours,

Kazuhide TOMITA (Mr.)
Assistant Director-General
Office of International Programs
Japan Nuclear Energy Safety Organization (JNES) 3-17-1, Toranomom, Minato-ku, Tokyo, 105-0001, JAPAN
Tel: +81-3-4511-1910
Fax: +81-3-4511-1998
E-mail: tomita-kazuhide@jnes.go.jp

A/104

Balarabe, Sarah

From: Hiland, Patrick *mkc*
Sent: Monday, March 14, 2011 1:18 PM
To: Brown, Frederick; Ruland, William; McGinty, Tim; Skeen, David; Thomas, Eric; Thorp, John; Giitter, Joseph
Cc: Boger, Bruce
Subject: RE:

Looks good; be sure to include other offices that are working on this effort (e.g. RES has drafted a section on seismic and continue to brainstorm questions). I'm assuming that Eric will act as filter, as best he can, to avoid duplication.

From: Brown, Frederick *mkc*
Sent: Monday, March 14, 2011 1:11 PM
To: Hiland, Patrick; Ruland, William; McGinty, Tim; Skeen, David; Thomas, Eric; Thorp, John; Giitter, Joseph
Cc: Boger, Bruce
Subject:
Importance: High

Drafted the message below for Eric to send to all NRR staff. Does this look like a reasonable scope?

As you are all aware from the Agency wide e-mails, the NRC Operations Center is being manned 24 hours a day to support monitoring of the situation in Japan. Many of your NRR colleagues are involved with this effort.

Here in NRR, we can look forward in the coming days and months to many questions about the situation in Japan and the relevance to domestic nuclear facilities. The staff in the Operations Center has already been working on these types of questions and answers. It will be important to maintain effective communication and coordination between the work done in the Office, and the work done in the Operations Center.

In an effort to minimize disruption of Operations Center activities, NRR has designated Eric Thomas (eric.thomas@nrc.gov) in NRR's Operating Experience Branch to be the focused single point of contact for information requests that NRR staff may have for the Reactor Safety and Preventative Measures Teams in the Operations Center.

If you are assigned a task involving event questions and answers, please let Eric know so that he can coordinate with the Operations Center to ensure that we are providing consistent responses. If you are contacted directly by staff in the Operations Center, please respond to the request promptly, and provide an electronic copy of your response to Eric so that he can maintain the response for future use by others.

Balarabe, Sarah

From: Giitter, Joseph *JKR*
Sent: Monday, March 14, 2011 11:48 AM
To: Ruland, William
Cc: Hasselberg, Rick
Subject: RE:

I understand that. I'll forward to Hasselberg.

From: Ruland, William *JKR*
Sent: Monday, March 14, 2011 11:46 AM
To: Giitter, Joseph
Subject: RE:

You need to get back on the list, including getting on a RST.

From: Giitter, Joseph *JKR*
Sent: Monday, March 14, 2011 10:57 AM
To: Ruland, William
Subject: RE:

Not recently. When I came to NRR they dropped me from the fuel cycle safety team and never added me to other teams. Of course, I ran the op center for 8 years and served on many teams in the past.

From: Ruland, William *JKR*
Sent: Monday, March 14, 2011 10:53 AM
To: Giitter, Joseph
Subject: RE:

Have you been through the IRC training?

Bill

From: Giitter, Joseph
Sent: Monday, March 14, 2011 10:42 AM
To: Ruland, William
Subject: RE:

Bill—For some reason I didn't get called to the Op Center this weekend. Just want to let you know that I'm available to help. I'm sure Allen and Nelson would be willing as well.

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

Norton based on what?

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

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

Joseph G. Giitter

Director

Division of Operating Reactor Licensing

Office of Nuclear Reactor Regulation

Balarabe, Sarah

From: Boger, Bruce
Sent: Monday, March 14, 2011 11:04 AM
To: Ruland, William
Subject: RE: Proposed folks to Japan from DSS

Thanks, Bill.

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

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

Balarabe, Sarah

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

To add to his information.

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

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

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

Norton based on what?

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

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

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

Balarabe, Sarah

From: Ruland, William *mk*
Sent: Monday, March 14, 2011 10:06 AM
To: Beall, James
Subject: RE: Excellent NYT graphic

Thanks! I saw this via facebook yesterday.

From: Beall, James *mk*
Sent: Monday, March 14, 2011 9:24 AM
To: Ruland, William
Subject: Excellent NYT graphic

<http://www.nytimes.com/interactive/2011/03/13/world/asia/satellite-photos-japan-before-and-after-tsunami.html?hp>

Give it a few seconds, but a vertical line will appear in each photo. You can "grab" the line and move it to see Before and after.

Caponiti, Kathleen

From: Taylor, Robert *NR*
Sent: Tuesday, March 15, 2011 1:30 PM
To: Harrington, Holly
Subject: RE: drafty draft of Q&A for the public.

Will do. Might take a little bit of time. These aren't complete yet.

From: Harrington, Holly *OPA*
Sent: Tuesday, March 15, 2011 1:28 PM
To: Taylor, Robert
Subject: FW: drafty draft of Q&A for the public.
Importance: High

This is what undine did for our response to the public. Can you marry with the ones you just send me and return to me?

From: Shoop, Undine *NR*
Sent: Tuesday, March 15, 2011 1:04 PM
To: Couret, Ivonne; Harrington, Holly; Akstulewicz, Brenda; Steger (Tucci), Christine
Subject: drafty draft of Q&A for the public.
Importance: High

Undine Shoop
Chief, Health Physics and Human Performance Branch
Division of Inspection and Regional Support
Office of Nuclear Reactor Regulation
301-415-2063

A1130

Balarabe, Sarah

From: GovExec.com newsletters [news@get.govexec-media.com]
Sent: Monday, March 14, 2011 5:01 AM
To: Ruland, William
Subject: GovExec Today: Reorganization begins; Japanese tragedy; and advice from the advisory board

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MONDAY, MARCH 14, 2011

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1. **White House officially begins government reorganization**
2. **Government uses new and old media to get its message out after Japan disaster**
3. **From Nextgov.com: Defense prepares response to massive earthquake in Japan**
4. **Corporate leaders advise government on personnel, contracting issues**
5. **SEC told to reorganize and live within its means**
6. **Is D.C. prepared for a tsunami?**
7. **New continuing resolution shows GOP's strong hand**
8. **Japan earthquake live blog**
9. **Fedblog: Rhetoric of Reorganization**
10. **Today's column: Wired Workplace**
11. **The Earlybird: Today's headlines**
12. **Quote of the Day**
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1. **White House officially begins government reorganization**

By Robert Brodsky

Presidential memo directs top aides to look for ways to reduce duplication in trade and export agencies.

Full story: http://www.govexec.com/story_page.cfm?articleid=47317&dcn=e_gvet

[Return to Top](#)

2. **Government uses new and old media to get its message out after Japan disaster**

By Kelli Linnay

Press conferences, Twitter help agencies disseminate information on tsunami effects in the U.S.

Full story: http://www.govexec.com/story_page.cfm?articleid=47319&dcn=e_gvet

[Return to Top](#)

3. **From Nextgov.com: Defense prepares response to massive earthquake in Japan**

By Bob Brewin

High-capacity undersea cable used by military was severed; impact on operations is unclear.

Full story: http://www.govexec.com/story_page.cfm?articleid=47321&dcn=e_gvet

[Return to Top](#)

4. **Corporate leaders advise government on personnel, contracting issues**

By Robert Brodsky

The new Management Advisory Board is working with the White House on operational management issues.

Full story: http://www.govexec.com/story_page.cfm?articleid=47318&dcn=e_gvet

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5. **SEC told to reorganize and live within its means**

By George A. Warner

House hearing on conflict-of-interest charges involving former general counsel leaves agency battling for public trust and increased funding.

Full story: http://www.govexec.com/story_page.cfm?articleid=47315&dcn=e_gvet

[Return to Top](#)

6. **Is D.C. prepared for a tsunami?**

By Marc Ambinder, National Journal

Complicating a mass evacuation would be various emergency contingency plans put in place by the federal government.

Full story: http://www.govexec.com/story_page.cfm?articleid=47314&dcn=e_gvet

[Return to Top](#)

7. **New continuing resolution shows GOP's strong hand**

By Humberto Sanchez, National Journal

Plan could be considered by the full House as soon as Tuesday.

Full story: http://www.govexec.com/story_page.cfm?articleid=47313&dcn=e_gvet

[Return to Top](#)

8. **Japan earthquake live blog**

National Journal has continuous updates on the earthquake, tsunamis and the federal response.

Full story: http://www.govexec.com/story_page.cfm?articleid=47311&dcn=e_gvet

[Return to Top](#)

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9. **Fedblog: Rhetoric of Reorganization**

By Tom Stoop

Outside the bureaucracy, looking in.

Friday, March 11, 6:16 p.m. ET:

In continued to be intrigued by the talk coming out of the White House on the subject of reorganizing government. On the one hand, the rhetoric is sweeping. "We cannot win the future with a government built for the past," President Obama said in his memo to agencies on reorganization today. "We live and do business in the information age, but the organization of the federal government has not kept pace. Government agencies have grown without overall strategic planning and duplicative programs have sprung up, making it harder for each to reach its goals."

Read blog: <http://blogs.govexec.com/fedblog/>

[Return to Top](#)

10. **Today's column: Wired Workplace**

Race to Hire

The Veterans Affairs Department has brought on 365 new IT workers so far in its push announced in January.

Full column: <http://www.govexec.com/dailyfed/0311/031411ww.htm>

[Return to Top](#)

11. **The Earlybird: Today's headlines**

Get links to the top news of the day:

<http://www.govexec.com/dailyfed/ebird.htm>

[Return to Top](#)

12. **Quote of the Day**

We use contractors to write contracts for other contractors.

-- Dan Gordon, administrator of the Office of Federal Procurement Policy, on government's overdependence on contractors.

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Government Executive * 600 New Hampshire Avenue, NW * Washington, DC 20037

Balarabe, Sarah

From: Bailey, Marissa *inmass*
Sent: Monday, March 14, 2011 8:45 AM
To: Bailey, Stewart
Subject: FW: Information Sheet Regarding the Tohoku Earthquake

From: Hiltz, Thomas *TH*
Sent: Monday, March 14, 2011 8:14 AM
To: Tschiltz, Michael; Bailey, Marissa
Subject: FW: Information Sheet Regarding the Tohoku Earthquake

FYI _ I suspect this was widely distributed to Huruta's contact lists

From: Kazuhiko Hiruta [Hiruta@denjiren.com]
Sent: Sunday, March 13, 2011 4:47 PM
To: Kazuhiko Hiruta
Subject: Fwd: Information Sheet Regarding the Tohoku Earthquake

Dear friends,

Please find information about the incidents at Fukushima Nuclear Power Station. If you have questions, please feel free to contact me.

Kazuhiko Hiruta

Begin forwarded message:

差出人: Tai Inada <Inada@denjiren.com>
日時: March 13, 2011 16:36:27 EDT
宛先: Tai Inada <Inada@denjiren.com>
件名: **Information Sheet Regarding the Tohoku Earthquake**

Dear Friends,

Please find an information sheet below and attached that summarizes the events of the past few days in Japan and the continuing efforts to mitigate the incident at Fukushima Daiichi Nuclear Power Station.

Please direct any questions regarding this document to me, Tai Inada or Samuel Lederer, Researcher with FEPC at lederer@denjiren.com or 202-466-6781.

A/132

Tai Inada

The Federation of Electric Power Companies of Japan (FEPC)

1901 L Street NW, Suite 600

Washington, DC 20036

tel: 202-466-6781

fax: 202-466-6758

Information Sheet Regarding the Tohoku Earthquake

The Federation of Electric Power Companies of Japan (FEPC) Washington DC Office

As of 4:30PM (EST), March 13, 2011

At 2:46PM (JST) on March 11, 2011, a 9.0-magnitude earthquake occurred near the Tohoku region of Northeast Japan. The epicenter of the earthquake lies 17 miles below the earth's surface in the Pacific Ocean, 81 miles off the coast from Sendai City. Intense shaking could be felt from Tokyo to Kamaishi, an arc of roughly 360 miles.

The earthquake generated a tsunami with waves of more than 30 feet that caused widespread damage to a swath of the northeast Japan coastline. In addition to the significant destruction of buildings, infrastructure, and human property, two of Japan's 17 nuclear power stations (sites)—Fukushima Daiichi and Fukushima Daini—suffered damage due to the tsunami. All three of the six operating reactors at Fukushima Daiichi Nuclear Power Station and all four reactors at Fukushima Daini Nuclear Power Station, both operated by Tokyo Electric Power Company (TEPCO), shut down automatically in response to the earthquake. TEPCO is one of ten member companies of The Federation of Electric Power Companies of Japan (FEPC).

A state of emergency was declared at Fukushima Daiichi at 7:03PM March 11. Unit 1 and 3 reactors at Fukushima Daiichi lost primary reactor cooling because of a loss of all electrical power. Emergency cooling systems were engaged to lower the core reactor temperature. In order to alleviate the buildup of pressure, slightly radioactive vapor, that posed no health threat, was passed through a filtration system and emitted outside via a ventilation stack from Unit 1 reactor vessel at 9:07AM on March 12 and Unit 3 reactor vessel at 9:20PM on March 13. At 3:36PM on March 12, an explosion occurred at Fukushima Daiichi Unit 1 reactor damaging the roof of the secondary containment building. The explosion—caused by the interaction of hydrogen and oxygen vapor between the primary containment vessel and secondary containment building—did not damage the primary containment vessel or the reactor core. Four workers who were injured by the explosion were transported to a nearby hospital.

In order to control the pressure of the reactor core, TEPCO began to inject seawater and boric acid into the primary containment vessels of Unit 1 (8:20PM, March 12) and Unit 3 (1:12PM, March 13). There is likely some damage to the fuel rods contained the reactor core of Unit 1 and 3 reactors. The water level in the reactor vessel of Unit 2 reactor is steady. Personnel from TEPCO are closely monitoring the status of Unit 1, 2, and 3 reactors. The highest recorded radiation level at the Fukushima Daiichi site was 1557 micro sievert (1:52PM, March 13). The most recent reported level at Fukushima Daiichi is 44 micro sievert (7:33PM, March 13).

While representatives of the Japanese government have acknowledged the potential for partial meltdowns at Fukushima Daiichi Unit 1 and 3 reactors, there is no danger for core explosion, as occurred at the nuclear power station at Chernobyl in 1986. Control rods have been successfully inserted at all of the reactors, thereby ending the chain reaction. The reactor cores at Fukushima Daiichi and Daini power stations are surrounded by steel and concrete containment vessels of 40 to 80 inches thick that are designed to contain radioactive materials.

At 7:45AM on March 12, a state of emergency was declared for Fukushima Daini. There is electricity available at all four of the reactors at Fukushima Daini, including Unit 3 reactor. Although there is limited availability of the cooling water pumps at Unit 1, 2, and 4 reactors, TEPCO is working effectively to maintain constant cooling in the primary containment vessels. TEPCO confirms that no radioactivity has been recorded outside of the secondary containment buildings at Fukushima Daini.

Two other plants in the Tohoku region, Onagawa Nuclear Power Station and Tokai Nuclear Power Station, were automatically shut down in response to the earthquake. The four reactors at these plants have functioning cooling systems and are being monitored by plant operators. The Rokkasho Reprocessing Plant and accompanying facilities, located far north of the tsunami zone in Rokkasho Town, is operating safely on backup power generation systems. Japan Nuclear Fuel Limited (JNFL), which operates the Rokkasho facilities, drained a 600-liter spill from the containment pool for spent fuel through a specialized wastewater treatment system. Two casks of low-level nuclear waste (LLW), which were being prepared for transport from Mutsu Ogawara Port when the earthquake occurred, have been successfully received at the Rokkasho facility.

Japanese nuclear facilities are built to exacting safety standards. They are designed to withstand powerful seismic events, such as earthquakes. In this earthquake—the strongest recorded over the past 100 years in Japan—the containment structures of Fukushima Daiichi maintained their structural integrity. These facilities were designed to withstand tsunamis within a range of assumed strength. In this event, however, the force of the tsunami exceeded the assumed range and flooded diesel generators at Fukushima Daiichi power station, thus precipitating the loss of power for the reactor cooling systems.

In order to minimize adverse health effects of any potential radioactive release, the Japanese government issued an evacuation order at 9:23PM on March 11 for a radius

of 1.86 miles around Fukushima Daiichi. By 6:25PM on March 12, the evacuation area has been enlarged to cover the approximately 70,000 residents within 12.5 miles of Fukushima Daiichi and 6.2 miles of Fukushima Daini.

In addition to supporting the evacuations near Fukushima Daiichi and Daini nuclear power stations, TEPCO is collaborating with the Japanese government to ensure the safety of the all people in the affected region. Iodine tablets, to counteract the effects of radioactivity on the thyroid gland, have been distributed to people at the boundary of the evacuation zone. Sophisticated radiation screening equipment has been mobilized to measure radiation exposure for people close to the evacuation area. The Japanese Nuclear and Industrial Safety Agency said that as many as 160 people may have been exposed to radiation around the Fukushima Daiichi station. TEPCO and the Japanese government will continue to use their full professional and technological resources, as well as those offered by international organizations, to ensure the safety of those displaced by the earthquake and tsunami.

The automatic shutdown of the 11 operating reactors at the Onagawa Nuclear Power Station, Tokai Nuclear Power Station, Fukushima Daiichi and Daini, represents a loss of 3.5% of electric generation capacity for Japan. In addition, several thermal power stations were damaged in the earthquake and are currently under repairs. In order to compensate for this loss of electricity production, TEPCO has instituted rolling blackouts, information about which can be found on the TEPCO website. The Japanese government is also urging all residents in Japan to minimize their electricity use in order to support the relief and recovery effort in Tohoku.

FEPC, in cooperation with TEPCO and related organizations, will continue to work tirelessly to provide the public with the most accurate and timely information on the situation at the Fukushima Daiichi and Daini nuclear power stations.

Schaperow, Jason

From: Schaperow, Jason
Sent: Tuesday, March 22, 2011 8:22 AM
To: Lee, Richard
Subject: FW: Requests

FYI.

From: Tinkler, Charles
Sent: Monday, March 21, 2011 3:17 PM
To: Santiago, Patricia; Chang, Richard; Wagner, Katie
Cc: Schaperow, Jason
Subject: Requests

Right now we have 2 actions we are following up

1. Clarification and assessment of potential radiological release source terms for Fukushima Units 3&4 spent fuel pools, earlier estimates were made based on earlier Peach Bottom analyses and followup is needed to address Fukushima and complete dryout and concrete attack, clarification sought by the PMT
2. We have received additional requests from Naval Reactors. These are being put on hold. Discussed with Brian Sheron

Charles Tinkler
Charles.Tinkler@nrc.gov

A1133

Ali, Syed

From: Pires, Jose
Sent: Monday, March 14, 2011 7:19 AM
To: Hogan, Rosemary; Ali, Syed; Ake, Jon; Anooshehpoor, Rasool; Herrity, Thomas; Weaver, Thomas; Roche, Robert; Sircar, Madhumita; Candra, Hernando
Cc: Stovall, Scott; Rivera-Lugo, Richard
Subject: RE: Follow-up to the Japanese Earthquake/Tsunami

Herman,

I placed materials that may help with the seismic design basis for the affected plants (at a plant it can vary by unit depending when it was built and I do not know if retrofits were made) in the G drive in the following folder:

G:\DE\SGSEB\JPires\Seismic Design Japan NPPs

The briefing by Stevenson and the NBS SP 592 (after page 120) have interesting information (the design basis PGA for Unit 1 in Fukushima was 0.18 g and they used the Kern County earthquake (Blume). Not sure if there was retrofit.

Note that the buildings then dot be conservatively designed and they seemed to have performed well. It is usually the mechanical and electrical equipment that raises issues (as noted by Stevenson as well).

Scott,

Can ShakeCast find the PGAs at the various sites? That would help compare with the design basis which is not only based on magnitude.

Thanks,

Jose.

From: Hogan, Rosemary
Sent: Friday, March 11, 2011 6:15 PM
To: Ali, Syed; Ake, Jon; Pires, Jose; Anooshehpoor, Rasool; Herrity, Thomas; Weaver, Thomas; Roche, Robert; Sircar, Madhumita; Candra, Hernando
Cc: Stovall, Scott; Rivera-Lugo, Richard
Subject: FW: Follow-up to the Japanese Earthquake/Tsunami

From: Richards, Stuart
Sent: Friday, March 11, 2011 6:12 PM
To: Hogan, Rosemary; Graves, Herman; Kammerer, Annie; Murphy, Andrew
Cc: Case, Michael; Uhle, Jennifer
Subject: Follow-up to the Japanese Earthquake/Tsunami

Brian wants us to be prepared to answer questions on the earthquake/tsunami, particularly as it is related to US plants.

For example:

- Was the ground motion at the Japanese sites beyond their design basis?

- Why do we have confidence that US nuclear power plants are adequately designed for earthquakes and tsunamis?
- If the earthquake in Japan was a larger magnitude than considered by plant design, why can't the same thing happen in the US?
- What would be the results of a tsunami generated off the coast of a US plant? (Or why are we confident that large tsunamis will not occur relatively close to US shores?)

Mike will likely get additional guidance on Monday morning.

Thanks
Stu

Murphy, Andrew

From: Case, Michael
Sent: Monday, March 14, 2011 7:20 AM
To: Murphy, Andrew
Subject: FW: ANS Japan Backgrounder
Attachments: ANS Japan Backgrounder.pdf

From: Csontos, Aladar
Sent: Sunday, March 13, 2011 9:45 PM
To: Case, Michael; Richards, Stuart; Tregoning, Robert
Subject: ANS Japan Backgrounder

I know you probably already know or got this, but, it's a nice synopsis of the Japan events.

Aladar A. Csontos, Ph.D
Chief, Component Integrity Branch
Division of Engineering
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
21 Church Street M/S 0507M
Rockville, MD 20852

Office: (301) 251-7640
Fax: (301) 251-7425
Email: aladar.csontos@nrc.gov

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

3/12/2011 5:22 PM EST

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

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

What happened?

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

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

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

Can it happen here in the US?

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

Is a nuclear reactor "meltdown" a catastrophic event?

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

What is the ANS doing?

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

ANS has established an incident communications response team.

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

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

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

Case, Michael

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

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

Case, Michael

From: Case, Michael
Sent: Monday, March 14, 2011 8:41 AM
To: Gibson, Kathy
Cc: Sheron, Brian; Uhle, Jennifer; Bonaccorso, Amy; Flory, Shirley
Subject: Japanese Earthquake--Ops Center Request

Hi Kathy. They are working on what if scenarios in the Ops Center. They are tasked to compare some of the dose assessment results on the Japanese plants to Chernobyl. They need someone or some information on dose results from Chernobyl. Who do you have to help? The request is specifically from Kathryn Brock on the PMT.

Stutzke, Martin

From: Stutzke, Martin
Sent: Monday, March 14, 2011 9:51 AM
To: Coyne, Kevin
Subject: PRA Info on Tsunamis and Aftershocks

The Diablo Canyon PRA considered a tsunami leading to flooding of the ASW pumps. Nothing in the San Onofre PRA on tsunamis.

Seismic PRAs do not consider damage from earthquake aftershocks. To do so, you'd need to predict the fragility of the plant SSCs following the main shock.

Marty

Martin A. Stutzke
Senior Technical Advisor for PRA Technologies
Division of Risk Assessment
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
(301) 251-7614

Flanagan, Michelle

From: Flanagan, Michelle
Sent: Monday, March 14, 2011 11:24 AM
To: Aissa, Mourad; Algama, Don; Esmaili, Hossein; Flanagan, Michelle; Lee, Richard; Notafrancesco, Allen; Raynaud, Patrick; Salay, Michael; Scott, Harold; Wagner, Katie
Cc: Voglewede, John
Subject: Important information from branch chief's meeting

FSTB,

At this morning's branch chief meeting, Michael Scott requested that staff be notified of the following guidance.

Staff are requested to direct any inquiries on the events in Japan - from the press, public or anyone else - to OPA. We are not equipped with enough information to comment or answer questions on the event and should not speculate. This guidance is not intended to have staff be evasive, but rather to maintain effectiveness in communication with information that is confirmed to be accurate.

Also, if you are asked to provide support in any way to NRC's response to the events, it is the top priority. If your support of the response would impact other, time sensitive work, please speak with Michael Scott.

Thank you,

Michelle Flanagan
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
(301) 251-7547

Wegner, Mary

From: Wegner, Mary
Sent: Monday, March 14, 2011 1:58 PM
To: King, Mark

<http://www-news.iaea.org/news/topics/default.asp>

Tracking:

A/139

Hogan, Rosemary

From: Sheron, Brian
Sent: Friday, March 25, 2011 5:57 PM
To: Kammerer, Annie
Cc: Case, Michael; Richards, Stuart; Hogan, Rosemary; Uhle, Jennifer
Subject: RE: Question

I think what you told me is that we can calculate the open ocean wave height very well. It is when it runs up on the shore, you need to know the near shore topography in detail in order to accurately calculate the runup wave height? If we know the near shore topography, are the models valid?

From: Kammerer, Annie
Sent: Friday, March 25, 2011 5:33 PM
To: Sheron, Brian
Cc: Case, Michael; Richards, Stuart; Hogan, Rosemary; Uhle, Jennifer
Subject: RE: Question

Hi Brian,

Sorry for the delay in getting back to you.

First let me clarify. NOAA's real time prediction of a tsunami wave have nothing to do with TEPCO's design basis tsunami. In terms of the real time wave, NOAA hasn't under predicted anything (8m offshore and 14m runup onshore are consistent quantities).

The best estimate of the wave at daiichi from NOAA was a 8 meters offshore (at the 5 meter bathymetric line—where the water at mean tide is 15 meters deep). This is a calculation performed using what is widely believed to be the best available global model for tsunami. So, that wasn't either a educated guess or professional judgment, it was a calculation using a well validated modeling tool. However, the numbers do have uncertainly based on the fact that the model does not have the preferred very high resolution bathymetric information in the very near shore area (that's why NOAA's calculations can push only to the 5meter bathy line). The NOAA model results were also informed by (and checked against) the recordings on the closest DART buoys, these are actual measurements of wave height and the pressure front in the open ocean.

A tsunami has two phases of response. In the open ocean it is very well behaved and calculations are highly accurate. As it gets close to shore and the shoaling effect begins, the behavior starts to go non-linear and very high resolution bathymetric (an topographic) information is required for a very precise prediction of runup (onto land) at any particular point on the coastline. However, it is well understood that as a tsunami wave comes onshore it grows in size significantly. Therefore, NOAA's calculation of 8 meters offshore and TEPCO's (most recently) announcement of 14 meters onshore are consistent.

My previous comment (before this event) was actually that NOAA's tsunami warning system models (NOAA, not the USGS) have been extremely well validated over time (with hundreds of real tsunami), and that continues to be the case. But, again, that is up to water depth where they have the necessary resolution of bathymetric data (and where the non-linear response begins in earnest). As a result of this fact, there is an effort currently to collect very high resolution data for the entire US pacific coast and to implement it into the NOAA database (currently the resolution of US data is not uniform). This will make US Pacific coast onshore runup predictions highly accurate. As part of the recent UW/NOAA contract, NOAA will give us a tool (ComMIT) that will provide NRC staff with very accurate run-up predictions in the areas around SONGS and Diablo during future tsunami warnings (it will allow us to do independent PTHA at SONGS and Diablo). We had recently pushed that technology transfer back to slow the burn rate on the UW/NOAA contract (due to budget cuts) but we may find that we need to find the money sooner rather than later so that we can run some analyses.

As noted, TEPCO has recently said the tsunami had a 14meters runup (onshore). However this is the 3rd time they have provided numbers. I didn't believe (and didn't post) their initial 2 postings because they were lower than NOAA's offshore measurements and calculations (which is inconsistent with basic physics). Also, we knew that it had to at least exceed

the elevation of the equipment that was impacted. TEPCO is most likely (in my opinion) getting the measurements from watermarks on the buildings, or something similar. It's hard for me to believe that their tide gauges survived the tsunami, but one of NOAA's top experts in tide gauges and offshore measurements is my brother Carl (who, ironically was named after the Carl Kammerer who used to work at the NRC, who was my father's cousin). I can ask him about the chance of survival of equipment at the site. There are a lot of uncertainties with this, obviously, but 14 meters onshore is believable.

With regard to TEPCO's design basis tsunami, I have long gone on record as saying that the Japanese should be using PTHA, which would have predicted this water level, instead of the deterministic method that they use. Many of the tsunami specialists in Japan agree, and JNES had come around to that way of thinking due to their new concept of "residual risk". I think everyone was eagerly awaiting the new JSCE codes that detailed the PTHA technique to be used in Japan. Also, FYI, developing guidance on PTHA was identified as the #1 priority for the tsunami working group of the IAEA ISSC and NRC, JNES, and NOAA were going to jointly lead the work. We were supposed to have a kick of conference call to start the work the week after the earthquake hit. As we all know, fate intervened.

I hope this answers your questions.

Cheers,
Annie

From: Sheron, Brian
Sent: Thursday, March 24, 2011 8:27 AM
To: Kammerer, Annie
Cc: Case, Michael; Richards, Stuart; Hogan, Rosemary; Uhle, Jennifer
Subject: Question

I am seeing a spectrum of tsunami wave heights that reportedly hit the Fukushima plant. I saw in one of your briefing packages that was a USGS calculation that showed the peak wave height at about 30 feet. I saw some slides from TEPCO yesterday that said the tsunami wave height at the plant was "more than 10 meters". In today's "Nucleonics Week" on page 11 it says "Tepco discovered by checking the walls of Fukushima 1and the nearby Fukushima 2March 21 that the tsunamis had reached higher than 14 meters (about 46 feet) above sea level...." It then said the design basis for Fukushima 1 & 2 was 5.7 and 5.2 meters respectively.

Without any accurate measurements, are we limited to educated guesses and expert judgment?

I think one question we will be asked is how well can we predict a tsunami wave height? I seem to recall you said the USGS calculations (wave height versus time at various locations) were probably pretty good because they had a well validated model. However, it would now appear they significantly under-predicted the wave height.

Am I missing something?

Wegner, Mary

From: Wegner, Mary
Sent: Monday, March 14, 2011 2:43 PM
To: Breskovic, Clarence
Subject: Info Source

<http://rt.com>

Russian Television news

Wegner, Mary

From: Wegner, Mary
Sent: Monday, March 14, 2011 2:47 PM
To: Uhle, Jennifer
Cc: Beasley, Benjamin
Subject: Op Center Help

I have seven years of experience working on BWRs (GE Nuclear Service – out of Atlanta from 1974 to 1981, including a three year stint at Browns Ferry before, during, and after the fire. I would be willing to help out in the Op Center (day time only – I cannot drive at night) with Ben's approval.

Tracking:

Wegner, Mary

From: Wegner, Mary
Sent: Monday, March 14, 2011 3:02 PM
To: Garmon-Candelaria, David
Subject: News Sources

Daily Yomiuri – Tokyo, Japan - <http://www.yomiuri.co.jp/dy/>

RT (Russian Television news) – <http://rt.com>

Tracking:

A/14B

Murphy, Andrew

From: Murphy, Andrew
Sent: Monday, March 14, 2011 3:09 PM
To: Kammerer, Annie; Case, Michael; Skeen, David; Hiland, Patrick
Cc: Pires, Jose; Hogan, Rosemary; Sheron, Brian; Uhle, Jennifer
Subject: RE: Japanese Earthquake Questions

Is there anything that I can do to help the effort?

Andy

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

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

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

What kind of experts do you have?

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

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

Wegner, Mary

From: Wegner, Mary
Sent: Monday, March 14, 2011 3:36 PM
To: Beasley, Benjamin; Breskovic, Clarence; King, Mark
Subject: Finally some good news

Fukushima Daiichi units 1, 2, and 3 are in cold shutdown. <http://www.nisa.meti.go.jp/english/files/en20110315-1.pdf>

Unit 4 may be in trouble.

Onagawa 1 and 3 are in cold shutdown. Unit 2 is not and the stats are not looking so good

"13:25 TEPCO notified NISA that Unit 2 of Fukushima Dai-ichi NPS reached a situation specified in Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness" N/SA

<http://www.nisa.meti.go.jp/english/files/en20110315-1.pdf>

Tracking:

Wegner, Mary

From: Wegner, Mary
Sent: Monday, March 14, 2011 4:03 PM
To: O'Donnell, Edward
Subject: References

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

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

<http://www.yomiuri.co.jp/dy/>

<http://rt.com>

Valentine, Nicholee

NAR
From: Cullingford, Michael, *NAR*
Sent: Monday, March 14, 2011 7:57 AM
To: Leeds, Eric; Boger, Bruce; Grobe, Jack; McGinty, Tim; Regan, Christopher; Hopkins, Jon; Astwood, Heather
Cc: Quinones, Lauren; Brown, Frederick; Giitter, Joseph; Cheok, Michael; Hiland, Patrick; Blount, Tom; Ruland, William; Holian, Brian; Lubinski, John
Subject: FW: Status of Nuclear Power Stations in Japan
Attachments: Summary of the News Releases on the earthquake No22.docx

Latest information received.....mc

From: Hidehiko Yamachika [<mailto:yamachika-hidehiko@jnes-usa.org>]
Sent: Monday, March 14, 2011 7:32 AM
To: Emche, Danielle; Foggie, Kirk; Cullingford, Michael
Cc: Michael W. Chinworth; aono-kenjiro@jnes-usa.org
Subject: Status of Nuclear Power Stations in Japan

FYI

Latest Press Release of NISA.

March 14, 2011
Nuclear and Industrial Safety Agency

Seismic Damage Information (the 22th Release)
(As of 07:30 March 14, 2011)

Nuclear and Industrial Safety Agency (NISA) confirmed the current situation of Onagawa NPS, Tohoku Electric Power Co., Inc; Fukushima Dai-ichi and Fukushima Dai-ni NPSs, Tokyo Electric Power Co., Inc. as follows:

1. The status of operation at Power Stations (Number of automatic shutdown units: 10)

○Fukushima Dai-ichi Nuclear Power Station, Tokyo Electric Power Co., Inc. (TEPCO)
(Okuma-machi and Futaba-machi, Futaba-gun, Fukushima Prefecture)

(1) The status of operation

- Unit 1 (460MWe): automatic shutdown
- Unit 2 (784MWe): automatic shutdown
- Unit 3 (784MWe): automatic shutdown
- Unit 4 (784MWe): in periodic inspection outage
- Unit 5 (784MWe): in periodic inspection outage
- Unit 6 (1,100MWe): in periodic inspection outage

(2) Readings at monitoring posts

The measurement of radioactive materials in the environmental monitoring area near the site boundary by a monitoring car confirmed the increase in the radioactivity compared to the radioactivity at 19:00, March 13.

MP1 (Monitoring at North End of Site Boundary) :

26 microSv/h(18:30 March 13)

→ (Move to MP2)

MP2 (Monitoring at north-northwest of Unit1 and northwest of the
End of Site Boundary for Unit 1) :

450 microSv/h(20:10 March 13)

→680 microSv/h(3:50 March 14)

MP4 (Monitoring Car at North West Site Boundary for Unit 1)

44.0 microSv/h(19:33 March 13)

→56.4 microSv/h(04:08 March 14)

(Surveyed by MP2 as MP1 is in the top of the cliff)

MP6 (Monitoring at the Main Gate)

5.2microSv/h(19:00 March 13)

→66.3 microSv/h(02:50 March 14)

(3) Wind direction/wind speed (as of 00:01, March 14)

Wind direction: North North West

Wind Speed: 0.3 m/s

(4) Report concerning other malfunction

- No fire report notified to NISA
- TEPCO reported to NISA in accordance with Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1,2 and 3. (15:42 March 11)
- TEPCO report to NISA the event in accordance with Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi, Units 1 and 2.(notified to NISA at 16:36 March 11)
- For Unit 1: Sea water is being injected to the Primary Containment Vessel (PCV) via the Fire Extinguishing System Line (Start up 11:55 March 13)
→Interruption of injection (01:10 March 14)
- For Unit 2: Water Injection Function has been sustained. (14:00 March 13)
- For Unit 3: Fresh water is being injected to the PCV via Fire Extinguishing System Line (FESL) (11:55 March 13)
- For Unit 3: Sea water is being injected to the PCV via FESL(13:12 March 13)
- For Unit 1 and Unit 3: Injection of Sea water injection into PCV is

interrupted because of the lack of sea water in pit. (01:10 March 14)

- For Unit 3: Injection of Sea water into PCV is restarted(03:20 March 14)

○ Fukushima Dai-ni Nuclear Power Station (TEPCO)

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

(1) The status of operation

Unit1 (1,100MWe): automatic shutdown

Unit2 (1,100MWe): automatic shutdown

Unit3 (1,100MWe): automatic shutdown, cold shut down at 12:15, March 12

Unit4 (1,100MWe): automatic shutdown

(2) Readings at monitoring post etc.

MP1 (Monitoring at the North End of Site Boundary)

0.036 microSv/h(19:00 March 13)

→0.038 microSv/h(05:00 March 14)

MP3 (Monitoring at the North/West End of site boundary)

0.038microSv/h(19:00 March 13)

→0.037 microSv/h(05:00 March 14)

MP4 (Monitoring at the North/West End of Site Boundary)

0.036microSv/h(19:00 March 13)

→0.038 microSv/h(05:00 March 14)

MP5 (Monitoring at the West End of Site Boundary)

0.04 microSv/h(19:00 March 13)

→0.042 microSv/h(05:00 March 14)

(3) Direction and velocity of wind (As of 05:00, 14 March)

Direction: South-southwest

Velocity: 0.9 m /s

(4) Report concerning other malfunction

- None of fire report notified to NISA
- TEPCO reported to NISA in accordance with Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ni, Units 1. (18:08 March 11)
- As same as above, TEPCO reported to NISA Fukushima Dai-ni Units 2 and 4.(18:33 March 11)

- For Unit 1: Due to Recovery of Residual Heat Removal System(RHR), water in suppression pool is started to cool for cold shut down.(01:24 March 14)

c. Onagawa Nuclear Power Station (Onagawa-cho, Oga-gun and Ishinomaki-shi, Miyagi Prefecture)

(1) The status of operation

Unit 1 (524MWe): automatic shutdown, cold shut down at 0:58, March 12

Unit 2 (825MWe): automatic shutdown

Unit 3 (825MWe): automatic shutdown, cold shut down at 1:17, March 12

(2) Readings of monitoring post

Reading of monitoring post : Changed

MP2 (Monitoring at the North End of Site Boundary)

Approx. 10,000 nGy/h (as of 13:09 March13)

→7,200 nGy/h (07:20 March 14)

(3) Report concerning other malfunction

- Fire Smoke on the first basement of the Turbine Building was confirmed extinguished at 22:55 on March 11th.
- Article 10* of Act on Special Measures Concerning Nuclear Emergency Preparedness (Unit No. not identified) (13:09 March 13)

2. Action taken by NISA

(March 11)

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

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

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

18:08: Unit 1 of Fukushima Dai-ni notified NISA of the situation of the

Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

- 18:33: Units 1,2 and 4 of Fukushima Dai-ni notified NISA of the situation of the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 19:03 : Government declared the state of nuclear emergency (Establishment of Government Nuclear Emergency Response Headquarters and Local Emergency Response Headquarters)
- 20:50: Fukushima Prefecture's Emergency Response Headquarters issued a direction regarding the accident occurred at Fukushima-Dai-ichi Nuclear Power Station, TEPCO, that the residents living in the area of 2km radius from Unit 1 of the Nuclear Power Station must evacuate.(The population of this area is 1,864)
- 21:23: Directives from Prime Minister to the Governor of Fukushima, Mayor of Ookuma and Mayor of Futaba were issued regarding the accident occurred at Fukushima-Dai-ichi Nuclear Power Station, TEPCO, pursuant to Paragraph 3, Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness as follows:
- Residents living in the area of 3km radius from Unit 1 of the Nuclear Power Station must evacuate.
 - Residents living in the area of 10km radius from the Unit 1 must take sheltering.
- 24:00: Mr. Ikeda, Vice Minister of METI, arrived at the Local Emergency Response Headquarters

(March12)

- 05:22 Unit 1 of Fukushima Dai-ni notified NISA of the situation of the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 05:32 Unit 2 of Fukushima Dai-ni notified NISA of the situation of the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness.
- 05:44 Residents living in the area of 10km radius from unit 1 of the Nuclear Power Station must evacuate by the Prime Minister Direction.
- 06:07 Regarding of Fukushima Dai-ni NPS, TEPCO reported NISA in accordance with Article 15 of Act for Special Measures Concerning

Nuclear Emergency Preparedness.

- 06:50 According to the article 64, 3 of the Nuclear Regulation Act, government order to control the internal pressure in Fukushima-dai-ichi Units 1 and 2
- 07:45 Directives from Prime Minister to Governor of Fukushima, Mayors of Hirono, Naraha, Tomioka, Ookuma and Futaba were issued regarding the accident occurred at Fukushima-Dai-ni Nuclear Power Station, TEPCO, pursuant to Paragraph 3, Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness as follows:
- Residents living in the area of 3km radius from Fukushima Dai-ni Nuclear Power Station (NPS) must evacuate.
 - Residents living in the area of 10km radius from Fukushima Dai-ni NPS must take sheltering
- 17:00 Notification pursuant to Article 15 of the Act for Special Measure Concerning Nuclear Emergency Preparedness since the radiation level exceeded the acceptable level of Fukushima Dai-ichi NPS.
- 17:39 Prime Minister directed evacuation of the residents living within the 10 km radius from the Fukushima-Dai-ni NPS
- 18:25 Prime Minister directed evacuation of the residents living within the 20km radius from the Fukushima Dai-ichi NPS
- 19:55 Directives from Prime Minister was issued regarding sea water injection to Unit No.1 of Fukushima Dai-ichi NPS.
- 20:05 Based on the directives form Prime Minister and pursuant to Paragraph 3, Article 64 of the Nuclear Regulation Act, the Government issued an order to inject sea water Unit 1 of Fukushima Dai-ichi NPS.
- 20:20 Fukushima Dai-chi NPS, Unit1 started sea water injection.

(March 13)

- 05:38 TEPCO notified NISA of the situation pursuant to the Article 15 of Act on Special Measures Concerning Nuclear Emergency Preparedness that Unit 3 of Fukushima Dai-ichi NPS is in a loss of all coolant injection function. Recovering efforts of the power source and coolant injection function and work on venting are underway.
- 09:08 Pressure suppression in the Containment Vessel and fresh water injection started at Unit 3 of Fukushima Daii-chi NPS.

- 09:20 Opening of Pressure vent valve of Unit 3 of Fukushima Dai-ichi NPS.
- 09:30 NISA directed the Governor of Fukushima Prefecture, the Mayors of Ookuma-machi, Futaba-machi, Tomioka-machi and Namie-machi based on the Act for Special Measures Concerning Nuclear Emergency Preparedness on radioactivity decontamination screening.
- 09:38 TEPCO notified NISA that Unit 1 of Fukushima Dai-ichi NPS reached a situation specified in Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness.
- 13:09 Tohoku Electric notified NISA that Onagawa NPS reached a situation specified in Article 10 of the Act for Special Measures Concerning Nuclear Emergency Preparedness.
- 13:12 Fresh water injection was switched to sea water injection at Unit 3 of Fukushima Dai-ichi NPS.
- 14:25 TEPCO notified NISA that Fukushima Dai-ichi NPS reached a situation specified in Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness.

(March 14)

- 01:10 Sea water injection at unit 1 and unit 3 of Fukushima Dai-ichi NPS were temporary stopped due to decreasing sea water in pool
- 03:20 Sea water injection at unit 3 of Fukushima Dai-ichi NPS was restarted.
- 04:24 TEPCO notified NISA that Fukushima Dai-ichi NPS reached a situation specified in Article 15 of the Act for Special Measures Concerning Nuclear Emergency Preparedness.

<Possible Exposure to Residents>

(1) Case for Travel from Futaba Public Welfare Hospital to Nihonmatsu Man and Woman Symbiosis Center, Fukushima Prefecture

- i) No. of persons to be measured: About 60 persons
- ii) Measured Result: Not yet
- iii) Passage: Exposure could have happened while waiting to be picked up by helicopter at the Futaba high school ground
- iv) Other

Prefectural Response Headquarters judged that there were no exposure to 35 persons who traveled from Futaba Public Welfare Hospital to Kawamata Saiseikai Hospital, Kawamata-machi by the private bus provided by Fukushima Prefecture.

(2) Case for Futaba-machi Residents Evacuated by Buses

- i) No. of Persons: About 100 persons
- ii) Measured Result: 9 persons out of 100 persons

No. of Counts	No. of Persons
18,000cpm	1
30,000-36000cpm	1
40,000cpm	1
little less than 40,000cpm*	1
very small counts	5

*(This results was measured without shoes, though the first measurement exceeded 100,000cpm)

- iii) Passage: Under investigation
- iv) Other

Though persons evacuated in different location outside of the Prefecture (Miyagi Prefecture), all destinations are under confirmation.

<Status of Evacuation (As of 04:30 March 14)>

Ookuma-machi: Evacuation of subject evacuees (about 11,000 persons) completed. (Area of Refuge: Tamura Comprehensive Gymnasium, etc.)

(Contact Person)

Mr. Toshihiro Bannai

Director, International Affairs Office,
NISA/METI

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

Cheok, Michael

From: Cullingford, Michael *MC*
Sent: Monday, March 14, 2011 8:36 AM
To: Leeds, Eric; Boger, Bruce; Grobe, Jack; Grobe, Jack; McGinty, Tim; Ruland, William; Lubinski, John; Cheok, Michael; Holian, Brian; Brown, Frederick; Giitter, Joseph; Hiland, Patrick
Subject: FW: Seismic Damage Information News Release in English
Importance: High

fyi

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

From: tomita-kazuhide@jnes.go.jp [mailto:tomita-kazuhide@jnes.go.jp]
Sent: Monday, March 14, 2011 12:58 AM
To: tomita-kazuhide@jnes.go.jp
Subject: Seismic Damage Information News Release in English
Importance: High

Dear All

Please find the NISA News Release in English from the NISA HP web as shown below.

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

This is the best way you could obtain the quick official release on the Seismic Damage Information from Japan.

Sincerely Yours,

Kazuhide TOMITA (Mr.)
Assistant Director-General
Office of International Programs
Japan Nuclear Energy Safety Organization (JNES) 3-17-1, Toranomom, Minato-ku, Tokyo, 105-0001, JAPAN
Tel: +81-3-4511-1910
Fax: +81-3-4511-1998
E-mail:tomita-kazuhide@jnes.go.jp

A/148

Pires, Jose

From: Pires, Jose
Sent: Monday, March 14, 2011 7:19 AM
To: Hogan, Rosemary; Ali, Syed; Ake, Jon; Anooshehpoor, Rasool; Herrity, Thomas; Weaver, Thomas; Roche, Robert; Sircar, Madhumita; Candra, Hernando
Cc: Stovall, Scott; Rivera-Lugo, Richard
Subject: RE: Follow-up to the Japanese Earthquake/Tsunami

Herman,

I placed materials that may help with the seismic design basis for the affected plants (at a plant it can vary by unit depending when it was built and I do not know if retrofits were made) in the G drive in the following folder:

G:\DE\SGSEB\JPires\Seismic Design Japan NPPs

The briefing by Stevenson and the NBS SP 592 (after page 120) have interesting information (the design basis PGA for Unit 1 in Fukushima was 0.18 g and they used the Kern County earthquake (Blume). Not sure if there was retrofit.

Note that the buildings then dot be conservatively designed and they seemed to have performed well. It is usually the mechanical and electrical equipment that raises issues (as noted by Stevenson as well).

Scott,
Can ShakeCast find the PGAs at the various sites? That would help compare with the design basis which is not only based on magnitude.

Thanks,

Jose.

From: Hogan, Rosemary
Sent: Friday, March 11, 2011 6:15 PM
To: Ali, Syed; Ake, Jon; Pires, Jose; Anooshehpoor, Rasool; Herrity, Thomas; Weaver, Thomas; Roche, Robert; Sircar, Madhumita; Candra, Hernando
Cc: Stovall, Scott; Rivera-Lugo, Richard
Subject: FW: Follow-up to the Japanese Earthquake/Tsunami

From: Richards, Stuart
Sent: Friday, March 11, 2011 6:12 PM
To: Hogan, Rosemary; Graves, Herman; Kammerer, Annie; Murphy, Andrew
Cc: Case, Michael; Uhle, Jennifer
Subject: Follow-up to the Japanese Earthquake/Tsunami

Brian wants us to be prepared to answer questions on the earthquake/tsunami, particularly as it is related to US plants.

For example:

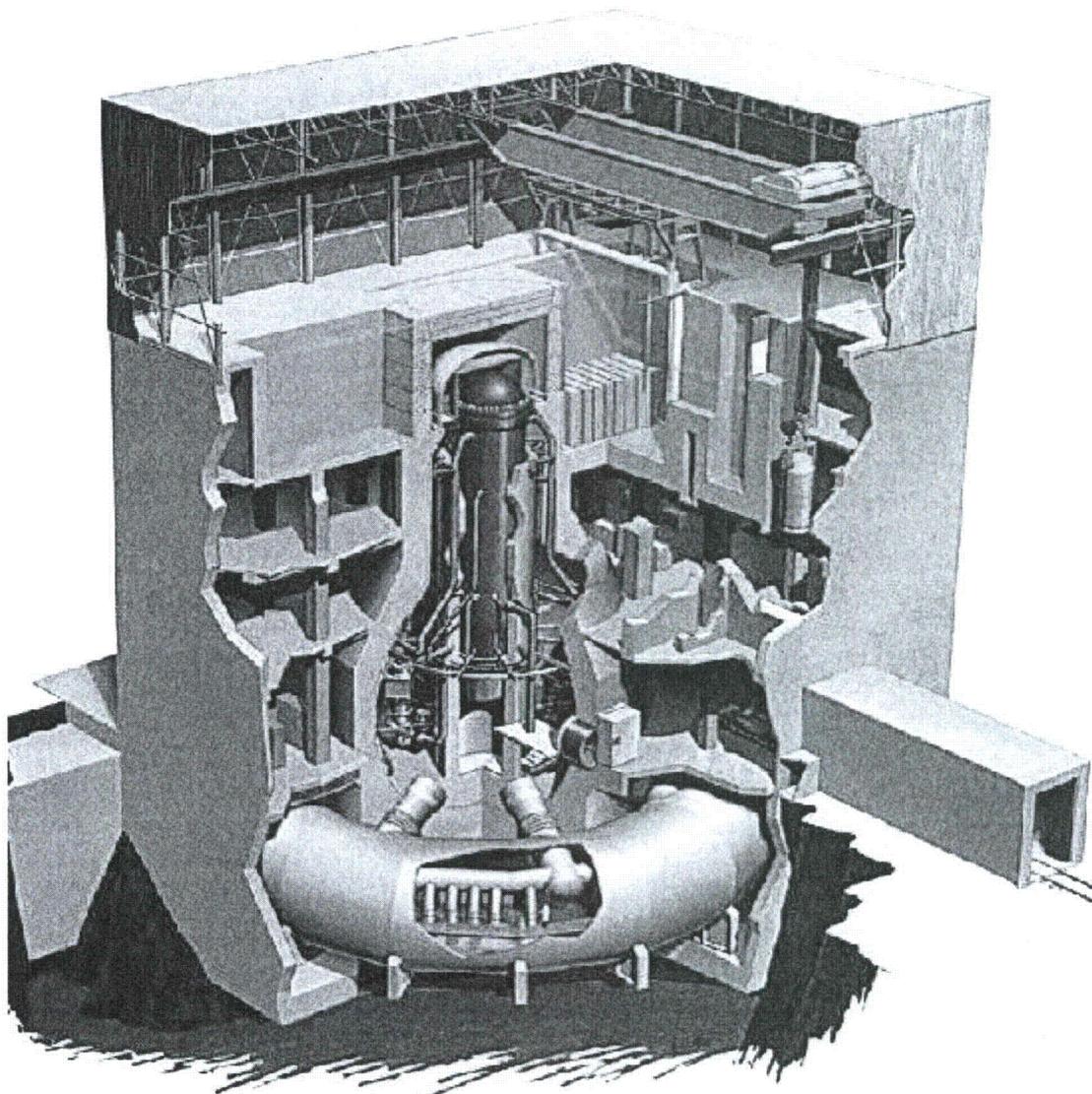
- Was the ground motion at the Japanese sites beyond their design basis?

Rathbun, Howard

From: Stevens, Gary
Sent: Monday, March 14, 2011 7:56 AM
To: RES_DE_CIB; Case, Michael; Richards, Stuart
Subject: Japanese Nuclear Situation
Attachments: ANS Japan Backgrounder.pdf

Several folks have been asking me questions on this topic, so I thought I would share some facts with you from my background experience.

Amidst all of the sensationalizing and speculation coming out of Japan, below and attached is the first report I've seen that seems to contain some good rational facts from NEI and ANS about the Fukushima Unit 1 accident in Japan. Note that Fukushima Daiichi Unit 1 is a GE-designed BWR-3, RPV ID = 188", ~500 MWe, that has operated for about 40 years (entered service in 1971). The explosion you saw on TV was the reactor building (see below, top portion of building) due to hydrogen build-up, as explained in the attachment. The plant has a Mark I containment, which looks like this:



I have several friends in Japan from my days working at GE, some of whom were at the plant performing outage work. I am happy to report, based on an e-mail I received this a.m. containing correspondence from

one of them, that GE's crew of about 40 engineers made it out of the area safely. Under a separate e-mail, I will share that first-hand report anonymously with you.

Gary L. Stevens
Senior Materials Engineer
NRC/RES/DE/CIB
✉ Gary.Stevens@nrc.gov
☎ 301-251-7569

March 13, 2011, 7 p.m. EDT Update

Fukushima Daiichi

The hydrogen explosion on March 11 between the primary containment vessel and secondary containment building of the reactor did not damage the primary containment vessel or the reactor core. To control the pressure of the reactor core, TEPCO began to inject seawater and boric acid into the primary containment vessels of Unit 1 on March 12 and Unit 3 on March 13. There is likely some damage to the fuel rods contained in reactors 1 and 3.

At both reactors 1 and 3, seawater and boric acid is being injected into the reactor using fire pumps. On reactor 3, a pressure relief valve in the containment structure failed to open, but was restored by connecting an air pressure to the line driving valve operation.

The water level in the reactor vessel of reactor 2 reactor is steady.

Personnel from TEPCO are closely monitoring the status of all three reactors.

The highest recorded radiation level at the Fukushima Daiichi site was 155.7 millirem at 1:52 p.m. on March 13. Radiation levels were reduced to 4.4 millirem by the evening of March 13. The NRC's radiation dose limit for the public is 100 millirem per year.

Japanese government officials acknowledged the potential for partial fuel meltdowns at Fukushima Daiichi Unit 1 and 3 reactors, but there is no danger for core explosion, as occurred at the nuclear power station at Chernobyl in 1986. Control rods have been successfully inserted at all of the reactors, thereby ending the chain reaction. The reactor cores at Fukushima Daiichi and Daini power stations are surrounded by steel and concrete containment vessels of 40 to 80 inches thick that are designed to contain radioactive materials.

Fukushima Daini

The Fukushima Daini plants remains in a state of emergency. There is electricity available at all four of the reactors at Fukushima Daini, although there is limited availability of the cooling water pumps at reactors 1, 2 and 4.

TEPCO is working to maintain constant cooling in the primary containment vessels of those reactors. No radioactivity has been recorded outside of the secondary containment buildings at Fukushima Daini, according to TEPCO.

Two other nuclear power plants in the Tohoku region, Onagawa Nuclear Power Station and Tokai Nuclear Power Station, were automatically shut down in response to the earthquake. The four reactors at these plants have functioning cooling systems and are being monitored by plant operators.

The Rokkasho Reprocessing Plant and accompanying facilities, located far north of the tsunami zone in Rokkasho Town, is operating safely on backup power generation systems.

Japanese nuclear facilities are designed to withstand powerful seismic events, such as earthquakes. In this earthquake—the strongest recorded over the past 100 years in Japan—the containment structures of Fukushima Daiichi maintained their structural integrity. These facilities were designed to withstand tsunamis within a range of assumed strength, however the force of the tsunami on March 10 exceeded the assumed range and flooded diesel generators at Fukushima Daiichi power station. This precipitating the loss of power for the reactor cooling systems.

The automatic shutdown of the 11 operating reactors at the Onagawa Nuclear Power Station, Tokai Nuclear Power Station, Fukushima Daiichi and Daini, represents a loss of 3.5% of electric generation capacity for Japan.

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

3/12/2011 5:22 PM EST

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

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

What happened?

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

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

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

Can it happen here in the US?

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

Is a nuclear reactor "meltdown" a catastrophic event?

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

What is the ANS doing?

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

ANS has established an incident communications response team.

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

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

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

Murphy, Andrew

From: Hiland, Patrick
Sent: Monday, March 14, 2011 8:14 AM
To: Case, Michael; Skeen, David; McDermott, Brian
Cc: Murphy, Andrew; Pires, Jose; Kammerer, Annie; Hogan, Rosemary; Sheron, Brian; Uhle, Jennifer
Subject: RE: Japanese Earthquake Questions

Annie worked on refining her Qs and As during the day yesterday. We were asked by the ET to develop sets of "topical" question banks. When I left we had four topics: 1) Chairman's 15-questions, 2) RST Technical Questions, 3) PMT Technical Questions; and, 4) Research lead on Seismic/Tsunami questions. Not sure where we stand on coordinating these sections, but perhaps the IRC should take lead?

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

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

Rathbun, Howard

From: Rudland, David
Sent: Monday, March 14, 2011 8:16 AM
To: Stevens, Gary; RES_DE_CIB; Case, Michael; Richards, Stuart
Subject: RE: Japanese Nuclear Situation

Thanks Gary

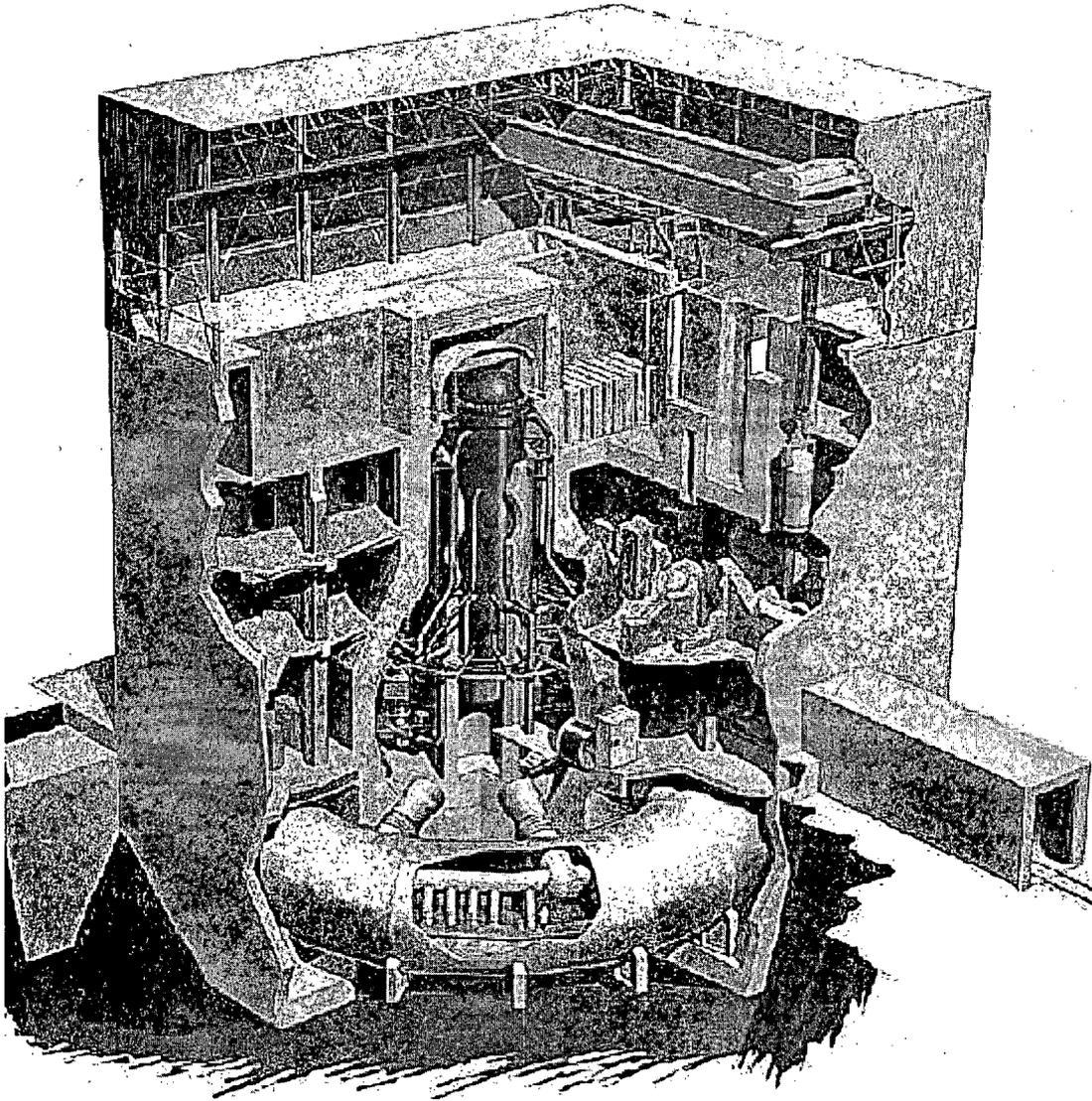
I too have several Japanese friends that work for both JNES and Tokyo Gas. I have been in contact with all of them, and am happy to report that everyone is fine. They seem to be getting around by bicycle, and nothing else. Several of my Tokyo gas friends spent three full days without leaving the office, sleeping on the floor of their offices.

Dave

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Pires, Jose

From: Pires, Jose
Sent: Monday, March 14, 2011 8:38 AM
To: Graves, Herman
Subject: FW: Japanese Earthquake Questions

Herman,

Please see below a couple of emails (from Mike to Patrick Hyland and his reply). I had asked Mike about the questions that Stu had sent.

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Sent: Monday, March 14, 2011 8:14 AM
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Cc: Murphy, Andrew; Pires, Jose; Kammerer, Annie; Hogan, Rosemary; Sheron, Brian; Uhle, Jennifer
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From: Rathbun, Howard
Sent: Monday, March 14, 2011 9:16 AM
To: 'John Broussard'
Subject: ANS Summary
Attachments: ANS Japan Backgrounder.pdf

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3/12/2011 5:22 PM EST

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- DC power from batteries was consumed after approximately 8 hours.
- At that point, the plant experienced a complete blackout (no electric power at all).
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Murphy, Andrew

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

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

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

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

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

What kind of experts do you have?

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

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

Rodriguez-Luccioni, Hector

From: Rodriguez-Luccioni, Hector
Sent: Monday, March 14, 2011 12:12 PM
To: Green, Brian
Subject: RE: Hello

Thank you very much I appreciate it.

From: Green, Brian
Sent: Monday, March 14, 2011 11:10 AM
To: Rodriguez-Luccioni, Hector
Subject: RE: Hello

http://news.yahoo.com/s/ap/20110314/ap_on_bi_ge/as_japan_earthquake_nuclear_crisis

Just saw that (above).

I would look at the NRC News section on the internal webpage, they tend to do a good job summarizing news stories.
<http://www.bulletinnews.com/nrc/>

From: Rodriguez-Luccioni, Hector
Sent: Monday, March 14, 2011 10:48 AM
To: Green, Brian
Subject: Hello

Hello Brian, how are you? Look I have to prepare a presentation tomorrow for my Branch Meeting and I was wondering if you have the latest information or status about what happen in Japan Nuclear Plant. Information of the effect of the earthquake and the causes and they have done about it. Thank you.

Hector Luis Rodriguez-Luccioni, PhD-Chem Eng
Regulatory Guide Development Branch
Division of Engineering
Office of Nuclear Regulatory Research
(301)251-7685
Hector.Rodriguez-Luccioni@nrc.gov



Pires, Jose

From: Pires, Jose
Sent: Monday, March 14, 2011 2:29 PM
To: Kammerer, Annie; Ake, Jon
Cc: Graves, Herman; Hogan, Rosemary
Subject: RE: Japanese Earthquake Questions
Attachments: Seismic design history OP2-2_Stevenson.pdf

Annie,

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

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

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

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

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

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

Thanks,

Jose.

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

Pat,

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

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

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

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

Annie

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A SUMMARY OF THE
HISTORICAL DEVELOPMENT
OF THE SEISMIC DESIGN OF
NUCLEAR POWER PLANTS IN
JAPAN AND THE U.S.

By: Dr. John D. Stevenson

ORIGINAL NPP JAPANESE SEISMIC LOAD REQUIREMENTS BEFORE 1965

Seismic NPP Requirements in Japan were originally developed for:

- ▣ English Gas Cooled Reactors, 1957 – Japanese Building Code of the time
- ▣ Westinghouse PWR – Mihama Unit One, 1964 – 0.29g pga
- ▣ G.E. BWR – Tsuruga and Fukushima Unit 1, 1965 – 0.24g pga and 0.17g; respectively

ORIGINAL NPP U.S. REQUIREMENTS SEISMIC LOAD REQUIREMENTS BEFORE 1965

Seismic NPP Requirements in the U.S. were originally defined for:

- ▣ U.S. G.E. BWR – Humbolt Bay, 1962 – a single 0.25g Design Basis Earthquake
- ▣ U.S. PWR – Connecticut Yankee, 1964 – 0.03g (evaluated later for 0.17g pga) Originally designed based on Building Code Requirements with Nuclear Safety Related buildings modeled as fundamental 1 horizontal dynamic degree of freedom system with UBC static analysis used for design of safety related systems and components.

Seismic Design Requirements

There are 3 areas that require definition to be used in seismic design of a NPP:

- ▣ Quantification of Seismic Load and other Applicable Loads and Specification of their Load Combinations to be considered in design
- ▣ Analysis Methods and Procedures (necessary to convert input earthquake motions normally expressed in the form of acceleration to resultant seismic forces, moments or stresses, fms in structures, systems and components, SSC
- ▣ Codes or standards acceptance criteria used to evaluate resultant forces, moments or stresses in nuclear safety SSC to determine design adequacy.

Seismic Design Requirements

To determine the loads and load combinations to be considered in design, it is necessary to safety/seismic classify those SSC to which each load and load combination is applicable.

The first and third design requirements are directly controlled by national construction codes and standards while the second is associated with analytical procedures is controlled by a combination of the education and experience of the design engineer and codes and standards. In many instances the applicable codes or standards require a peer review and approval of the design and analysis by a licensed or otherwise qualified professional engineer.

JAPANESE SEISMIC LOAD ACCEPTANCE REQUIREMENTS AFTER 1970

- ▣ Two dynamic earthquake criteria for A and As Safety Classes.
 - Static Building Code required for B and C Safety Class SSC. Building Code short term load acceptance criteria applied to Safety Class A.
 - Ultimate Strength applied to buildings and $2 \times$ yield stress applied to pressure retaining components for load combinations which included S2.