Sexton, Kimberly

From: Nieh, Ho
Sent: Wednesday, June 08, 2011 8:59 AM
To: 'Mike Weightman (mike.weightman@hse.gsi.gov.uk)'
Subject: ONR Interim Report on Japanese Earthquake and Tsunami

Dear Dr. Weightman,

I hope this message finds you doing well. I just read with great interest ONR's interim report on the nuclear events in Japan.

The US NRC is also systematically evaluating the lessons from Japan. A key element of this process will be the NRC's external communication of its findings and conclusions.

I found ONR's to be very well written and logically organized, and I think it will serve as a valuable communication tool for your organization. As noted in your report, it appears that ONR has also recognized the importance openness and transparency.

(b)(5)

Best regards,

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

Sexton, Kimberly

From: Ostendorff, William
Sent: Wednesday, September 07, 2011 10:30 AM
To: Nieh, Ho
Cc: Franovich, Mike
Subject: RE: Contact info

(b)(5)

From: Nieh, Ho
Sent: Wednesday, September 07, 2011 7:25 AM
To: Ostendorff, William
Cc: Franovich, Mike
Subject: FW: Contact info

(b)(5)

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Joe Neto [mailto:joen@infocastevents.com]
Sent: Friday, September 02, 2011 1:57 PM
To: Herr, Linda
Cc: Nieh, Ho
Subject: RE: Contact info

Dear Ms. Herr,

Hope this e-mail finds you well.
Since our conference will be mostly oriented towards the guidelines specified in the United States National Regulatory Commission Near-Term Task Force Report, we would like to kindly ask Commissioner Ostendorff to submit a brief quote about the current environment of the nuclear community post-Fukushima Daiichi incident, that makes it so crucial for the sector to gather and discuss the next steps that will be taken to enhance safety. This quote will be featured on the conference's brochure.

I appreciate your attention to this matter.

With my best regards,

Joe Neto
Event Producer

☎ 1 (818) 888-4444
✉ 20931 Burbank Blvd., Suite B
Woodland Hills, CA, 91367

INFOCAST
The Leasing Source
www.infocastinc.com

From: Joe Neto [mailto:joen@infocastevents.com]
Sent: Thursday, August 18, 2011 3:28 PM
To: 'Herr, Linda'
Cc: 'Nieh, Ho'
Subject: RE: Contact info

Good afternoon Ms. Herr.

Thank you very much for sending me Commissioner Ostendorff's picture and the NRC Logo.

Best Regards,

Joe Neto
Event Producer

☎ 1 (818) 888-4444
✉ 20931 Burbank Blvd., Suite B
Woodland Hills, CA, 91367

INFOCAST
The Leasing Source
www.infocastinc.com

From: Herr, Linda [mailto:Linda.Herr@nrc.gov]
Sent: Thursday, August 18, 2011 12:21 PM
To: 'joen@infocastevents.com'
Cc: Nieh, Ho

Subject: RE: Contact info
Importance: High

Good afternoon Mr. Neto:

Attached are Commissioner Ostendorff's picture and the NRC Logo you requested from Mr. Nieh. Please don't hesitate to call or email me if I can assist further.

Regards,

Linda S. Herr
Administrative Assistant to
Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
PH: 301-415-1759
FAX: 301-415-1757

GO green™ *Please consider the environment before printing this e-mail.*

From: Nieh, Ho
Sent: Thursday, August 18, 2011 3:13 PM
To: Herr, Linda
Cc: 'joen@infocastevents.com'
Subject: FW: Contact info

Linda – could you please provide Joe with the material he is requesting?

Thanks.

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Joe Neto [mailto:joen@infocastevents.com]
Sent: Thursday, August 18, 2011 3:12 PM
To: Nieh, Ho
Subject: RE: Contact info

Dear Ho,

We are delighted to confirm Commissioner Ostendorff's participation as a Keynote Speaker of our Nuclear Safety Post-Fukushiima Policy Conference.
To properly feature the Commissioner and the NRC in our conference brochure and website, would you be kind enough to send me his picture, along with the NRC logo (in high-resolution)?

I appreciate that.

Best Regards,

Joe Neto
Event Producer

☎ 1 (818) 888-4444
20931 Burbank Blvd., Suite B
Woodland Hills, CA, 91367

INFOCAST
The Leading Source
www.infocastinc.com

From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Thursday, August 18, 2011 11:57 AM
To: 'joen@infocastevents.com'
Subject: Contact info

Dear Joe – good talking to you, will get back to you to confirm.

Best wishes,

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

Sexton, Kimberly

From: Ostendorff, William
Sent: Tuesday, June 28, 2011 2:30 PM
To: Herr, Linda
Cc: Nieh, Ho
Subject: RE: Meeting Request w/BlueWater Strategies

Thanks Linda.

From: Herr, Linda
Sent: Tuesday, June 28, 2011 8:05 AM
To: Ostendorff, William
Cc: Nieh, Ho
Subject: Meeting Request w/BlueWater Strategies

Sir:

(b)(5)

Linda

From: Catherine Gernes [mailto:cgernes@bwstrategies.com]
Sent: Monday, June 27, 2011 11:55 AM
To: Herr, Linda
Subject: Meeting Request

Commissioner Ostendorff,

I am sending this meeting request on behalf of Andrew Lundquist, Managing Partner of BlueWater Strategies.

BlueWater Strategies is a bipartisan consulting firm here in Washington DC. www.bwstrategies.com As you can see from the BlueWater web site, Andrew worked in the Senate for a number of years including as Staff Director of the Senate Energy Committee.

Andrew is requesting a meeting with Commissioner Ostendorff on behalf of Mr. Hiroshi Sakamoto, Vice President of Toshiba.

Mr. Sakamoto is responsible for overseeing Toshiba's U.S. nuclear business, and is on the Board of Directors of USEC.

Mr. Sakamoto is also directly involved in overseeing Toshiba's support for TEPCO's restoration and cleanup efforts at the Fukushima Daiichi site, including the activities of Westinghouse and Babcock and Wilcox.

Mr. Sakamoto is requesting this meeting with the Commissioner to provide a briefing on the status of the ongoing efforts at Fukushima.

Mr. Sakamoto will be in Washington on Thursday and Friday of this week, and can come on Wednesday as well if that is necessary. Mr. Sakamoto returns to Japan next week to work on the Fukushima effort, and thus is available only this week or in several weeks when he returns.

Please advise if the Commissioner might have time on Thursday or Friday and Wednesday if needed to meet with Mr. Lundquist and Mr. Sakamoto.

If you have any questions please do not hesitate to call me or Andrew at 202-589-0015.

Cheers,
Katie

Catherine Gernes
BlueWater Strategies llc
400 North Capitol Street, NW
Suite 475
Washington, DC 20001

Phone: (202) 589-0015
Fax: (202) 589-1516
Web: www.bwstrategies.com

Herr, Linda

From: CMROSTENDORFF Resource
Sent: Thursday, March 17, 2011 8:23 AM
To: Herr, Linda
Subject: FW: GE

From: (b)(6)
Sent: Thursday, March 17, 2011 8:11 AM
To: CMROSTENDORFF Resource
Subject: GE

Dear Bill

We the American people are deeply concerned that NRC is doing nothing to decommission GE and Toshiba-designed boiling water reactors like the ones failed or failing at Japan's Fukushima and Tokai complexes. All 13 emergency diesel generators (EDG) failed, and not because of the quake or tsunami but the crankshafts just failed. This was known way back in 1976 when 3 engineers quit GE after they blew the whistle on GE's Mark 1 reactor. The 1988 racketeering case about Shoreham plant in NY revealed that EDG tests were faked to pass seismic qualification. We know that Japan is at level 6 out of 7 now and 200,000 people have been evacuated from the contaminated nuclear sites with "partial" meltdowns. Systemic failure, where rods are overheating – Units 1, 3 and 4 at Fukushima exploded, sending up radioactive plumes – and malfunctioning coolants and EDG are reported all over the Japanese nuclear network. Scariest of all is that Japan's nuclear safety agency, with its long record of mendacity, is saying its reactors are under control.

The struggle to cool the reactors isn't the only problem as there is far greater danger of widespread radioactivity from an inability to cool Fukushima's spent fuel pools. These spent fuel pools hold far more radioactivity than the reactor core, and placing them on top the reactor is another bad design which is as dangerous as putting a gasoline tank above the engine. There are reports of escaping cesium-137, a deadly isotope that gives off highly penetrating radiation and is absorbed in the food chain. While Japan insists that radiation released into the air at Fukushima would not be harmful, a number of Japanese workers have been hurt by radiation, and US sailors on their way to a rescue mission have been contaminated. We urge NRC to be truthful to the American people and not be like Japan, and learn their lesson that serving powerful companies at the expense of public safety and public benefit could be a capital crime of mass murder.

We urge NRC to demand full safety, EDG and 9.0 quake stress tests for all major 3rd generation reactors including GE Hitachi, Areva EPR, Mitsubishi, and Toshiba (Westinghouse AP-1000). Germany has shut down 7 out of 17 aged nuclear plants, and NRC must do the same in America. China has suspended the approval process for nuclear power stations so that safety

standards can be revised, and we urge NRC to do likewise. NRC must require relevant departments to do **safety checks at existing plants, especially EDG stressed tested to the max** until they fail. Safety is our top priority in developing nuclear power plants, and we call for a **comprehensive safety check and enhanced management over existing plants**. All plants with fuel pools on top must be closed to prevent pool fire, and spent fuel must be shipped elsewhere. Before the revised safety standards are approved, all new nuclear power plants, including pre-construction, must be suspended. We also urge NRC to step up monitoring of radioactive substances and issue alerts timely with results on NRC website every day. We the people know more than the politicians many of which are corrupted by special interests and demand that you listen to us and not them, because our lives are at stake and **this is what democracy is all about.**

Thirty million Californians live between two nuclear stations, San Onofre down near San Diego and Diablo Canyon up by central California's San Luis Obispo. The operators insist "there is no immediate threat to the state" but the fact is **no mass evacuation is possible in a meltdown or fuel pool fire in California.** The fact that they don't even give us free iodine tablets showed that they and NRC don't really care about us. The operator of Diablo Canyon is Pacific Gas & Electric, the company sued by the small town of Hinkley after it allowed poisonous hexavalent chromium to leach into their groundwater and lied about it, as immortalized in the film Erin Brockovich. The Diablo reactor is built smack in the middle of four earthquake faults in a built-up suburbanized area. San Onofre has tallied ten times the number of safety complaints by workers who are afraid to speak out fearing retaliation. For good measure, San Onofre is sited between both offshore and inland San Andreas active seismic faults. Its nearest city San Diego has suffered 50% more earthquake activity since 1984.

We Americans have a virile tradition of whistleblowers, nuclear and otherwise, although Obama has declared war on leakers who expose government scandals. He won't succeed because **truth will always prevails** and because of Wikileaks, the internet, and Facebook so we demand that the NRC start regulating GE, Toshiba and the big boys and serve the people and not be beholden to the industry it is supposed to regulate. The poor Japanese have no such legacy, which is why they're in such a pickle. Japanese salarymen used to working for one company their entire lives keep their mouths shut. They must have known what we know now, that Fukushima's operator, Tokyo Electric Power (Tepco), never tested EDG or safety for a quake-and-tsunami anywhere near the 9.0 that has devastated Japan. Tepco is the shogun of electricity and their nuclear watchdog looked the other way. The result is full-scale panic, because now they don't know what to do or how to do it. **NRC must not allow any Tepco in America, and must hold every manufacturer, contractor and operator to account.**

So there goes the nuclear renaissance trumpeted by Obama in his state of the union. To tamp down global warming and solve our energy needs, he boasted, "It means building a new generation of safe, clean nuclear power plants in this country." He aimed to give $36 billion to the nuclear power industry and a $4 billion loan guarantee for two new reactors on the Texan Gulf Coast to be built by Tepco, assisted by the same American company Stone &Webster now a nuclear unit of Shaw Construction that made false safety reports at New York's Shoreham

nuclear plant. The liability for Tepco and Houston Power is capped at only $75 million, which is an insult to the people, because it must be at least $1 billion in the event of a megaquake and tsunami. The cost to generate nuclear power in Texas is twice that of wind power, so this project is uneconomical and will stick it to the taxpayers and the ratepayers. **Hello NRC, whose interests do you serve, the people or the industry?** The Gulf Coast has suffered enough from Katrina and BP, so we demand that you cancel the Texas deal and monitor all safety and EDG tests and not rely on contractors who will fake safety reports to save billions. We demand that you fulfill your oaths of office and **cancel all uneconomical deals that do not benefit taxpayers or ratepayers because projects must serve the people and not the industry.**

China is strong because its leaders heed the voices of their people and serve them, rooting out corruption, waste, fraud and special interests. Of the 104 old, fault-ridden, leaky, rickety nuclear power stations in the US, 23 are of a similar GE or Toshiba design that has failed catastrophically in Japan. If a reactor goes China Syndrome and melts all the way down as occurred at Chernobyl which made a huge area uninhabitable and caused hundreds of thousands of deaths, its radioactivity will contain 1,000 times as much as the Hiroshima bomb. We demand that NRC decommission all 23 such reactors and stop serving the industry or kowtow to its powerful lobby. We the people are your true masters, and we demand that you serve General People and not General Electric while you are still in office by heeding our voices and cater to our safety. We demand that you provide free potassium iodine 130mg tablets to residents of Southern California and other locations and fulfill your role as watchdog and make real enemies of the industry with the power to regulate and punish, and not be its lapdog as we the people know whassup and will hold all of you accountable.

We The People
Eddy Nguyen
Titan Capital

Herr, Linda

From: Herr, Linda
Sent: Thursday, March 17, 2011 2:50 PM
To: OPA Resource
Cc: Akstulewicz, Brenda; Shannon, Valerie; Brenner, Eliot; Bozin, Sunny; Franovich, Mike; Herr, Linda; Kock, Andrea; Nieh, Ho; Warnick, Greg; Zorn, Jason
Subject: FW: Solution to cool Japan reactor!

Importance: High

Hello!

(b)(5)

Many thanks,
Linda

From: CMROSTENDORFF Resource
Sent: Thursday, March 17, 2011 2:21 PM
To: Herr, Linda
Subject: FW: Solution to cool Japan reactor!
Importance: High

From: Robert Sanchez [mailto:robert.sanchez@linclightingelectrical.com]
Sent: Thursday, March 17, 2011 1:25 PM
To: CMROSTENDORFF Resource
Subject: Solution to cool Japan reactor!
Importance: High

William,

I hope this reaches you, and I hope I'm not just wasting your time. Their efforts in Japan on cooling the spent fuel suggests to me that this "pool" is outdoors. They tried to reach it with water cannons which also suggests to me that the safe distance needed is not too far for what I suggest. I believe that helicopters can bring in hoses and direct them to the pool(s). They would have to be weighted of course to anchor them. And from a safer distance pump water through them. I hope this helps!

Robert Sanchez
Journeyman Electrician
Linc Lighting and Electrical | ,
An ABM Company
Work: | Mobile: | Fax: | Other:
Email: robert.sanchez@linclightingelectrical.com | http://www.thelincgroup.com

Bozin, Sunny

From: Herr, Linda
Sent: Wednesday, April 06, 2011 1:55 PM
To: Bozin, Sunny
Subject: FW: Nuclear Safety Statement on Fukushima
Attachments: Statement April 4, 2011.pdf; ATT00002..txt

Sunny:

(b)(5)

Thanks!
Linda

-----Original Message-----
From: CMROSTENDORFF Resource
Sent: Wednesday, April 06, 2011 1:05 PM
To: Herr, Linda
Subject: FW: Nuclear Safety Statement on Fukushima

-----Original Message-----
From: Roger Mattson [mailto: (b)(6)
Sent: Wednesday, April 06, 2011 12:43 PM
To: CMRAPOSTOLAKIS Resource; CMRSVINICKI Resource; CMRMAGWOOD Resource; CMROSTENDORFF Resource
Cc: Borchardt, Bill; OPA1 RESOURCE; Doane, Margaret; Leeds, Eric
Subject: Nuclear Safety Statement on Fukushima

Dear NRC Commissioners and Staff:

I write to you on behalf of an ad hoc group of nuclear safety experts from various countries that for many years have been engaged in research and development, design, construction, operation, management and safety regulation of nuclear power plants. We have prepared a Statement, "NEVER AGAIN: An Essential Goal for Nuclear Safety" to express our deep concern about the future of nuclear power in view of the consequences of the earthquake and tsunami at the Fukushima-Daiichi NPP in Japan. A copy of the Statement is attached. We delivered the Statement to Mr. Yukiya Amano, Director General of IAEA on April 6 in Vienna. We offer the Statement with good intentions in the hope that it will help national nuclear safety organizations such as yours, and your international counterparts, in developing considered responses to the events at Fukushima.

Although comprehensive analysis of this tragic event is not feasible at the moment due to lack of complete data on the events that occurred, we wish to voice our opinion about severe accidents at civilian nuclear power plants and suggest additional measures to avoid them in light of the experience so far gained at Fukushima. In our Statement, we review the many advances in nuclear safety that were realized after the accidents at Three Mile Island and Chernobyl. We hoped these advances would relegate severe nuclear accidents to history. Nevertheless, another one has happened. Why?

A detailed analysis based on more data is needed to give a full answer to this question, but some preliminary observations deserve to be made now. Accordingly, our Statement describes measures that should be considered, for both operating and new nuclear power plants, by the organizations that own and operate these plants and those that oversee their safety.

We hope that our recommendations will be accepted for consideration by national authorities, the nuclear industry, the conferees at the Chernobyl-25 Conference in Kiev this month, and the conferees at the IAEA Ministerial Conference in Vienna in June.

We are always ready to share our experience and expertise to assist in developing and implementing these and other recommendations to reach our common goal - to "Never Again" experience severe accidents and, as defense in depth, to effectively respond to them should they nevertheless occur.

Sincerely, on behalf of the ad hoc group,

Roger

Roger J. Mattson, PhD

(b)(6)

STATEMENT

NEVER AGAIN: An Essential Goal for Nuclear Safety

The people listed below are nuclear safety experts from various countries that for many years have been engaged in research and development, design, construction, operation, management and safety regulation of nuclear power plants (NPPs). We express here our deep concern about the future of nuclear power in view of the consequences of the earthquake and tsunami at the Fukushima-Daiichi NPP in Japan. We are confident that only nuclear power that avoids being a threat to the health and safety of the population and to the environment is acceptable to society. Although comprehensive analysis of this tragic event is not feasible at the moment due to lack of complete data on the events that occurred, we wish to voice our opinion about severe accidents at civilian nuclear power plants and suggest additional measures to avoid them in light of the experience so far gained at Fukushima. First, we review the improvements made in safety due to earlier severe accidents.

The accident at Three Mile Island (TMI) Unit 2 (USA, 1979) did not cause injuries of the plant personnel or the population. There was no significant radioactive contamination outside the plant. Even so, the accident caused a reduction of investments in new NPPs due to a decreased interest from private investors. Studies of the accident confirmed the robustness of safety principles employed in the design of that type of NPP. At the same time, the accident revealed significant weaknesses in the implementation of those principles, including design of instrumentation and controls, operating procedures and the realism of the analyses supporting them, personnel training, and feedback of operating experience. Lessons learned from the accident allowed improvements with regard to human factors (how people and NPPs relate), design-specific probabilistic safety assessments, emergency preparedness, and safety systems. This accident also led the nuclear industry to design new NPPs that include passive safety features not dependent on the availability of electrical or mechanical equipment.

The accident at Chernobyl Unit 4 (USSR, 1986) was the largest in history. The spread of the accident to the other reactors at the plant was prevented but cost the lives of thirty-one members of plant personnel and firemen. There was widespread radioactive contamination over large parts of Europe. Many thousand people had to be relocated from their homes near the plant. Regionally, the accident produced excess thyroid cancers and other negative effects on human health and had a large psychological impact on the public. The accident also had significant political resonance. The design of the reactor at Chernobyl was very different from the light-water reactors at TMI and Fukushima. Studies of the Chernobyl accident highlighted significant design deficiencies (core instability, inadequate design of control rods, unsatisfactory characteristics of confinement) as well as deficiencies in safety culture in the former Soviet Union. In harmony with international guidance and in compliance with upgraded national safety standards, significant modernization was achieved in NPPs in the former Soviet Union. Moreover, the IAEA International Nuclear Safety Advisory Group (INSAG) issued reports on the accident and developed Guidance on General Safety Principles and Safety Culture for improving NPP safety worldwide. The nuclear industry created the World Association of Nuclear Operators (WANO) for a continuous review and feedback of nuclear power plant operating experience.

On learning the lessons from these accidents, the approaches to safety regulation and NPP design were upgraded, and an international nuclear safety regime based on the Nuclear Safety Convention and other international accords was established. The fundamental principle of safety culture has become a daily routine.

International cooperation was strengthened to improve the fundamental requirements and criteria to ensure safety of nuclear power and to incorporate them into the design basis of NPPs of the next generations. The Nuclear Safety Convention also called for reviewing the safety of existing NPPs to identify and implement reasonably practical improvements.

The importance of nuclear education and training was acknowledged, which led to the establishment of the World Nuclear University (WNU) and the creation of regional nuclear education networks in different parts of the world.

Severe nuclear accidents seemed to have gone to history. Nevertheless, another one has happened. Why?

A detailed analysis based on more data is needed to give a full answer, but some preliminary observations deserve to be made now. On one hand, the Tohoku-Taiheiyou-Oki Earthquake on March 11, 2011 shows that nuclear power plants are capable of withstanding some catastrophic natural events better than many other manmade objects. On the other hand, it appears that, in the siting and design of the Fukushima-Daiichi nuclear plants, an unlikely combination of low-probability events (historic earthquake plus historic tsunami leading to loss of all electrical power) was not taken sufficiently into account.

In fact, complex combinations of initiating events unforeseen in plant designs resulted in all the severe accidents described above. In addition, these accidents took emergency responders outside the range of circumstances for which they were trained and equipped. Moreover, hindsight shows that relatively inexpensive improvements, detectable by more extensive analysis beforehand, may have avoided these accidents altogether.

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These observations lead us to conclude that more can be done to prevent severe accidents and to limit their consequences should they nevertheless occur. We know that due to a natural tendency of human beings for complacency, the nuclear safety regime can erode; i.e., if we do not continuously pursue safety, we can loose safety. There are occasional signs that national and international safety assessments and peer review missions are becoming more focused on demonstrating that safety is satisfactory and in compliance with national and international standards than on finding and correcting deficiencies, be they in design, operation, or the standards themselves. Therefore, we need to reinforce our dedication, not only in words but also in actions towards a questioning attitude, thereby assuring continuous improvement in the safety of NPPs.

Thus, there is a need to continue to audit and improve the safety culture at all levels of nuclear power management and regulation, achieve due attention to detail, implement effective programs to identify, analyze and correct safety deficiencies, and effectively manage nuclear knowledge.

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Special attention should be paid to the quality of personnel training for nuclear power. To achieve this goal, NPP vendor countries should establish centers to train specialists for nuclear technology in recipient countries. Top professionals involved in nuclear power generation should not only "know what" and "know how" but also "know why" in order to deliver difficult and critical decisions in time to deal with unforeseen circumstances. In

addition, regulatory organizations should improve the effectiveness of expert missions and inspections, and guarantee openness and honesty in reporting the findings of such inspections to the public. Routine inspections are important; however, even more important is the capability to recognize early indications of low probability incidents or circumstances.

In addition to further measures to prevent severe accidents, more must be done to limit the consequences of such accidents if they occur. It is important to finalize the in-depth safety assessments of severe accident vulnerabilities for each NPP plant design and to develop severe accident management provisions for all operating nuclear reactors. Measures for accident management should be supported with robust technical capabilities, backup equipment, and procedures for restoration of core heat removal before the onset of fuel melting. Plant staff should be well trained in flexible severe accident management.

Renewed attention should be given to general safety requirements for plants built to earlier safety standards in view of the considerable remaining operating time envisaged for many such plants. A more internationally harmonized approach in this area should be sought. In light of the common mode failure of redundant safety systems (electric power) caused by the tsunami at Fukushima, authorities should ask to what extent this failure and other common mode failure vulnerabilities in operating plants might be revealed by current technology.

The safety requirements for future NPPs should be refined to assure that their backup cooling systems are able to operate for a long enough time following a complete loss of on-site and off-site power. These future NPPs should be able to promptly restore or compensate for lost power. Passive systems and advanced technologies for system engineering, materials, information management and communications should be applied to new NPPs. New plants should be sited away from areas of extreme natural and manmade hazards. Risk assessments and risk governance should be used for optimization of plant design and operation but not substitute for deterministic safety justifications. The next-generation NPPs should ensure safety even if operating personnel are not able to provide immediate response in an emergency.

The responsibility and qualifications of government and corporate officials involved in nuclear safety-related decision-making should be reviewed and enhanced by national authorities where needed. National nuclear institutions in all countries, including nuclear safety regulators, should be accountable for their actions and transparent in nuclear safety communications so that they receive and deserve the trust of the public. It is necessary to ensure that national nuclear safety regulators in all countries are fully independent in their decision-making on nuclear safety and to assure their competence, resources and enforcement authorities. Insurance premiums for all NPP owners should be tied to plant safety performance.

The safety of nuclear power goes beyond national boundaries. Appropriate measures to further strengthen the international nuclear safety regime should be identified and implemented after proper discussions, whether it will be within the framework of the Nuclear Safety Convention, the IAEA, regional bodies like the EU or industry organizations like WANO. A critical question should be what measures would be most effective in further promoting a high level of nuclear safety worldwide. Would it be to create new international frameworks, for example in the shape of an international regulatory agency entrusted with

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issuing binding international safety standards and performing compulsory inspections, or would it be to further develop and strengthen existing frameworks, emphasizing national responsibilities in combination with rigorous international peer reviews? It is to be expected that the international conference to be convened at the IAEA in Vienna in June of this year will provide a starting point for discussions of such measures.

Requirements for new countries wishing to start using nuclear power should be developed and incorporated into the international nuclear safety regime. Such countries must demonstrate their ability to uphold high international standards with regard to safety, security and non-proliferation over the lifetime of their nuclear power programs.

We hope that our recommendations will be accepted for consideration by national authorities and international organizations and that concerted measures will be developed. We are always ready to share our experience and expertise to assist in developing and implementing these and other recommendations to reach our common goal - to "Never Again" experience severe accidents in the future and, as defense in depth, to effectively respond to them should they nevertheless occur.

The following people assisted in the formulation of this Statement and concur in its issuance.

Adolf Birkhofer	Germany	Professor Emeritus, Technical University of Munich; former member and chair, INSAG; former chair, German Reactor Safety Commission; former chair, Committee on Safety of Nuclear Installations of OECD
Agustin Alonso	Spain	Former member, INSAG; former member, director and commissioner of Spanish Regulatory Institution; vice chair, Committee on Safety of Nuclear Installations of OECD
KunMo Chung	Republic of Korea	Former member, INSAG; former minister, Science & Technology, Republic of Korea; former president, Korean Academy of Science & Technology; former president, General Conference, IAEA; former vice chair, World Energy Council
Harold Denton	USA	Former director, office of nuclear reactor regulation, US Nuclear Regulatory Commission and President Carter's representative at TMI during the accident
Lars Högberg	Sweden	Former member, INSAG; former director general, Swedish Nuclear Power Inspectorate; former chair, steering committee, OECD Nuclear Energy Agency
Anil Kakodkar	India	Former member, INSAG, former chairman, Atomic Energy Commission of India
Georgy Kopchinsky	Ukraine	Former head, nuclear power and industry department, USSR Council of Ministers; former vice chair, Ukrainian nuclear regulatory authority
Jukka Laaksonen	Finland	Vice-chair, INSAG; director general, Finnish Radiation & Nuclear Safety Authority; chair, Western European Nuclear Regulatory Association (WENRA); former chair, NEA Committee on Nuclear Regulatory Activities (CNRA)
Salomon Levy	USA	Former member, INSAG; former design and manufacturing manager, General Electric Atomic Power Equipment Division; honorary member, ASME

Roger Mattson	USA	Former director of reactor systems safety division and leader, TMI Lessons Learned Task Force, US Nuclear Regulatory Commission; working group co-chair, INSAG-3
Victor Murogov	Russia	Professor, National Nuclear Research University (MEPHI); director, Russian Association Nuclear Science and Education; former director, Institute of Physics and Power Engineering (IPPE); former deputy director general for nuclear power, IAEA
Nikolai Ponomarev-Stepnoy	Russia	Member, Russian Academy of Science; former deputy director, Kurchatov Institute
Victor Sidorenko	Russia	Correspondent member of Russian Academy of Science; former member, INSAG; former deputy director, Kurchatov Institute; former deputy Chairman of the USSR nuclear regulatory authority; former deputy minister of nuclear power of the USSR and Russia
Nikolai Steinberg	Ukraine	Former member, IAEA Standing Advisory Group on Nuclear Energy; former chief engineer, Chernobyl NPP; former deputy chairman of USSR nuclear regulatory authority; former chairman of Ukrainian nuclear regulatory authority; former deputy minister of fuel & power of Ukraine
Pierre Tanguy	France	Former member, INSAG; former inspector general of nuclear safety, Electricité de France
Jurgis Vilemas	Lithuania	Member of Lithuanian Academy of Science; former director, Lithuanian Energy Institute

Sexton, Kimberly

From: Kock, Andrea
Sent: Tuesday, July 19, 2011 7:54 AM
To: Ho Nieh; Franovich, Mike
Cc: Sexton, Kimberly
Subject: (b)(5)

(b)(5)

NRC decisions on new reactors hinge on 90-day review

RELATED TOPICS

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Mon Jul 18, 2011 2:17pm EDT

WASHINGTON, July 18 (Reuters) - The U.S. nuclear safety regulator needs to provide clarity within 90 days on what new measures are warranted by Japan's Fukushima Daiichi disaster -- decisions that will be key to evaluate applications to build new reactors, its chairman said on Monday.

"We need to move on this in 90 days or it will be difficult to see how we move forward on new reactors because we won't have certainty on these recommendations, whether they apply or don't apply," Gregory Jaczko, chairman of the Nuclear Regulatory Commission, told reporters.

Andrea Kock
United States Nuclear Regulatory Commission
Policy Advisor for Materials
Office of Commissioner Ostendorff
301-415-2896

Sexton, Kimberly

From: Ostendorff (b)(6)
Sent: Wednesday, November 09, 2011 9:27 PM
To: Ostendorff, William
Subject: Fw: Updates

----- Original Message -----
From: Ralph Stoll
To: Ostendorff
Cc: Ralph Stoll
Sent: Wednesday, November 09, 2011 2:30 PM
Subject: Updates

Bill -

News today about USS NORFOLK being awarded the 2010 Arleigh Burke Fleet Trophy (http://www.wavy.com/dpp/news/local_news/norfolk/uss-norfolk-crew-honored-in-ceremony) reminded me to follow up on our meeting last month.

Did our presentation and discussion resonate further within your staff? Is a demonstration for Commissioner Apostolakis still appropriate?

Our colleague, Jim Voss, is currently in Australia and headed for Tokyo this weekend to meet with two companies performing strategic planning for the Fukushima cleanup. Since our discussion last month are there any new perspectives or concerns that might be useful for him to consider when speaking with the Japanese?

Cheers,
Ralph

Ralph Stoll
Predicus LLC
(O) +1 206 325 5490
(C) (b)(6)

Sexton, Kimberly

From: Herr, Linda
Sent: Friday, October 07, 2011 2:15 PM
To: Ostendorff, William; Nieh, Ho; Franovich, Mike; Kock, Andrea; Sexton, Kimberly
Subject: RE: Reunion Follow Up

Sir:
This meeting has been scheduled w/Mr. O'Connell, Bob Holland and Jeff Merrifield for Nov. 2, 2011 from 3:15-4:00pm for you (they are meeting with all the Commissioners that day at different times as well as staff from 1:00-2:00pm).
Linda

From: Ostendorff, William
Sent: Tuesday, September 06, 2011 12:34 PM
To: Nieh, Ho; Herr, Linda; Franovich, Mike; Kock, Andrea; Sexton, Kimberly
Subject: FW: Reunion Follow Up

Team- For your situational awareness. WCO

From: Ostendorff, William
Sent: Tuesday, September 06, 2011 12:32 PM
To: 'O'Connell, Michael (Stoughton)'
Cc: Holland, Robert (Stoughton)
Subject: RE: Reunion Follow Up

Mike [redacted (b)(6)] [redacted (b)(5)] Best wishes, Bill

[redacted (b)(6)]

From: O'Connell, Michael (Stoughton) [mailto:James.O'Connell@shawgrp.com]
Sent: Monday, September 05, 2011 2:48 PM
To: Ostendorff, William
Cc: Holland, Robert (Stoughton)
Subject: Reunion Follow Up

Bill,

[redacted (b)(6)] Bob Holland and I would be pleased to stop by your office at some convenient time for a discussion on what is being done by some of the US firms in support of the Fukushima recovery. As we discussed, there are a number of insights into near term actions that the Commission is seeking to transform into action that both Bob and I support from our personal perspectives on safe nuclear operations. Equally important in the review of what went wrong I believe is to contrast what worked to preclude failures at the other Fukushima #2 site and even for reactors 5 & 6 at the Fukushima #1 site. Bob visited the #2 site recently and can provide his observations on the solutions implemented. Hopefully those insights will be useful in a dialog with the various stakeholders as we all look to ensure the safety of nuclear facilities.

Looking forward to a future meeting following my next Tokyo working trip,

Regards,
Mike

J. Michael O'Connell
Senior Vice President & Executive Director for Operations
Shaw Global Services, LLC

1-617-589-1544 office
(b)(6) mobile
blackberry

Shaw™ a world of Solutions™
www.shawgrp.com

Sexton, Kimberly

From: Herr, Linda
Sent: Tuesday, June 28, 2011 8:05 AM
To: Ostendorff, William
Cc: Nieh, Ho
Subject: Meeting Request w/BlueWater Strategies

Sir:

(b)(5)

Linda

From: Catherine Gernes [mailto:cgernes@bwstrategies.com]
Sent: Monday, June 27, 2011 11:55 AM
To: Herr, Linda
Subject: Meeting Request

Commissioner Ostendorff,

I am sending this meeting request on behalf of Andrew Lundquist, Managing Partner of BlueWater Strategies.

BlueWater Strategies is a bipartisan consulting firm here in Washington DC. www.bwstrategies.com As you can see from the BlueWater web site, Andrew worked in the Senate for a number of years including as Staff Director of the Senate Energy Committee.

Andrew is requesting a meeting with Commissioner Ostendorff on behalf of Mr. Hiroshi Sakamoto, Vice President of Toshiba.

Mr. Sakamoto is responsible for overseeing Toshiba's U.S. nuclear business, and is on the Board of Directors of USEC.

Mr. Sakamoto is also directly involved in overseeing Toshiba's support for TEPCO's restoration and cleanup efforts at the Fukushima Daiichi site, including the activities of Westinghouse and Babcock and Wilcox.

Mr. Sakamoto is requesting this meeting with the Commissioner to provide a briefing on the status of the ongoing efforts at Fukushima.

Mr. Sakamoto will be in Washington on Thursday and Friday of this week, and can come on Wednesday as well if that is necessary. Mr. Sakamoto returns to Japan next week to work on the Fukushima effort, and thus is available only this week or in several weeks when he returns.

Please advise if the Commissioner might have time on Thursday or Friday and Wednesday if needed to meet with Mr. Lundquist and Mr. Sakamoto.

If you have any questions please do not hesitate to call me or Andrew at 202-589-0015.

Cheers,
Katie

Catherine Gernes
BlueWater Strategies llc
400 North Capitol Street, NW
Suite 175
Washington, DC 20001
Phone: (202) 589-0015
Fax: (202) 589-1516
Web: www.bwstrategies.com

Sexton, Kimberly

From: Herr, Linda
Sent: Wednesday, April 27, 2011 10:48 AM
To: EDOBriefingPkgRequest Resource; Jaegers, Cathy
Cc: Wittick, Susan; Sargent, Kimberly; Franovich, Mike; Nieh, Ho
Subject: Briefing Package Request for May 6th drop in w/Cmr. Ostendorff
Attachments: archie.pdf; byrne.pdf; clary.pdf; Paglia.pdf; timmerman.pdf

Importance: High

(b)(5)

Linda S. Herr
Administrative Assistant to
Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
PH: 301-415-1759
FAX: 301-415-1757

(b)

From: PAGLIA, ALFRED M JR [mailto:APAGLIA@scana.com]
Sent: Wednesday, April 27, 2011 8:38 AM
To: Gibbs, Catina; Herr, Linda; Lepre, Janet; Crawford, Carrie

Cc: PAGLIA, ALFRED M JR
Subject: Bios and Agenda for Drop-In

The attached are the bios for those attending the drop in on May 6th. The topics for discussion include the following:

- COLA and DCD Rulemaking Schedule Activities
- Industry Response to Fukushima Event
- Site Preconstruction Activities Update

Thanks for your assistance in setting up these visits.

Al

Sexton, Kimberly

From: Kock, Andrea
Sent: Tuesday, September 06, 2011 4:23 PM
To: Franovich, Mike
Cc: Nieh, Ho
Subject: FW: Reunion Follow Up

FYI- WCO indicated he would like more information on the role of US companies in the clean up efforts at Fukushima. Maybe a quick briefing from the NRR staff would be helpful.

Andrea Kock
United States Nuclear Regulatory Commission
Policy Advisor for Materials
Office of Commissioner Ostendorff
301-415-2896

From: Ostendorff, William
Sent: Tuesday, September 06, 2011 12:34 PM
To: Nieh, Ho; Herr, Linda; Franovich, Mike; Kock, Andrea; Sexton, Kimberly
Subject: FW: Reunion Follow Up

Team- For your situational awareness. WCO

From: Ostendorff, William
Sent: Tuesday, September 06, 2011 12:32 PM
To: 'O'Connell, Michael (Stoughton)'
Cc: Holland, Robert (Stoughton)
Subject: RE: Reunion Follow Up

Mike - (b)(6)

(b)(5)

Best wishes, Bill

(b)(6)

From: O'Connell, Michael (Stoughton) [mailto:James.O'Connell@shawgrp.com]
Sent: Monday, September 05, 2011 2:48 PM
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Cc: Holland, Robert (Stoughton)
Subject: Reunion Follow Up

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Looking forward to a future meeting following my next Tokyo working trip,

Regards,
Mike

J. Michael O'Connell
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Sexton, Kimberly

From: Ostendorff, William
Sent: Tuesday, May 17, 2011 6:33 PM
To: Zorn, Jason; Nieh, Ho
Subject: Re: Challenge for Operators

Thanks to you both for your helpful responses. Let's discuss tomorrow.

----- Original Message -----
From: Zorn, Jason
To: Nieh, Ho; Ostendorff, William
Sent: Tue May 17 18:02:27 2011
Subject: Re: Challenge for Operators

(b)(5)

----- Original Message -----
From: Nieh, Ho
To: Ostendorff, William; Zorn, Jason
Sent: Tue May 17 17:52:16 2011
Subject: RE: Challenge for Operators

(b)(5)

The plans requested in the bulletin are not "emergency plans" in the classic sense as required by 50.47, rather they are plans that address the B.5.b items now under 50.54 (hh) (2).

From my experience neither the B.5.b procedures nor the 50.47 emergency plans have a public communication piece.

As noted in their, licensee public communication is typically handled by the public affairs part of the organization with support/participation from a senior level representative at the site or EOF. I have not come across any licensee procedures from my time out in the field and working in the ops center.

(b)(5)

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Ostendorff, William

Sent: Tuesday, May 17, 2011 5:35 PM
To: Zorn, Jason; Nieh, Ho
Subject: Fw: Challenge for Operators

Jason and Ho- [(b)(5)] Bryan was head of public affairs at NNSA during my time there. Thanks.

From: Bryan Wilkes [(b)(6)]
To: Ostendorff, William
Sent: Tue May 17 17:06:03 2011
Subject: FW: Challenge for Operators

Bill,

Recently, some former colleagues of mine and I talked about a recent article in the Wall Street Journal (pasted below my text). The article states that NRC has ordered operators to produce emergency plans. The conversation I had with my former colleagues centered around whether or not each plant has an emergency public information plan and knows what to do with it (e.g. practice/exercise it). Our hunch is that the operators may have something on paper, but don't have a proper plan, tools, practice, or human resources necessary to be prepared to communicate a serious event to the public in the most effective way. When a true crises hits (like Fukushima), it is vital that an emergency public affairs procedure and plan is in place, and that the public information staff knows how to use it.

We would like to meet with you to see if our ideas have any merit. If you are willing to give us 20 minutes, then please let me know what your schedule looks like next week and what is best for you.

We are three deeply experienced communicators in nuclear and emergency events, and we think we can make a contribution to this effort for the operators. My two former colleagues are Jonathan Thompson, former Director of External Relations of FEMA and a former DASD for Public Affairs in the Pentagon, and Mark Pfeifle, former Deputy Assistant to the President and Deputy National Security Advisor at the NSC. I'm happy to share their bios with you.

V/r,
Bryan Wilkes
703-401-7111

From: Jonathan Thompson [mailto:jt@referocommunications.com]
Sent: Monday, May 16, 2011 6:10 PM
To: [(b)(6)] 'Pfeifle, Mark D.'
Subject: Challenge for Operators

My sense is that it will be a big challenge for operators to convince the NRC, Congress and FEMA they have the technical tools, human resources and the practice necessary to mitigate and respond to a major event.

Nuclear Plants to Submit Plans in Case of 'Extreme Event'
By RYAN TRACY

WASHINGTON—The U.S. Nuclear Regulatory Commission told the operators of nuclear plants Wednesday to provide information about their plans to respond to "extreme events," saying it would use the information as it reviews its safety regime after a nuclear crisis in Japan.

The agency Wednesday asked for detailed information about plans that companies were required to develop after the Sept. 11, 2001, terrorist attacks. The plans deal with the possibility that large areas of the plant would

be lost during an emergency and detail how the operator would continue to keep nuclear reactors cool and prevent the release of radiation.

The agency said in a news release that it "continues to conclude" the plans would be effective, even as it reviews them.

"We'll review the plants' responses to see if they need to take any additional actions to meet our existing requirements, along with seeing what the NRC might need to do to enhance those requirements and continue to protect public health and safety," said NRC Chairman Gregory Jaczko.

Operators of the 104 reactors in the U.S. have until June 10 to show the tools to implement the plans are in place and available, and that sufficient staff are on hand to execute them. By July 11, the companies must show how the plans are tested and re-evaluated, as well as how they coordinate with local emergency responders.

"Our initial guidance on these strategies focused on the mitigative actions themselves, but we also need to consider things such as operator training and maintaining the related equipment," said Eric Leeds, director of the NRC's Office of Nuclear Reactor Regulation.

Jonathan Thompson
703.344.4447

Sexton, Kimberly

From: Nieh, Ho
Sent: Wednesday, July 20, 2011 6:46 PM
To: Sharkey, Jeffry
Subject: RE: FYI

(b)(5)

Thanks for sharing that Jeff.

Would be good to catch up tomorrow.

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Sharkey, Jeffry
Sent: Wednesday, July 20, 2011 6:18 PM
To: Nieh, Ho; Bubar, Patrice; Sosa, Belkys
Subject: FYI

July 20, 2011: MARKEY TO NRC COMMISSIONERS SVINICKI AND MAGWOOD: STOP ABDICATING RESPONSIBILITY

WASHINGTON, D.C. (July 20, 2011) – Today, Congressman Edward J. Markey (D-Mass.), the top Democrat on the Natural Resources Committee and a senior Member of the Energy and Commerce Committee, released the following statement in response to the votes of NRC Commissioners Kristine L. Svinicki and William D. Magwood to delay even the consideration of the adoption of the recommendations of the Nuclear Regulatory Commission's (NRC's) Near-Term Task Force reviewing NRC processes and regulations in the wake of the Fukushima nuclear meltdowns.

"Commissioners Svinicki and Magwood have rejected the Chairman's call to vote on the Fukushima task force's recommendations within 90 days," said Rep. Markey. "Instead, they want to direct the NRC staff to endlessly study the NRC staff's own report before they will even consider a single recommendation made by the very same NRC staff. We do not need another study to study the NRC staff's study. This is an unacceptable abdication of responsibility, and I call on these two Commissioners to do their jobs and quickly move to order the adoption of the recommendations of the Fukushima task force."

Commissioner Svinicki's vote can be found at http://www.nrc.gov/reading-rm/doc-collections/commission/cvr/2011/2011-0093vtr-kls.pdf
<http://www.nrc.gov/reading-rm/doc-collections/commission/cvr/2011/2011-0093vtr-kls.pdf>
Commissioner Magwood's vote can be fount at http://www.nrc.gov/reading-rm/doc-collections/commission/cvr/2011/2011-0093vtr-wdm.pdf
<http://www.nrc.gov/reading-rm/doc-collections/commission/cvr/2011/2011-0093vtr-wdm.pdf>
###

Sexton, Kimberly

From: Nieh, Ho
Sent: Wednesday, July 20, 2011 6:36 PM
To: Ostendorff, William
Subject: FW: FYI

(b)(5)

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Sharkey, Jeffry
Sent: Wednesday, July 20, 2011 6:18 PM
To: Nieh, Ho; Bubar, Patrice; Sosa, Belkys
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Commissioner Svinicki's vote can be found at http://www.nrc.gov/reading-rm/doc-collections/commission/cvr/2011/2011-0093vtr-kls.pdf
<http://www.nrc.gov/reading-rm/doc-collections/commission/cvr/2011/2011-0093vtr-kls.pdf>
Commissioner Magwood's vote can be fount at http://www.nrc.gov/reading-rm/doc-collections/commission/cvr/2011/2011-0093vtr-wdm.pdf
<http://www.nrc.gov/reading-rm/doc-collections/commission/cvr/2011/2011-0093vtr-wdm.pdf>
###

Sexton, Kimberly

From: Caputo, Annie (EPW) [Annie_Caputo@epw.senate.gov]
Sent: Thursday, July 07, 2011 11:14 AM
To: Nieh, Ho
Subject: RE: FYI

Ok. I will be out for lunch from 12 to 2 but other than that, I'm open.

From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Thursday, July 07, 2011 11:12 AM
To: Caputo, Annie (EPW)
Subject: Re: FYI

(b)(5)

(b)(5)

Sent via BlackBerry

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Caputo, Annie (EPW) <Annie_Caputo@epw.senate.gov>
To: Nieh, Ho
Sent: Thu Jul 07 11:09:37 2011
Subject: RE: FYI

Do I have time to go downstairs and fetch a cup of tea?

From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Thursday, July 07, 2011 10:12 AM
To: Caputo, Annie (EPW)
Subject: RE: FYI

(b)(5)

(b)(5)

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Caputo, Annie (EPW) [mailto:Annie_Caputo@epw.senate.gov]
Sent: Thursday, July 07, 2011 10:10 AM
To: Nieh, Ho
Subject: Re: FYI

Oh, yeah. I'd like to talk with Cmsr Ostendorff sometime today or tomorrow when he has a few minutes.

From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Thursday, July 07, 2011 09:50 AM
To: Caputo, Annie (EPW)
Subject: RE: FYI

On the day before the Commission meeting.

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Caputo, Annie (EPW) [mailto:Annie_Caputo@epw.senate.gov]
Sent: Thursday, July 07, 2011 8:41 AM
To: Svinicki, Kristine; Magwood, William; Ostendorff, William; Nieh, Ho; Bubar, Patrice; Sharkey, Jeffry
Subject: Fw: FYI

From: Michael Callahan [mailto:mike_callahan@govstrat.com]
Sent: Wednesday, July 06, 2011 10:06 PM
To: Caputo, Annie (EPW)
Subject: FYI

Nuclear Regulatory Commission Chairman Gregory Jaczko to Address the National Press Club July 18

THE NATIONAL
PRESS CLUB

WASHINGTON, July 6, 2011 /PRNewswire-USNewswire/ -- Gregory Jaczko, Chairman of the Nuclear Regulatory Commission, will address the National Press Club at a luncheon on Monday, July 18.

(Logo: http://photos.prnewswire.com/prnh/20080917/NPCLOGO)

Jaczko will talk about lessons learned by the nuclear power industry in the aftermath of Japan's March 11 Fukushima nuclear disaster, which stands as the most serious nuclear accident since the Chernobyl meltdown in 1986. The NRC is scheduled to meet on July 19 to consider a report on the Fukushima disaster and how it pertains to the U.S. nuclear industry.

In May of 2009, President Obama appointed Jaczko chairman of the NRC, where he had served as a commissioner since 2005. Before Fukushima, Jaczko and the commission had been working to reinvigorate the U.S. nuclear sector. Electric utilities had been planning to begin building nuclear plants again after 30 years of inactivity, but in light of the Japan disaster, new questions have arisen.

The July 18 luncheon will begin promptly at 12:30 p.m. and Jaczko's remarks will begin at 1:00, followed by a question-and-answer session. Advance reservations should be made by calling (202) 662-7501 or reservations@press.org. Cost of luncheon admission is $18 for National Press Club members, $29 for their guests and $36 for general admission.

National Press Club Luncheons are webcast live on press.org. Follow the conversation on Twitter using the hashtag #NPCLunch, or on Facebook (facebook.com/PressClubDC) and Twitter (@PressClubDC). Submit questions for speakers in advance and during the live event by sending them to @NPCLunch on Twitter, or email a question in advance, with JACZKO in the subject line, to president@press.org before 10 a.m. on July 18.

Credentialed press may cover this event with proper ID.

The Press Club is on the 13th floor, 529 14th Street, NW, Washington, D.C. Credentialed press may cover this event.

ABOUT THE NATIONAL PRESS CLUB

The National Press Club is the world's leading professional organization for journalists. Founded in 1908, the Club has 3,500 members representing most major news organizations. Each year, the Club holds more than 2,000 events including news conferences, luncheons and panels, and more than 250,000 guests come through its doors.

SOURCE National Press Club

Sexton, Kimberly

From: Caputo, Annie (EPW) [Annie_Caputo@epw.senate.gov]
Sent: Thursday, July 07, 2011 10:25 AM
To: Nieh, Ho
Subject: RE: FYI

Sure. Thanks!

From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Thursday, July 07, 2011 10:12 AM
To: Caputo, Annie (EPW)
Subject: RE: FYI

(b)(5)

(b)(5)

Ho Nieh
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From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Thursday, July 07, 2011 [illegible] AM
To: Caputo, Annie (EPW)
Subject: RE: FYI

On the day before the Commission meeting.

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
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From: Caputo, Annie (EPW) [mailto:Annie_Caputo@epw.senate.gov]
Sent: Thursday, July 07, 2011 8:41 AM

To: Svinicki, Kristine; Magwood, William; Ostendorff, William; Nieh, Ho; Bubar, Patrice; Sharkey, Jeffry
Subject: Fw: FYI

From: Michael Callahan [mailto:mike_callahan@govstrat.com]
Sent: Wednesday, July 06, 2011 10:06 PM
To: Caputo, Annie (EPW)
Subject: FYI

Nuclear Regulatory Commission Chairman Gregory Jaczko to Address the National Press Club July 18

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THE NATIONAL PRESS CLUB

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(Logo: http://photos.prnewswire.com/prnh/20030917/NPCLOGO)

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SOURCE National Press Club

Sexton, Kimberly

From: Ostendorff, William
Sent: Wednesday, July 06, 2011 8:34 AM
To: Nieh, Ho
Subject: Re: FYI - article and one more bit of info on budget.

Thanks Ho.

From: Nieh, Ho
To: Ostendorff, William
Sent: Wed Jul 06 06:49:52 2011
Subject: RE: FYI - article and one more bit of info on budget.

Sir, links to some news articles of interest

WCO Confirmation
http://vtdigger.org/2011/06/30/sanders-expects-u-s-to-stay-out-of-vermont-yankee-court-fight/

http://vermonttoday.com/apps/pbcs.dll/article?AID=/BT/20110701/NEWS02/707019904

http://www.lvrj.com/blogs/politics/Roadblock_removed_Ostendorff_confirmed.html?ref=879

Yucca/Dry Casks
http://thehill.com/homenews/campaign/169745-nevadas-yucca-mountain-a-dilemma-for-gop-hopefuls

http://www.nytimes.com/2011/07/06/business/energy-environment/06cask.html?_r=1

AP1000
http://theenergycollective.com/dan-yurman/60750/tying-ap1000-knots-nrc

Fukushima
http://www.bloomberg.com/news/2011-07-06/japan-to-carry-out-stress-tests-on-all-nuclear-reactors-minister-says.html

Ho Nieh
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(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Ostendorff, William
Sent: Tuesday, July 05, 2011 6:09 PM
To: Nieh, Ho
Subject: Re: FYI - article and one more bit of info on budget.

Time for both of us to take a deep breath! Please get me copies of the articles you reference-thanks Ho.

From: Nieh, Ho
To: Ostendorff, William
Sent: Tue Jul 05 15:18:29 2011
Subject: FYI - article and one more bit of info on budget.

Sir –the most recent issue of SpentFUEL had an article on your confirmation. It is over taken by events, bu there was a section that caught my attention...see below (also similar passages in other recent articles).

> "Senator Sanders thanked Senate Majority Leader Harry Reid for his support in blocking Ostendorff's reconfirmation. Sanders said in a statement 'I want to thank Sen. Harry Reid for his strong support for the state of Vermont.' Sanders added 'The Majority Leader is clearly in our corner on this issue and he has agreed to do everything he can to help me in this effort.' Of course, Senator Reid would have loved to see Commissioner Ostendorff leave the Commission even temporarily, since Ostendorff has been a thorn in Jaczko's side over Jaczko's handling of Yucca Mountain."

How Reid is portrayed is different than what I understood. When you read some of the other articles, it is clear that this publication has a bias.

(b)(5)

Are you ready for the next five years??? I am!

Talk to you soon.

Ho

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Sexton, Kimberly

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Sent: Wednesday, July 06, 2011 8:34 AM
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Subject: Fw: FYI - article and one more bit of info on budget.

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Sexton, Kimberly

From: Nieh, Ho
Sent: Friday, June 10, 2011 5:37 AM
To: Caputo, Annie (EPW)
Subject: RE: Strassel: Obama's Nuclear Politics

Also NYT too...this article seemed light on the details of the report.

http://www.nytimes.com/2011/06/10/business/energy-environment/10nuke.html

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From: Caputo, Annie (EPW) [Annie_Caputo@epw.senate.gov]
Sent: Thursday, June 09, 2011 10:11 PM
To: Svinicki, Kristine; Sharkey, Jeffry; Ostendorff, William; Nieh, Ho
Subject: Fw: Strassel: Obama's Nuclear Politics

----- Original Message -----
From: (b)(6)
Sent: Thursday, June 09, 2011 09:05 PM
To: Dempsey, Matt (EPW)
Subject: Strassel: Obama's Nuclear Politics

June 10, 2011

WSJ

Obama's Nuclear Politics
By Kimberley A. Strassel

The Obama administration has shown a certain ruthless streak when it comes to getting what it wants. For its latest in brass-knuckle tactics, consider the ongoing fight over the proposed Yucca nuclear waste facility.

This tale begins in 2008, when candidate Obama was determined to win Nevada, a crucial electoral state. Catering to locals, Mr. Obama promised to kill plans—approved by Congress—to make the state's Yucca Mountain the repository for spent nuclear fuel. He was backed by Senate Majority Leader Harry Reid, a Nevadan who has made Yucca's demise an overriding priority.

Shortly after inauguration, Messrs. Obama and Reid teamed up to elevate Gregory Jaczko to chair the Nuclear Regulatory Commission, the nation's independent regulator. Mr. Jaczko was anything but a neutral designee, having served for years on the staffs of both Mr. Reid and Massachusetts' antinuke Rep. Edward Markey. As a Reid adviser, Mr. Jaczko headed up opposition to Yucca. The clear intent in making him chairman was to ensure Yucca's demise.

Toward that end, the Obama Department of Energy quickly filed a formal request with the NRC to revoke the license application for Yucca. A coalition of states and industry groups—drowning in spent fuel—then petitioned to prevent the department from doing so. The issue was thrown to a panel of NRC administrative

judges. Much to the administration's frustration, they ruled unanimously in June of last year that the Energy Department lacked the authority to "singlehandedly derail" a policy that had been directed by Congress.

Enter the brass knuckles.

The panel's decision was appealed to the five-member NRC board. This was Mr. Jaczko's moment to finally tank Yucca, only he ran into problems. While the board officially contains three Democrats and two Republicans, it has tended toward nonpartisanship and has in the past proved unwilling to overturn panel rulings. Worse for Mr. Jaczko, one of the board's Democrats recused himself from the vote. A 2-2 board decision is not enough to override the judges' verdict.

ASSOCIATED PRESS Nuclear Regulatory Commission Chairman Gregory Jaczko All four commissioners had voted by September of last year. Yet in an unprecedented display of political partisanship, Mr. Jaczko ultimately withdrew his vote, held open the process, and didn't revote until just before the November election. Why? The chairman had obviously lost the vote and didn't want the bad news hitting his former boss, Mr. Reid, before the polls closed in his hard-fought Nevada re-election. To this day, Mr. Jaczko has refused to close out the process and release the votes.

This latest foot-dragging appears related to the fact that the term of one of the Republicans on the board, William Ostendorff, expires in just a few weeks. Mr. Ostendorff has been renominated and boasts bipartisan support. Then again, should his term just happen to expire, Mr. Jaczko can hold a revote and potentially win on Yucca. And guess who gets to decide when Mr. Ostendorff's nomination comes up for full Senate approval? Mr. Reid.

The Yucca vote is hardly the only place Mr. Jaczko has been abusing his "independent" authority on behalf of the president and Mr. Reid. NRC staff have for years been working on a critical Yucca safety report, which includes conclusions on whether Yucca can safely hold radioactive waste for up to a million years. Environmentalists have used the million-year unknown as their main argument against the site, and the findings are crucial.

The documents are finished, yet Mr. Jaczko has used every means to keep them secret. When the agency finally answered a Freedom of Information request to release the documents, it blacked out all the staff's findings and conclusions on long-term safety.

Mr. Jazcko has been unilaterally closing down agency work on Yucca, even as the Energy Department's actions remain in adjudication. He's overridden fellow commissioners on Yucca decisions. He recently gave himself extraordinary emergency powers in the wake of the Japanese nuclear incident—without informing fellow commissioners or Congress. Mr. Jaczko has yet to make clear whether those powers are ongoing, when they will cease, or what actions he's taken with them.

All of this has inspired a revolt among agency staff and commissioners, and it's undermining the body's other work. Only this week, the NRC's inspector general finished an investigation into the chairman's actions. Mr. Jaczko claims the report vindicates him (though he refuses to release the report). House Energy and Commerce Republicans have their own copy (which they intend to release), and they'll be telling a starkly different story come Tuesday, when they hold a hearing on the report's gory details.

Mr. Obama has every right to try to convince the legislative branch to change the directives of past bipartisan Congresses on Yucca. Instead, he and Mr. Reid have teamed up to install a regulator whose only mission is to abuse his independent agency's authority and bypass Congress to accomplish a partisan political promise.
Sent from my Verizon Wireless BlackBerry

Sexton, Kimberly

From: Nieh, Ho
Sent: Friday, June 10, 2011 5:34 AM
To: Caputo, Annie (EPW)
Subject: RE: Strassel: Obama's Nuclear Politics

Thanks Annie.

Looks like the WSJ online may have a copy of the report.

http://online.wsj.com/article/SB10001424052702304259304576375961521636474.html

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Sent: Thursday, June 09, 2011 10:11 PM
To: Svinicki, Kristine; Sharkey, Jeffry; Ostendorff, William; Nieh, Ho
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June 10, 2011

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Sent from my Verizon Wireless BlackBerry

Sexton, Kimberly

From: Ostendorff, William
Sent: Tuesday, October 04, 2011 1:09 PM
To: Sexton, Kimberly; Nieh, Ho; Kock, Andrea
Subject: Re: Media Campaign

Thanks Kim.

----- Original Message -----
From: Sexton, Kimberly
To: Nieh, Ho; Kock, Andrea
Cc: Ostendorff, William
Sent: Tue Oct 04 12:57:00 2011
Subject: RE: Media Campaign

Ho,

(b)(5)

Thank you,
Kimberly

-----Original Message-----
From: Nieh, Ho
Sent: Monday, October 03, 2011 8:34 PM
To: Kock, Andrea; Sexton, Kimberly
Cc: Ostendorff, William
Subject: Fw: Media Campaign

Andrea, Kim - I encourage you to listen in if you have the time.

Ho

Sent via BlackBerry

Ho Nieh
Chief of Staff
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----- Original Message -----
From: Caputo, Annie (EPW) <Annie_Caputo@epw.senate.gov>
To: Sharkey, Jeffry; Nieh, Ho; Bubar, Patrice
Sent: Mon Oct 03 20:18:26 2011
Subject: Fw: Media Campaign

Tune in tomorrow...

----- Original Message -----
From: Michael Callahan [mailto:mike_callahan@govstrat.com]
Sent: Monday, October 03, 2011 07:52 PM
To: Caputo, Annie (EPW)
Subject: Media Campaign

See http://theenergycollective.com/dan-yurman/66469/online-webinar-nrc-chairman-gregory-jaczko-oct-4th

Sexton, Kimberly

From: Nieh, Ho
Sent: Tuesday, October 04, 2011 1:58 PM
To: Sexton, Kimberly
Subject: Re: Media Campaign

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Sent via BlackBerry

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Sexton, Kimberly

From: Franovich, Mike
Sent: Friday, May 13, 2011 2:51 PM
To: Nieh, Ho
Subject: Re: NYT article from yesterday's CM mtg

(b)(5)

SENT FROM NRC BLACKBERRY
Mike Franovich
(b)(6)

From: Nieh, Ho
To: Ostendorff, William; Franovich, Mike
Sent: Fri May 13 11:22:00 2011
Subject: NYT article from yesterday's CM mtg

General public will read into this that things are not OK at US NPPs...

Disaster Plan Problems Found at U.S. Nuclear Plants

By MATTHEW L. WALD

ROCKVILLE, Md. — Despite repeated assurances that American nuclear plants are better equipped to deal with natural disasters than their counterparts in Japan, regulators said Thursday that recent inspections had found serious problems with some emergency equipment that would have made it unusable in an accident.

In addition, the staff of the Nuclear Regulatory Commission acknowledged that the agency's current regulations and disaster plans did not give enough consideration to two factors that had greatly contributed to the continuing Fukushima Daiichi crisis in Japan: simultaneous problems at more than one reactor and a natural disaster that disrupts roads, electricity and other infrastructure surrounding a plant.

The briefing was part of a review requested by the commissioners to evaluate the vulnerability of American reactors to severe natural disasters like the ones that hit the Japanese plant in March.

Marty Virgilio, the deputy executive director of the agency, told the five commissioners that inspectors checked a sample of equipment at all 104 reactors and found problems at less than a third of them. The problems included pumps that would not start or, if they did, did not put out the required amount of water; equipment that was supposed to be set aside for emergencies but was being used in other parts of the plants; emergency equipment that would be needed in case of flood stored in places that could be flooded; and insufficient diesel on hand to run backup systems.

Many of the emergency systems were put in place after the Sept. 11, 2001, terrorist attacks.

Officials said the problems that had been found were addressed immediately but not everything had been inspected. Mr. Virgilio said he expected to have a fuller picture soon.

He said an entire category of new procedures, called "severe accident mitigation guidelines," had been adopted voluntarily by the nuclear industry and thus was not subject to commission rules.

R. William Borchardt, the commission's chief staff official, said some of the preparations for severe accidents "don't have the same kind of regulatory pedigree" as the equipment in the original plant design.

The two-hour briefing given to the five-member commission was an early assessment, 30 days into a 90-day review being conducted by an N.R.C. task force.

Charlie Miller, the staff member leading the effort, said the staff was considering "enhancements" to its disaster plans and procedures. But as laid out by the staff, some of the changes under consideration could be far-reaching.

For example, the N.R.C. now looks at how well a plant's design can handle a problem at just one reactor, even if there is more than one reactor at the site.

"You have to take a step back and consider what would happen if you had multiple units affected by some 'beyond design basis' events," Mr. Miller said.

Another problem, staff members acknowledged, is that they have never paid much attention to the issues posed by handling an emergency when there is widespread damage to surrounding roads, power systems and communications links. In the past, the commission has explicitly rejected the notion that it should consider such combined events when reviewing a plant's safety preparations.

Simultaneous with the commission's meeting, Representative Edward J. Markey, a Massachusetts Democrat, released a report arguing that a variety of other shortcomings existed at nuclear plants, including the frequent failure of emergency diesel generators, which are essential to plant safety if the power grid goes down. He also criticized the commission for not requiring plants to have a backup power source for spent fuel pools while the reactor is shut for maintenance or refueling.

The Fukushima accident has cast new attention on spent fuel pools; the reason the United States government recommended that Americans stay 50 miles from the plant was damage to the spent fuel pool of Fukushima's Unit 4, a reactor that was shut down before the March 11 earthquake and tsunami.

Mr. Markey pointed out that in the last eight years, the commission had received 69 reports of inoperable diesel generators at 33 plants, with six of those generators out for more than a month. The diesels provide power for water pumps that allow removal of "decay heat," the heat that fuel generates even after a reactor shuts down. The Fukushima plants shut down successfully but decay heat wrecked their cores.

The N.R.C. said it was aware of the reports. But on Wednesday, attention was called to that problem by the Institute of Nuclear Power Operations, an industry group formed after the Three Mile Island accident in 1979 to provide peer-to-peer safety reviews. That group said one of the few safety measures that was getting worse was the reliability of diesel generators.

Mr. Markey also complained that the commission had allowed some plant operators to remove equipment that eliminates hydrogen produced by overheating fuel. In addition, there is no requirement for equipment to remove hydrogen in the rooms where spent fuel is stored; the building surrounding Fukushima Unit 4 was destroyed by the explosion of hydrogen that came from the spent fuel pool.

Commission officials said they were reviewing their previous decision to permit very heavy loading of the spent fuel pools. Thinning them out would reduce the amount of heat production that had to be dealt with in case of a severe accident, they said.

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Sexton, Kimberly

From: Nieh, Ho
Sent: Tuesday, May 17, 2011 6:57 PM
To: Ostendorff, William; Zorn, Jason
Subject: Re: Challenge for Operators

Will do (b)(5)

Sent via BlackBerry

Ho Nieh
Chief of Staff
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----- Original Message -----
From: Ostendorff, William
To: Zorn, Jason; Nieh, Ho
Sent: Tue May 17 18:33:24 2011
Subject: Re: Challenge for Operators

Thanks to you both for your helpful responses. Let's discuss tomorrow.

----- Original Message -----
From: Zorn, Jason
To: Nieh, Ho; Ostendorff, William
Sent: Tue May 17 18:02:27 2011
Subject: Re: Challenge for Operators

(b)(5)

----- Original Message -----
From: Nieh, Ho
To: Ostendorff, William; Zorn, Jason
Sent: Tue May 17 17:52:16 2011
Subject: RE: Challenge for Operators

(b)(5)

The plans requested in the bulletin are not "emergency plans" in the classic sense as required by 50.47, rather they are plans that address the B.5.b items - now under 50.54 (hh) (2).

From my experience neither the B.5.b procedures nor the 50.47 emergency plans have a public communication piece.

As noted in their, licensee public communication is typically handled by the public affairs part of the organization with support/participation from a senior level representative at the site or EOF. I have not come across any licensee procedures from my time out in the field and working in the ops center.

(b)(5)

Ho

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From: Ostendorff, William
Sent: Tuesday, May 17, 2011 5:35 PM
To: Zorn, Jason; Nieh, Ho
Subject: Fw: Challenge for Operators

Jason and Ho (b)(5) Bryan was head of public affairs at NNSA during my time there. Thanks.

From: Bryan Wilkes (b)(6)
To: Ostendorff, William
Sent: Tue May 17 17:06:03 2011
Subject: FW: Challenge for Operators

Bill,

Recently, some former colleagues of mine and I talked about a recent article in the Wall Street Journal (pasted below my text). The article states that NRC has ordered operators to produce emergency plans. The conversation I had with my former colleagues centered around whether or not each plant has an emergency public information plan and knows what to do with it (e.g. practice/exercise it). Our hunch is that the operators may have something on paper, but don't have a proper plan, tools, practice, or human resources necessary to be prepared to communicate a serious event to the public in the most effective way. When a true crises hits (like Fukushima), it is vital that an emergency public affairs procedure and plan is in place, and that the public information staff knows how to use it.

We would like to meet with you to see if our ideas have any merit. If you are willing to give us 20 minutes, then please let me know what your schedule looks like next week and what is best for you.

We are three deeply experienced communicators in nuclear and emergency events, and we think we can make a contribution to this effort for the operators. My two former colleagues are Jonathan Thompson, former Director of External Relations of FEMA and a former DASD for Public Affairs in the Pentagon, and Mark Pfeifle, former Deputy Assistant to the President and Deputy National Security Advisor at the NSC. I'm happy to share their bios with you.

V/r,
Bryan Wilkes
703-401-7111

From: Jonathan Thompson [mailto:jt@referocommunications.com]

Sent: Monday, May 16, 2011 6:10 PM
To: (b)(6) ,Pfeifle, Mark D.'
Subject: Challenge for Operators

My sense is that it will be a big challenge for operators to convince the NRC, Congress and FEMA they have the technical tools, human resources and the practice necessary to mitigate and respond to a major event.

Nuclear Plants to Submit Plans in Case of 'Extreme Event'
By RYAN TRACY

WASHINGTON—The U.S. Nuclear Regulatory Commission [illegible] operators of nuclear plants Wednesday to provide information about their plans to respond to "extreme [illegible]ts," saying it would use the information as it reviews its safety regime after a nuclear crisis in Japan.

The agency Wednesday asked for detailed information about [illegible] companies were required to develop after the Sept. 11, 2001, terrorist attacks. The plans deal with the possibility that large areas of the plant would be lost during an emergency and detail how the operator would continue to keep nuclear reactors cool and prevent the release of radiation.

The agency said in a news release that it "continues to conclude the plans would be effective, even as it reviews them.

"We'll review the plants' responses to see if they need to take [illegible] actions to meet our existing requirements, along with seeing what the NRC might need [illegible] those requirements and continue to protect public health and safety," said NRC Chairman [illegible]

Operators of the 104 reactors in the U.S. have until June 15 to show the tools to implement the plans are in place and available, and that sufficient staff are on hand to execute them. By July 11, the companies must show how the plans are tested and re-evaluated, as well as [illegible] they coordinate with local emergency responders.

"Our initial guidance on these strategies focused on the mitigation actions themselves, but we also need to consider things such as operator training and maintaining [illegible]ent," said Eric Leeds, director of the NRC's Office of Nuclear Reactor Regulation.

Jonathan Thompson
703.344.4447

Sexton, Kimberly

From: Franovich, Mike
Sent: Friday, October 14, 2011 10:02 AM
To: Nieh, Ho; Ostendorff, William
Subject: RE: ESBWR delay

(b)(5)

From: Nieh, Ho
Sent: Friday, October 14, 2011 9:54 AM
To: Ostendorff, William
Cc: Franovich, Mike
Subject: ESBWR delay

FYI – article below was first one in the clips today. Caught my attention – reached out to NRO to learn more.

Interestingly, GE called into our office to talk to you. I spoke with the representative – will discuss with you next time we chat.

Had not heard back from NRO yet.

Ho

NRC delays reactor certification to study Japan damage

Thu Oct 13, 2011 6:08pm EDT

* NRC expects to act by year-end on Westinghouse AP1000

* Consideration of GE Hitachi's ESBWR delayed to next year

By Jim Brumm

WILMINGTON, N.C., Oct 13 (Reuters) - U.S. Nuclear Regulatory Commission certification of new reactor technology has been delayed by the agency's evaluation of the earthquake and tsunami damage to Japan's Fukushima Daiichi power plant in March, NRC spokesman Scott Burnell said on Thursday.

He said the full commission is still expected to act on the final certification of Westinghouse Electric's AP1000 design by year-end, which would make the certification effective in 2012.

The NRC staff has been analyzing the Fukushima Daiichi plant after the earthquake and tsunami and making recommendations for future NRC action aimed at averting such an accident in the United States.

NRC consideration of GE Hitachi Nuclear Energy's Economic Simplified Boiling Water Reactor (ESBWR) has been delayed until next year, Burnell said in a telephone interview.

The NRC staff is in the process of preparing a final rule for both reactors and the AP100 has priority over the ESBWR for the commission's available resources, he said.

Burnell said the NRC staff would update GE Hitachi soon on the ESBWR's certification status, which now appears to have been delayed at least six months from "the June to September time frame" seen earlier this year by Danny Roderick, senior vice president of nuclear plant projects at GE Hitachi's headquarters in Wilmington, North Carolina.

Noting the company has worked closely with the NRC on licensing the ESBWR since 2005, GE Hitachi spokesman Michael Tetuan said the company has completed its required licensing work and is looking forward to receiving final design certification from the NRC.

GE Hitachi is owned 60 percent by General Electric Co and 40 percent by Japan's Hitachi Ltd .

- If the AP1000 certification is effective early next year, this would allow Southern Co to stay on schedule to begin producing electricity with the reactors built by Toshiba Corp's Westinghouse in 2016 and 2017, Southern spokesman Steve Higginbottom said on Thursday.

He said that schedule is based on the utility's expectation it will get an NRC license for the two reactors around year's end and noted that license is dependent on NRC certification of the reactors built by Toshiba Corp's Westinghouse.

The agency has already given Southern permission to perform limited construction in preparation for the new reactors at its Vogtle power plant near Augusta, Georgia, Higginbottom noted.

Meanwhile, Michigan's DTE Energy has begun site preparation for a GE Hitachi ESBWR next to its existing Fermi 2 plant south of Detroit.

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

Sexton, Kimberly

From: shizuyo.kusumi@cao.go.jp
Sent: Tuesday, October 18, 2011 8:50 PM
To: Svinicki, Kristine
Cc: Ostendorff, William; Magwood, William
Subject: NRC RIC2012

Dear Kristine,
c.c. Commissioner Ostendorff, Commissioner Magwood

First of all, I would like to express our sincere appreciation for your great supports for the Fukushima Daiich accident.

I am writing to you today concerning the NRC Regulation Information Conference (RIC) to be held in March 2012.

As you know, the main role of our Nuclear Safety Commission of Japan (NSC) is to give the technical advices to the head of Government Nuclear Emergency Response Headquarter, i.e. the Prime Minister of Japan, in case of a nuclear accident. The NSC has been, therefore, playing this role, including issuing more than two-hundred advice, since the beginning of the accident in March 2011.

In particular, in terms of radiation protection, we have applied the concept of "reference level" (existing exposure situation etc.), described in the Recommendation of International Commission on Radiation Protection (ICRP), 2007, as the very first case in the world.

I am writing to you today to propose to introduce, on behalf of the NSC, such a series of experiences throughout the Fukushima accident at the NRC RIC in March 2012. We believe that it would be of interest for the participants of the RIC. If you would kindly accept this, I will send you the abstract of my presentation and we can discuss more.

Thank you for your kind consideration and I look forward to hearing from you. Should you need further information or clarification, please feel free to contact me.

Yours sincerely,
Shizuyo

Shizuyo KUSUMI, M.D.
Commissioner, Nuclear Safety Commission, Cabinet Office
3-1-1 Kasumigaseki, Chiyoda-ku, Tokyo 100-8970 JAPAN Tel:+81-3-3581-3470, Fax:+81-3-3581-3475
E-mail: shizuyo.kusumi@cao.go.jp
URL: http://www.nsc.go.jp

Sexton, Kimberly

From: Herr, Linda
Sent: Tuesday, September 06, 2011 8:27 AM
To: joen@infocastevents.com
Cc: Nieh, Ho
Subject: RE: Contact info

Good Morning Mr. Neto:

Mr. Ho Nieh, Cmr. Ostendorff's Chief of Staff is aware of and will send you the info you request in the near future. Please call or email if I can assist in any other way.

Regards,
Linda

From: Joe Neto [mailto:joen@infocastevents.com]
Sent: Friday, September 02, 2011 1:57 PM
To: Herr, Linda
Cc: Nieh, Ho
Subject: RE: Contact info

Dear Ms. Herr,

Hope this e-mail finds you well.
Since our conference will be mostly oriented towards the guidelines specified in the United States National Regulatory Commission Near-Term Task Force Report, we would like to kindly ask Commissioner Ostendorff to submit a brief quote about the current environment of the nuclear community post-Fukushima Daiichi incident, that makes it so crucial for the sector to gather and discuss the next steps that will be taken to enhance safety. This quote will be featured on the conference's brochure.

I appreciate your attention to this matter.
With my best regards,

Joe Neto
Event Producer

☎ 1 (818) 888-4444
✉ 20931 Burbank Blvd., Suite B
Woodland Hills, CA, 91367

INFOCAST
The Leading Source
www.infocastinc.com

From: Joe Neto [mailto:joen@infocastevents.com]
Sent: Thursday, August 18, 2011 3:28 PM

To: 'Herr, Linda'
Cc: 'Nieh, Ho'
Subject: RE: Contact info

Good afternoon Ms. Herr.

Thank you very much for sending me Commissioner Ostendorff's picture and the NRC Logo.

Best Regards,

Joe Neto
Event Producer

☎ 1 (818) 888-4444
✉ 20931 Burbank Blvd., Suite B
Woodland Hills, CA, 91367

INFOCAST
The Leading Source
www.infocastinc.com

From: Herr, Linda [mailto:Linda.Herr@nrc.gov]
Sent: Thursday, August 18, 2011 12:21 PM
To: 'joen@infocastevents.com'
Cc: Nieh, Ho
Subject: RE: Contact info
Importance: High

Good afternoon Mr. Neto:

Attached are Commissioner Ostendorff's picture and the NRC Logo you requested from Mr. Nieh. Please don't hesitate to call or email me if I can assist further.

Regards,

Linda S. Herr
Administrative Assistant to
Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
PH: 301-415-1759
FAX: 301-415-1757

From: Nieh, Ho
Sent: Thursday, August 18, 2011 3:13 PM

To: Herr, Linda
Cc: 'joen@infocastevents.com'
Subject: FW: Contact info

Linda – could you please provide Joe with the material he is requesting?

Thanks.

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Joe Neto [mailto:joen@infocastevents.com]
Sent: Thursday, August 18, 2011 3:12 PM
To: Nieh, Ho
Subject: RE: Contact info

Dear Ho,

We are delighted to confirm Commissioner Ostendorff's participation as a Keynote Speaker of our Nuclear Safety Post-Fukushiima Policy Conference.
To properly feature the Commissioner and the NRC in our conference brochure and website, would you be kind enough to send me his picture, along with the NRC logo (in high-resolution)?

I appreciate that.

Best Regards,

Joe Neto
Event Producer

☎ 1 (818) 888-4444
✉ 20931 Burbank Blvd., Suite B
Woodland Hills, CA, 91367

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www.infocastinc.com

From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Thursday, August 18, 2011 11:57 AM

To: 'joen@infocastevents.com'
Subject: Contact info

Dear Joe – good talking to you, will get back to you to confirm.

Best wishes,

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

Sexton, Kimberly

From: Nieh, Ho
Sent: Wednesday, September 28, 2011 1:50 PM
To: 'Edwin Lyman'
Subject: RE: Thank you

Dear Ed,

Thank you for your note.

The Commissioner and I appreciated the opportunity to hear from the group last week.

In the future, please feel free to contact me if you would like to discuss any matters of interest to you related to nuclear safety and security. My contact information is below.

Best wishes,

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
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(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Edwin Lyman [mailto:ELyman@ucsusa.org]
Sent: Wednesday, September 28, 2011 12:45 PM
To: Nieh, Ho
Subject: Thank you

Dear Ho,

On behalf of Aileen Mioko Smith and the rest of the Japanese delegation, I would like to thank Commissioner Ostendorff for being so generous with his schedule and making time for the meeting last week. I appreciate the Commissioner's willingness to have a candid discussion of the challenging and sometime emotional issues that have arisen in the wake of the Fukushima Daiichi disaster. I also appreciate his attention to the important issue of public participation.

Please feel free to contact me at any time if the Commissioner has any follow-up questions or concerns.

Sincerely,

Ed Lyman
Senior Scientist
Union of Concerned Scientists
elyman@ucsusa.org
(202) 331-5445

Sexton, Kimberly

From:	Dave Lochbaum [DLochbaum@ucsusa.org]
Sent:	Monday, October 31, 2011 10:07 AM
To:	Borchardt, Bill
Cc:	Grobe, Jack
Subject:	BWR hardened vents?
Attachments:	19920928-jaf-nrc-ser-hardened-wetwell-vent.pdf

Hello Bill:

The first paragraph on page 29 of the paper submitted to the Commission via SECY-11-0137 dated October 3, 2011, contains this sentence:

"All Mark I plants have installed a hardened vent."

I don't believe this to be a truthful statement, unless "all" means "many" or "some."

I've attached the NRC's safety evaluation report dated September 28, 1992, in which it accepted no installation of the containment vent system at the James A. FitzPatrick nuclear plant, a boiling water reactor with a Mark I containment. This SER is also available from the NRC's public document room under Accession No. 9210060307. The NRC staff accepted the existing containment vent system at FitzPatrick without any of the physical modifications installed at other BWR Mark I's that provided the hardened vent path.

I was aware of this SER because I worked as a consultant to NYPA for Fitzpatrick from 1992 through 1995. Part of my tasks included developing the design basis document for the primary containment isolation valves and devices, which included the vent valves. I reviewed this SER for that DBD and didn't really understand why NRC allowed FitzPatrick not to install a hardened vent when other BWRs with Mark I containments where I'd worked (e.g., Hatch, Browns Ferry, and Peach Bottom) had to do so despite having very similar designs and procedures. It was confusing then how the NRC could accept installing a hardened vent and not installing a hardened vent as solutions to the same problem. Naiively, I thought that if FitzPatrick didn't really need a hardened vent, then other BWRs of virtually identical design wouldn't need one either. Conversely, if the other BWRs needed a hardened vent for safety reasons, FitzPatrick would seem to need this safety feature too.

Thus, it would seem that FitzPatrick sans the hardened vent system is not as protected as Fukushima Dai-ichi Units 2 and 3 were protected against containment venting during beyond design basis events.

I assume that the NRC staff did not intentionally misled their Commissioners with this "all Mark I plants have installed a hardened vent" line and simply didn't know about the FitzPatrick exception.

Had the NRC near-term task force staff known that FitzPatrick had not installed a hardened vent (which they relied upon, in part, in reaching their determination that no operating reactor had to immediately shut down for safety reasons), would that determination still have been the same?

Please don't construe this email as a 2.206 petition seeking enforcement action against FitzPatrick.

Instead, you might want to correct any mis-impressions the Commissioners formed from the inaccurate SECY paper since it's possible that they may be questioned about it during an upcoming Senate hearing.

Thanks,
Dave Lochbaum

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

September 28, 1992

Docket No. 50-333

Mr. Ralph E. Beedle
Executive Vice President - Nuclear Generation
Power Authority of the State of New York
123 Main Street
White Plains, New York 10601

Dear Mr. Beedle:

SUBJECT: HARDENED WETWELL VENT CAPABILITY AT THE JAMES A. FITZPATRICK NUCLEAR POWER PLANT (TAC NOS. M74868 AND M82364)

As a part of a comprehensive plan for closing severe accident issues, the NRC staff undertook a program to determine if any actions should be taken, on a generic basis, to reduce the vulnerability of BWR Mark I containments to severe accident challenges. At the conclusion of the Mark I Containment Performance Improvement Program, the NRC staff identified a number of plant modifications that substantially enhance the plant's capability to both prevent and mitigate the consequences of severe accidents. One of the modifications recommended was improved hardened wetwell vent capability. After considering the proposed Mark I Containment Performance Program (described in SECY 89-017, January 1989), the Commission directed the staff to pursue Mark I enhancements on a plant-specific basis in order to account for possible unique design differences that may bear on the necessity and nature of specific safety improvements. Accordingly, the Commission concluded that the recommended safety improvements, with one exception, that is, hardened wetwell vent capability, should be evaluated by licensees as part of the Individual Plant Examination (IPE) Program. With regard to the recommended plant improvement dealing with hardened vent capability, the Commission, in recognition of the circumstances and benefits associated with this modification, directed the staff to facilitate installation of a hardened vent under the provisions of 10 CFR 50.59 for licensees, who on their own initiative, elect to incorporate this plant improvement. On September 1, 1989, the staff issued Generic Letter 89-16, "Installation of a Hardened Wetwell Vent," which encouraged licensees to implement a hardened wetwell vent capability under the provisions of 10 CFR 50.59.

By letters dated October 27, 1989, and July 25, 1990, the Power Authority of the State of New York (PASNY) notified the NRC staff that it would defer making a decision on whether to install a hardened wetwell vent until the FitzPatrick Individual Plant Examination (IPE) was completed. In those letters, PASNY provided "plant specific" design information and engineering analyses that justified this approach on the hardened vent issue. The NRC staff reviewed the information provided by PASNY in the stated letters. Additionally, on August 22, 1990, the staff inspected the existing wetwell vent path at the FitzPatrick plant. As a result of the staff's review of PASNY's submittals, the inspection of the FitzPatrick wetwell vent path, and a

DFU1

review of the existing venting procedures and training, the NRC, by letter dated January 24, 1991, approved PASNY's approach to defer its decision to fully implement the industry's hardened vent general design criteria until completion of the IPE.

By letter dated December 6, 1991, PASNY provided the NRC with its final position regarding implementation of the hardened vent design criteria along with insights gained from performing the IPE and the status of investigations into accident management strategies associated with severe accidents. In a letter dated August 14, 1992, PASNY provided additional information on the hardened vent capability. PASNY determined that the current design of the FitzPatrick hardened wetwell vent meets many of the Boiling Water Reactor Owners Group (BWROG) design criteria and represents an acceptable deviation from the remainder. Furthermore, PASNY concluded that hardware modifications needed to fully meet the BWROG design criteria are not necessary to ensure that the vent performs its decay heat removal and scrubbing functions and would not produce significant public benefits.

Based on the information provided by PASNY and the results of the NRC inspection of the FitzPatrick hardened wetwell vent path, the NRC staff has determined that the current vent path meets the hardened vent design criteria or their intent. Furthermore, the NRC staff finds that the plant procedures and training are adequate to provide the information and guidance necessary for operators to effectively use the FitzPatrick hardened wetwell vent capability. Therefore, the NRC staff concludes that the existing wetwell vent capability at the FitzPatrick plant is acceptable.

A copy of the staff's evaluation of the plant-specific features, procedures, and training related to the FitzPatrick hardened wetwell vent capability is enclosed. This action completes our review activities associated with GL 89-16 and closes TAC Nos. M74868 and M82364.

Sincerely,

Steven A. Varga, Director
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosure:
Safety Evaluation

cc w/enclosure:
See next page

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION REPORT BY THE OFFICE OF NUCLEAR REACTOR REGULATION

POWER AUTHORITY OF THE STATE OF NEW YORK

HARDENED WETWELL VENT CAPABILITY

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

DOCKET NO. 50-333

1.0 INTRODUCTION

Generic Letter (GL) 89-16 encouraged licensees to implement a hardened wetwell vent capability under the provision of 10 CFR 50.59. By letter dated July 25, 1990, the Power Authority of the State of New York (PASNY, the licensee) submitted an analysis of the potential benefits of a hardened wetwell vent at the James A. FitzPatrick Nuclear Power Plant (FitzPatrick). The analysis indicated that the existing wetwell vent is hardened and capable of withstanding anticipated venting pressures, except for the interface with the standby gas treatment system (SGTS). The SGTS is located in a building adjacent to the reactor building. PASNY affirmed its willingness to make cost beneficial modifications to fully meet the approved hardened vent general design criteria; however, it wanted to defer such actions until completing its individual plant examination (IPE) program.

By letter dated January 24, 1991, the NRC staff approved the licensee's request to integrate the results of its IPE program into its decision to make any modifications to the existing vent design to fully implement the approved hardened vent general design criteria. Upon completion of the IPE program, the licensee was to: (1) provide the NRC with its final position regarding implementation of the hardened vent design criteria, and (2) use the results of the IPE to re-examine the venting procedures and training of operators. By letter dated December 6, 1991, the licensee provided this information along with insights gained from performing the IPE and the status of investigations into accident management strategies associated with severe accidents. In a letter dated August 14, 1992, the licensee provided additional information on the hardened vent capability.

2.0 EVALUATION

The FitzPatrick plant has a hardened vent system that originates at the primary containment suppression chamber and terminates at the inlet to the SGTS. The hardened vent system is located in the reactor building while the SGTS is located in a building adjacent to the reactor building. The SGTS consists, in part, of a series of filters connected by sheet metal ducting with an expected rupture pressure of a few psig. Outlet piping of the SGTS is routed through the building and to the plant stack. The hardened vent piping is rated for 150 psig internal pressure. As the vent system is already hardened up to the SGTS, the licensee performed an analysis to determine whether additional hardened piping should be added to bypass the SGTS and any

additional modifications were necessary to meet the hardened vent design criteria.

Through completion of the IPE, the licensee gained several insights for post accident venting. For the TW (loss of decay heat removal) accident sequence the containment pressure approaches the primary containment pressure limit (PCPL) of 44 psig in approximately 20 hours. The emergency operating procedures (EOPs) then direct the operators to vent the containment to maintain pressure below the PCPL. If the containment is not vented, the pressure will continue to rise leading to failure due to overpressurization. The licensee calculated the core damage frequency (CDF) with venting (1.92 E-6/yr) and without venting (2.72 E-5/yr). These calculations demonstrated a reduction in CDF by a factor of 14 due to venting.

For the station blackout (SBO) accident scenario, decay heat is transferred to the suppression pool causing an increase in containment pressure. Depletion of station batteries after about 8 hours causes failure of the remaining core cooling systems and core damage ensues. Core damage occurs approximately 13 hours into the scenario with containment pressure remaining below the PCPL vent setpoint pressure of 44 psig. Therefore, the licensee has concluded that venting cannot be considered as a mitigative concept for an SBO event, under the guidance of the existing Emergency Operating Procedures. During SBO sequences, core damage is calculated to occur around 13 hours whereas the pressure necessary to reach the primary containment pressure limit (PCPL) venting pressure occurs at approximately 20 hours.

The January 24, 1991, NRC staff evaluation of plant-specific features, procedures, and training related to the hardened wetwell vent capability at the FitzPatrick plant concluded that the existing venting capability was expected to achieve the desired reduction in core damage frequency; however, the hardened vent path did not completely meet the hardened vent design criteria. As a result, FitzPatrick was allowed to integrate the results of its IPE program into its decision to fully implement the hardened vent design criteria. The following is an evaluation of the FitzPatrick position relative to the hardened vent design criteria.

Criterion (1): The vent shall be sized such that under conditions of: (1) constant heat input at a rate equal to 1 percent of rated thermal power (unless lower limit justified by analysis), and (2) containment pressure equal to the PCPL, the exhaust flow through the vent is sufficient to prevent the containment pressure from increasing.

The FitzPatrick vent path will relieve pressure through parallel 6 and 12-inch lines. Based on the licensee analysis, one percent decay heat (24.36 MW) produces 25.183 lbm/sec of steam at the PCPL of 44 psig or a volumetric rate of 269.964 ft^3/sec. Since the initial flow of gases through the vent will consist of nitrogen and steam, the licensee concluded that a conservative vent mass flow rate of 44.21 lbm/sec was required to limit the primary containment pressure to the PCPL level. The 6-inch line is capable of passing 17 lbm/sec and the 12-inch line is capable of passing 71 lbm/sec.

Based on these results, FitzPatrick meets the vent criteria through use of the 12-inch line or combination of the 6 and 12-inch line. The NRC staff concludes that criterion (a) has been met.

Criterion (b): The hardened vent shall be capable of operating up to the PCPL. It shall not compromise the existing containment design basis.

The PCPL at FitzPatrick is 44 psig. The hardened vent piping has a design pressure rating of 150 psig, with the exception of the SGTS which is located in a building adjacent to the reactor building. The SGTS room contains sheetmetal ductwork and filters which are assumed to fail under most venting scenarios. After ductwork failure, high pressure venting will pressurize the SGTS room until failure of the access doors to the outside. They are double doors that normally open to the environment thereby providing a large release path for the steam mixture. As a result, the pressurization on the reactor building wall will be limited to relatively low pressures which will be well within the wall structural capability.

Although failure of the sheetmetal ductwork will render the SGTS inoperable, this failure should not affect any safety equipment located within the reactor building. The SGTS building is adequately isolated from the systems within the reactor building by the reactor building wall. Further, the containment design pressure is 56 psig and the PCPL is 44 psig. Both values are well below the piping design pressure of 150 psig. The NRC staff concludes that criterion (b) has been met.

Criterion (c): The hardened vent shall be designed to operate during conditions associated with the TW sequence. The need for SBO venting will be addressed during the IPE.

The FitzPatrick hardened vent is capable of relieving at least one percent of rated thermal power and withstanding the associated pressures, with the exception of the SGTS piping which is assumed to fail. The containment isolation valves in the vent path are also capable of operation at the PCPL. In the event electrical or pneumatic power is not available to operate the vent valves, manual operation from the reactor building is possible. The IPE determined that the PCPL would be reached after 20 hours into a TW sequence, which should provide sufficient time for any manual vent actuations, if required. The PASNY also provided preliminary insights into the need and feasibility of venting during SBO sequences and was examining several new accident management strategies. However, since core damage would occur long before venting was needed, venting was not credited in the IPE for an SBO event. The NRC staff concludes that criterion (c) has been met.

Criterion (d): The hardened vent shall include a means to prevent inadvertent actuation.

Inadvertent actuation of the hardened vent at FitzPatrick is prevented through several mechanisms. The emergency operating procedures are specific as to when venting is to be performed. Venting involves operation of several valves

from the relay room, which is physically separated from the control room. The TW sequence most likely would involve loss of some emergency power, and therefore, some manual vent valve operation would be required. Containment isolation signals from high drywell pressure and possibly high containment radiation would have to be bypassed. Therefore, either the need for manual operation or deliberate bypass actions makes the potential of inadvertent venting a remote possibility. As a result, the NRC staff concludes that the intent of criterion (d) has been met.

Criterion (e): The vent path up to and including the second containment isolation barrier shall be designed consistent with the design basis of the plant.

The NRC staff concluded, in its January 24, 1991, evaluation of the hardened vent design, that the vent path meets the design basis of the plant. The NRC staff concludes that criterion (e) has been met.

Criterion (f): The hard vent path shall be capable of withstanding, without loss of functional capability, expected venting conditions associated with the TW sequence.

The NRC staff concluded, in its January 24, 1991, evaluation of the hardened vent design, that the vent piping, with the exception of the SGTS piping, was capable of withstanding, without loss of functional capability, all expected venting conditions. In addition, the NRC staff concluded that the damage to the SGTS may be an acceptable deviation pending completion of the IPE. The licensee evaluated loss of the SGTS based on the IPE and performed a cost-benefit analysis for providing a hardened pipe bypass around the SGTS for SBO scenarios. The licensee concluded that loss of the SGTS was an acceptable consequence of venting and that modifications to the piping configuration were not justified. Modifications to the piping configuration could reduce the offsite dose but would not decrease the core damage frequency. The NRC staff concludes that the existing design is sufficient and that the intent of criterion (f) has been met.

Criterion (g): Radiation monitoring shall be provided to alert control room operators of radioactive releases during venting.

FitzPatrick will use the existing containment high range monitor (CHRM) and postaccident sampling system (PASS) to assess the radiological consequences of venting. These monitoring systems are capable of assessing severe accident conditions and will be operable under the environmental conditions associated with venting. The CHRM provide indication of radiation levels with the drywell. The PASS can take samples from the drywell, wetwell, suppression pool, and reactor coolant. The results from a PASS sample are available within the 3-hour criterion of NUREG-0737. The NRC staff concludes that the intent of criterion (g) has been met.

Criterion (h): The hardened vent design shall ensure that no ignition sources are present in the pipeway.

In the January 24, 1991, evaluation, the NRC staff indicated that there was a potential for a hydrogen deflagration upon rupture of the SGTS ducts. Large amounts of hydrogen could be produced during a core melt scenario; however, the TW sequence is prevented from progressing to a core melt by relieving both mass and energy through the containment vent. Therefore, large amounts of hydrogen are not expected for the TW sequence. However, the EOPs are symptom based, not sequence based procedures. In the event that hydrogen is released into the SGTS room, the vent flow will also consist of nitrogen and steam which will provide some amount of natural inerting. In addition, the barrier between the SGTS room and the reactor building is a 2-foot thick reinforced concrete wall which provides a barrier against the adverse consequences of a hydrogen deflagration.

A hard pipe bypass around the SGTS could prevent any hydrogen deflagration within the SGTS room. The licensee estimated the cost of this modification at $680,000. The licensee concluded that combustion in the existing vent path is not risk significant and does not plan to modify the vent design. Based on the uncertainty as to whether a combustible mixture could develop, the prevention potential of steam and nitrogen to suppress a hydrogen deflagration, the mitigation potential of the concrete wall between the SGTS room and the safety related equipment, and the costs associated with modifications, the NRC staff concludes that the existing design is acceptable and the intent of criterion (h) has been met.

As stated in the January 24, 1991, evaluation, the NRC staff identified several weaknesses in the technical and human factors aspects of F-AOP-35, "Post Accident Venting of the Primary Containment," which could prove detrimental to effective operator use of the procedure. Subsequent to the issuance of that evaluation, F-AOP-35 was revised to provide significant improvements including, step clarification, more detailed instructions, enhanced caution statements, and standardized phraseology and format. Also noted in the January 24, 1991, evaluation were several deficiencies in the operator training pertaining to containment venting. Subsequently, the licensee has committed to integrate the results of the IPE into the operator training program. This training will provide operators with guidance regarding severe accident phenomena such as the consequences of venting during severe accidents. Other improvements to the operator training program which have already been implemented include:

1. Training which provided clarification of procedural references to the FitzPatrick PCPL, containment failure pressure, and alternative methods of heat removal; and

2. Training which provided guidance on use of the 2" bypass line flowpath to protect the SGTS, unless flow is insufficient to counteract the decay heat addition to the containment thus requiring the main vent line to be used.

The NRC staff has reviewed the revised venting procedure and enhancements to the operator training as they relate to conformance to the human factor issues

of the Standard Review Plan (NUREG-0800) Sections 13.2.1, "Reactor Operator Training," and 13.5.1, "Operating and Maintenance Procedures." The NRC staff finds the revised procedural guidance and operator training acceptable.

The licensee has identified several accident management strategies associated with operation of the vent which may be beneficial. These venting strategies include venting until containment pressure is reduced to near atmospheric pressure and initiating venting early for certain circumstances. The NRC staff agrees with the licensee's approach of bringing these issues to the attention of the Boiling Water Reactor Owners Group (BWROG) for future generic consideration. However, the NRC staff has concluded that the design and procedures currently implemented at the FitzPatrick plant are sufficient to satisfy the hardened vent design criteria and ensure adequate plant safety.

3.0 CONCLUSION

Based on the above evaluation, the NRC staff concludes that PASNY either meets the hardened vent design criteria or its intent at the FitzPatrick plant. Furthermore, the NRC staff finds the revised procedural guidance and operator training regarding containment venting acceptable. Therefore, the staff has determined that existing containment vent path capability at the FitzPatrick plant is acceptable.

Principal Contributors:
J. Bonninger
J. Arildsen

Date: September 28, 1992

Sexton, Kimberly

From: Caputo, Annie (EPW) [Annie_Caputo@epw.senate.gov]
Sent: Thursday, April 21, 2011 4:53 PM
To: Sharkey, Jeffry; Bubar, Patrice; Nieh, Ho
Subject: FW: Look how Obama 'czar' uses his 'executive authority' ...

YOUR GOVERNMENT AT WORK

Look how Obama 'czar' uses his 'executive authority' ...

NRC commissioners report chief left them in the dark

Posted: April 21, 2011
4:04 pm Eastern

By John Rossomando

http://www.wnd.com/index.php?fa=PAGE.view&pageId=289809

WASHINGTON – Nuclear Regulatory Commission Chairman Gregory Jaczko promised to be more transparent than his predecessors when he began his job in May 2009.

But congressional investigators are suggesting Jaczko, a former staffer of Senate Majority Leader Harry Reid, D-Nev., has been anything but transparent in his handling of the federal government's response to the Japanese nuclear crisis.

The suggestion is his actions as one of President Obama's czars could be beyond what the law allows.

Jaczko assumed "emergency powers" following last month's earthquake and tsunami in Japan – powers that allow him to unilaterally manage the agency's response to the Japanese nuclear crisis without participation from the other NRC commissioners.

Now Sen. James Inhofe, R-Okla., the ranking member of the Senate Environment and Public Works Committee, asked his committee staff to contact all four of the other NRC commissioners, and was told Jaczko had not informed them of his decision to invoke his powers, as of March 30. "Since March 28th was the first indication my staff received regarding your exercise of emergency authority – apparently no public declaration was made – I am concerned that any effort by you to declare an emergency has been less than ideal, especially given your commitment to openness and transparency," Inhofe said in an April 6 letter to Jaczko.

GOP committee staffers say only the office of Senate Environment and Public Works Committee chairwoman Sen. Barbara Boxer, D-Calif., was informed, and they were kept out of the loop.

Some of the other commissioners on the five-member panel have more experience dealing with nuclear reactor issues of the sort that have been playing themselves out in Japan over the past month than Jaczko, and this fact has some on the EPW committee particularly concerned.

Concerns also have been expressed that Jaczko's actions may be beyond what is allowed by law for the NRC chairman. The practice requires the chairman to ensure "that the commission is fully and currently informed about matters within its functions." He also is supposed to inform the "commission of actions taken during an emergency."

GOP staffers say Jaczko's secret invocation of these powers with regard to Japan raises the question of whether or not he has acted similarly in other cases.

They also tell WND that Jaczko may have exceeded his authority by declaring the emergency because law limits his authority to matters "pertaining to an emergency concerning a particular facility or materials licensed or regulated by the commission," not foreign entities outside the NRC's jurisdiction.

Inhofe asked Jaczko to provide his legal rationale for invoking his powers to deal with a foreign nuclear crisis, but his staff says the chairman's response has been "cagey."

Jaczko responded to the inquiry with an April 11 letter to Inhofe justifying his actions as being based in American national interests in Japan and the NRC's expertise with nuclear emergency response procedures.

"The president designated me as chairman of the Nuclear Regulatory Commission on May 13, 2009. That designation conferred upon me the executive authorities vested in the chairmanship, including the authority to exercise emergency powers, when warranted," the letter said.

And Jaczko has denied keeping his colleagues uninformed, both in writing and in oral testimony before the Senate Energy and Public Works Committee.

The NRC chairman said in his letter, despite comments from the other commissioners to the contrary, that he has followed commission rules and has kept the other four commissioners informed of his activities related to Japan.

But this response has failed to answer the senator's concerns, and committee staffers say all five NRC commissioners likely will be asked to testify before Congress in the next month.

Jaczko also faces investigations in both the House Energy and Commerce Committee and the House Oversight and Government Reform Committee relative to his conduct as NRC chairman.

Read more: Look how Obama 'czar' uses his 'executive authority' ...
http://www.wnd.com/?pageId=289809#ixzz1KC0AAjvy

Matt Dempsey
Communications Director
Senate Environment and Public Works Committee
Inhofe Staff

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202-224-9797
(b)(6) Cell)
Twitter: InhofePress

Sexton, Kimberly

From: Ostendorff, William
Sent: Friday, April 29, 2011 8:12 PM
To: Nieh, Ho
Cc: Franovich, Mike
Subject: Re: Nuclear New Build Monitor; Vol. 30 No. 18 (4-29-2011)

Thanks Ho.

From: Nieh, Ho
To: Ostendorff, William
Cc: Franovich, Mike
Sent: Fri Apr 29 20:04:45 2011
Subject: Fw: Nuclear New Build Monitor; Vol. 30 No. 18 (4-29-2011)

FYI - Annie mentioned this line of inquiry today.

The article has quotes from NRO management indicating COL delays due to the CR.

On a positive note, Dave Matthews states that there are no delays due to Fukushima.

Ho

Sent via BlackBerry

Ho Nieh
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ho.nieh@nrc.gov

From: Caputo, Annie (EPW) <Annie_Caputo@epw.senate.gov>
To: Sharkey, Jeffry; Nieh, Ho
Sent: Fri Apr 29 19:15:16 2011
Subject: Fw: Nuclear New Build Monitor; Vol. 30 No. 18 (4-29-2011)

Really?! Seriously?

From: Spencer, Peter [mailto:Peter.Spencer@mail.house.gov]
Sent: Friday, April 29, 2011 06:29 PM
To: Caputo, Annie (EPW); Brown, Maryam <Maryam.Brown@mail.house.gov>; McCarthy, David <David.McCarthy@mail.house.gov>
Subject: FW: Nuclear New Build Monitor; Vol. 30 No. 18 (4-29-2011)

Another angle for being prickly at joint hearing, both potentially from Dems and from Chairman J.

CR may make it difficult to catch up on previous schedules for certain new reactor license activities.

FYI

From: EMPublications [mailto:empublications@exchangemonitor.com]
Sent: Friday, April 29, 2011 4:59 PM
To: Carol Galle; Edward Helminski; Kenneth Fletcher; Martin Schneider; Mike Nartker; Molly Hawkins; Sarah Anderson; T Jackman; Tamar Hallerman; Todd Jacobson
Subject: Nuclear New Build Monitor; Vol. 30 No. 18 (4-29-2011)

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Sexton, Kimberly

From: Nieh, Ho
Sent: Tuesday, May 17, 2011 12:06 PM
To: Franovich, Mike
Subject: RE: link

Thanks Mike.

Ho Nieh
Chief of Staff
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ho.nieh@nrc.gov

From: Franovich, Mike
Sent: Tuesday, May 17, 2011 11:28 AM
To: Nieh, Ho
Subject: RE: link

I read the EDG part. He mixes EDG reliability with Fukushima. The EDGs and other equipment at Fukushima failed because they were inadequately protected against tsunami flood waters, not because the EDGs were mechanically or electrically unreliable. A 97 percent reliable EDG system can't work under water or if the water wipes out the fuel supply.

As for EDG reliability itself, the NRC has new EDG reliability data available thanks to the ROP and MSPI. EDG reliability is far better than years past. We also have an extensive SBO reanalysis by the NRC that was completed just a few years ago. Anecdotal evidence during real events shows very good EDG performance (Surry, Browns Ferry, etc...). He also forgets a key fact of life that EDGs are repaired and we have estimates of median times to repair/recover. They would also be repaired in a real emergency so it just isn't a matter of the battery life at stake.

On the other hand, I note that we have many ROP White inspection findings against EDG issues.

From: Nieh, Ho
Sent: Tuesday, May 17, 2011 9:41 AM
To: Franovich, Mike
Subject: link

http://markey.house.gov/docs/05-12-11reportfinalsmall.pdf

found this interesting – being routed in the office.

Ho Nieh
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Sexton, Kimberly

From: Nieh, Ho
Sent: Wednesday, May 18, 2011 9:10 AM
To: 'Hannah Northey'
Subject: RE: NRC question

Good morning Hannah – just wanted to get back to you from our discussion yesterday.

Our office does not have any comments for your article.

Regards,

Ho

Ho Nieh
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U.S. Nuclear Regulatory Commission
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(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Hannah Northey [mailto:hnorthey@eenews.net]
Sent: Tuesday, May 17, 2011 4:06 PM
To: Nieh, Ho
Subject: NRC question

Hi Ho,

I wanted to ask you about the announcement that went out yesterday, saying the NRC is exiting its monitoring mode for the Japanese crisis – can you please call me at 202-446-0468?

Thanks, Hannah Northey

Hannah M. Northey
Reporter
hnorthey@eenews.net
202-446-0468 (p)
202-737-5299 (f)
(b)(6) (c)

Sexton, Kimberly

From: Nieh, Ho
Sent: Thursday, May 19, 2011 8:41 AM
To: Franovich, Mike
Cc: Ostendorff, William
Subject: Japan update one-pager

Mike – can you please send WCO the latest one pager on Japan? Just in case any questions come up today.

Thanks.

Ho

Ho Nieh
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(301) 415-1757 (fax)
ho.nieh@nrc.gov

Sexton, Kimberly

From: Nieh, Ho
Sent: Friday, May 20, 2011 7:04 AM
To: Virgilio, Martin
Subject: Task Force

Hi Marty – are you available anytime this AM for a quick phone call or meeting?

Ho

Ho Nieh
Chief of Staff
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642

Sexton, Kimberly

From: Caputo, Annie (EPW) [Annie_Caputo@epw.senate.gov]
Sent: Thursday, May 26, 2011 7:52 AM
To: Nieh, Ho
Subject: FW: <Update-46> Information Sheet Regarding the Tohoku Earthquake (from FEPC Washington Office)
Attachments: 110525_Update_to_Information_Sheet-46.doc; 0525_1900_Radiation_monitoring.pdf

From: Taro Ishida [mailto:ishida@denjiren.com]
Sent: Wednesday, May 25, 2011 4:15 PM
To: Taro Ishida
Cc: Samuel Lederer
Subject: <Update-46> Information Sheet Regarding the Tohoku Earthquake (from FEPC Washington Office)

Dear Friends,

Please find the updated information sheet below and attached that summarizes the events from Update-45 on 5/18.

For your reference, JAIF (Japan Atomic Industrial Forum) has been posting the translation of news reports on their website. http://www.jaif.or.jp/english/

Please direct any questions regarding this document to me, ishida@denjiren.com or Samuel Lederer, Researcher of FEPC at lederer@denjiren.com.

Update to Information Sheet Regarding the Tohoku Earthquake
The Federation of Electric Power Companies of Japan (FEPC) Washington DC Office

As of May 25, 2011
All times listed below are Japan Standard Time (JST) unless otherwise noted.

- Reactor Core Status of Unit 2 and 3 at Fukushima Daiichi Nuclear Power Station
  - On May 24, TEPCO announced the analysis result of the reactor core status of Unit 2 and 3 at Fukushima Daiichi Nuclear Power Station.
  - According to the analysis, TEPCO proposed a more severe situation in which the water level gauges of reactor pressure vessels have not indicated the actual water level. In such case, TEPCO estimates that fuel pellets of Unit 2 and 3 melted and fell down to the bottom of reactor pressure vessel approximately 101 hours and 60 hours after the earthquake, respectively.
  - TEPCO also estimates that most of the melted fuel is submerged and cooled with water at the bottom of reactor pressure vessel and damage to the reactor pressure vessels of Units 2 and 3 is limited.
  - TEPCO believes that a large-scale release of radioactive materials is unlikely to occur in the future.
  - The details are available at:

  http://www.tepco.co.jp/en/press/corp-com/release/betu11_e/images/110524e14.pdf

- Installation of Circulating Cooling System for Spent Fuel Pool at Unit 2
  - On May 21, TEPCO submitted a report to the Nuclear and Industry Safety Agency (NISA) regarding the installation of a circulating cooling system at the spent fuel pool of Unit 2 to remove decay heat of the spent fuel continuously in order to maintain the water level and ensure the cooling of water in the pool.

- Currently, freshwater is being injected from time to time in order to compensate for the evaporated water.
- TEPCO plans to install the system by the end of May and evaluated that the water temperature will decrease to approximately 149.0 Fahrenheit 1.5 days after full operation and further decrease to 105.8 Fahrenheit one month later.
- The full version of the report is available at: http://www.tepco.co.jp/en/press/corp-com/release/11052210-e.html

- Major Activities
  - On May 21, the artificial floating island called "Mega-Float" which can accommodate approximately 10,000 tons of water arrived at Fukushima Daiichi Nuclear Power Station to temporarily receive low-level radioactive water which has accumulated in site buildings.
  - Other countermeasures such as injecting water into reactor cores, injecting Nitrogen gas into primary containment vessels, shooting water aimed at spent fuel pools, transferring accumulated water, and dispersing dust inhibitor over the ground continue to be implemented.

- Radiation Levels
  - On May 21, TEPCO announced results of the analysis of the water entering the ocean from a pit (a vertical portion of an underground structure for housing electric cables) of Unit 3. TEPCO estimated the total amount of water that entered the ocean was approximately 250m^3 and that the total radiation content was approximately 2.0 x 10^{13} Bq. (As previously reported, the water was observed entering the ocean on May 11 and terminated on the same day.)
  - The concentration of radioactive nuclides from the groundwater sampled at sub-drain pits at Unit 1 to 6 of Fukushima Daiichi Nuclear Power Station were as follows:

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Samples taken at	5/23 11:40AM	5/23 11:45AM	5/23 11:50AM	5/23 11:31AM	5/23 11:30AM	5/23 11:20AM
Nuclides (half-life)	Concentration (Unit : Bq/cm^3)					
I-131 (8 days)	4.4 x 10^{-1}	2.9 x 10^{1}	1.8 x 10^{-2}	Not Detectable	Not Detectable	Not Detectable
Cs-134 (2 years)	6.2 x 10^{0}	1.8 x 10^{1}	1.6 x 10^{-1}	4.7 x 10^{-2}	Not Detectable	1.4 x 10^{-2}
Cs-137 (30 years)	7.4 x 10^{0}	2.2 x 10^{1}	1.8 x 10^{-1}	5.1 x 10^{-2}	Not Detectable	1.5 x 10^{-2}

  - The concentration of radioactive nuclides from the seawater sampled at the screen device (installed to remove waste before the intake of seawater) of Unit 2 and sampled near the seawater discharge point (south side) of Fukushima Daiichi Nuclear Station were as follows:

Nuclides (half-life)	Concentration (Unit : Bq/cm^3)				Ratio		
	Sampled inside the silt fence at the screen of Unit 2 5/24 6:40AM (a)	Sampled outside the silt fence at the screen of Unit 2 5/24 6:38AM (b)	Sampled at south side discharge point 5/24 1:40PM (c)	Maximum Permissible Water Concentration (d)	a / d	b / d	c / d
I-131 (8 days)	7.9 x 10^{0}	4.7 x 10^{-1}	Not Detectable	4.0 x 10^{-2}	200	12	-

Cs-134 (2 years)	4.4×10^{0}	1.2×10^{0}	5.3×10^{-2}	6.0×10^{-2}	73	20	0.88
Cs-137 (30 years)	4.6×10^{0}	1.3×10^{0}	5.5×10^{-2}	9.0×10^{-2}	51	14	0.61

- At 9:00PM on May 25, radiation level at west gate (approximately 3,609 feet from Unit 2 reactor building) of Fukushima Daiichi Nuclear Power Station: 15.5 micro Sv/hour. Other monitoring data at the site are available at: http://www.tepco.co.jp/en/nu/fukushima-np/f1/index-e.html
- Measurement results of environmental radioactivity level around Fukushima Nuclear Power Station announced at 7:00PM on May 25 are shown in the attached PDF file. Previous data are available at: http://www.mext.go.jp/english/incident/1304082.htm

- Plant Parameters (As of 6:00AM on May 25)
  http://www.tepco.co.jp/en/nu/fukushima-np/f1/images/11052506_table_summary_e.pdf

- Plant Status (As of May 16)
  http://www.tepco.co.jp/en/nu/fukushima-np/f1/images/f12np-gaiyou_e_9.pdf

Our official sources are:

- Office of The Prime Minister of Japan
- Nuclear and Industrial Safety Agency (NISA)
- Tokyo Electric Power Company (TEPCO) Press Releases
- Ministry of Education, Culture, Sports, Science and Technology (MEXT)
- Ministry of Defense (MOD)

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Taro Ishida
The Federation of Electric Power Companies of Japan
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Update to Information Sheet Regarding the Tohoku Earthquake

The Federation of Electric Power Companies of Japan (FEPC) Washington DC Office

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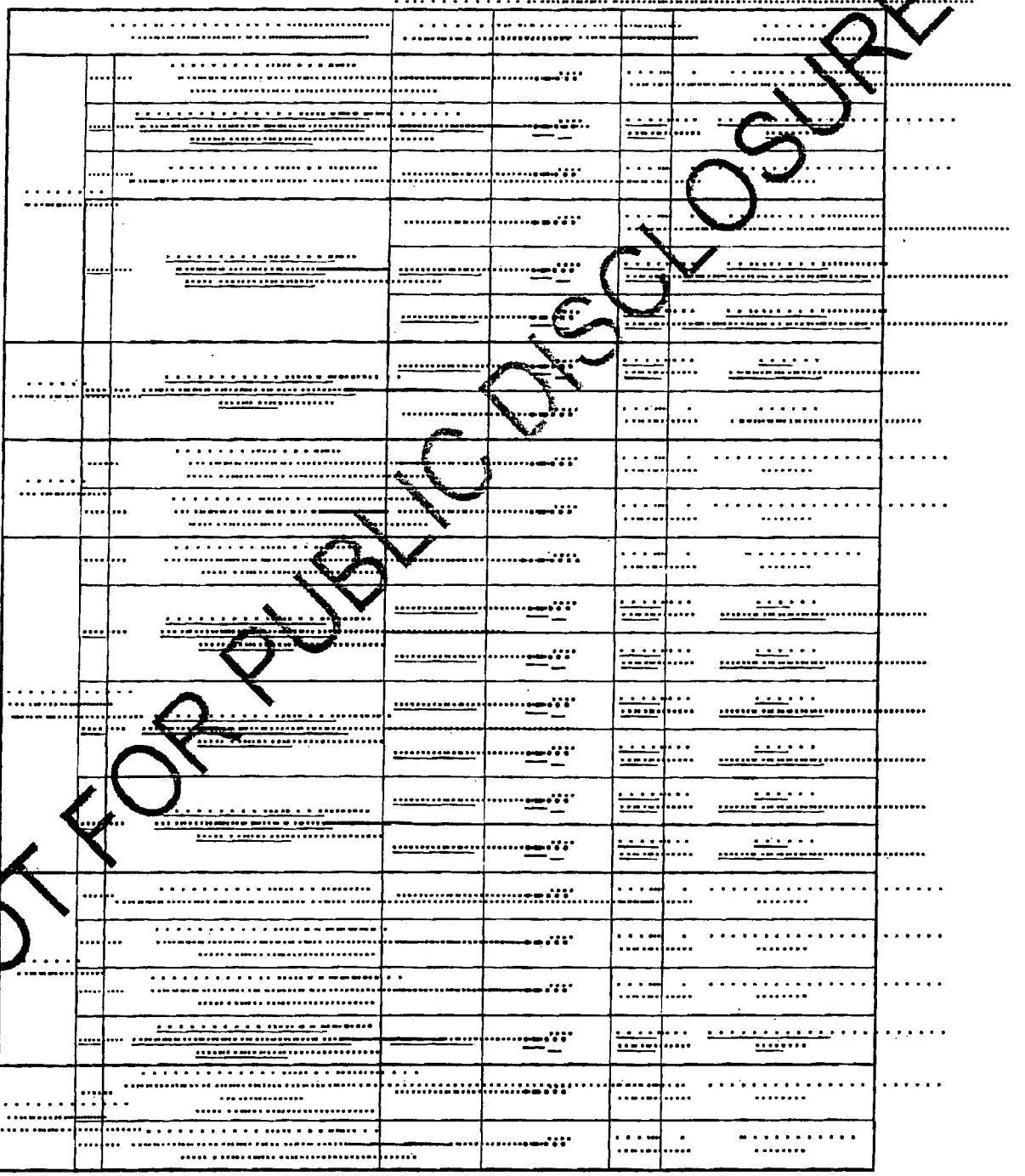
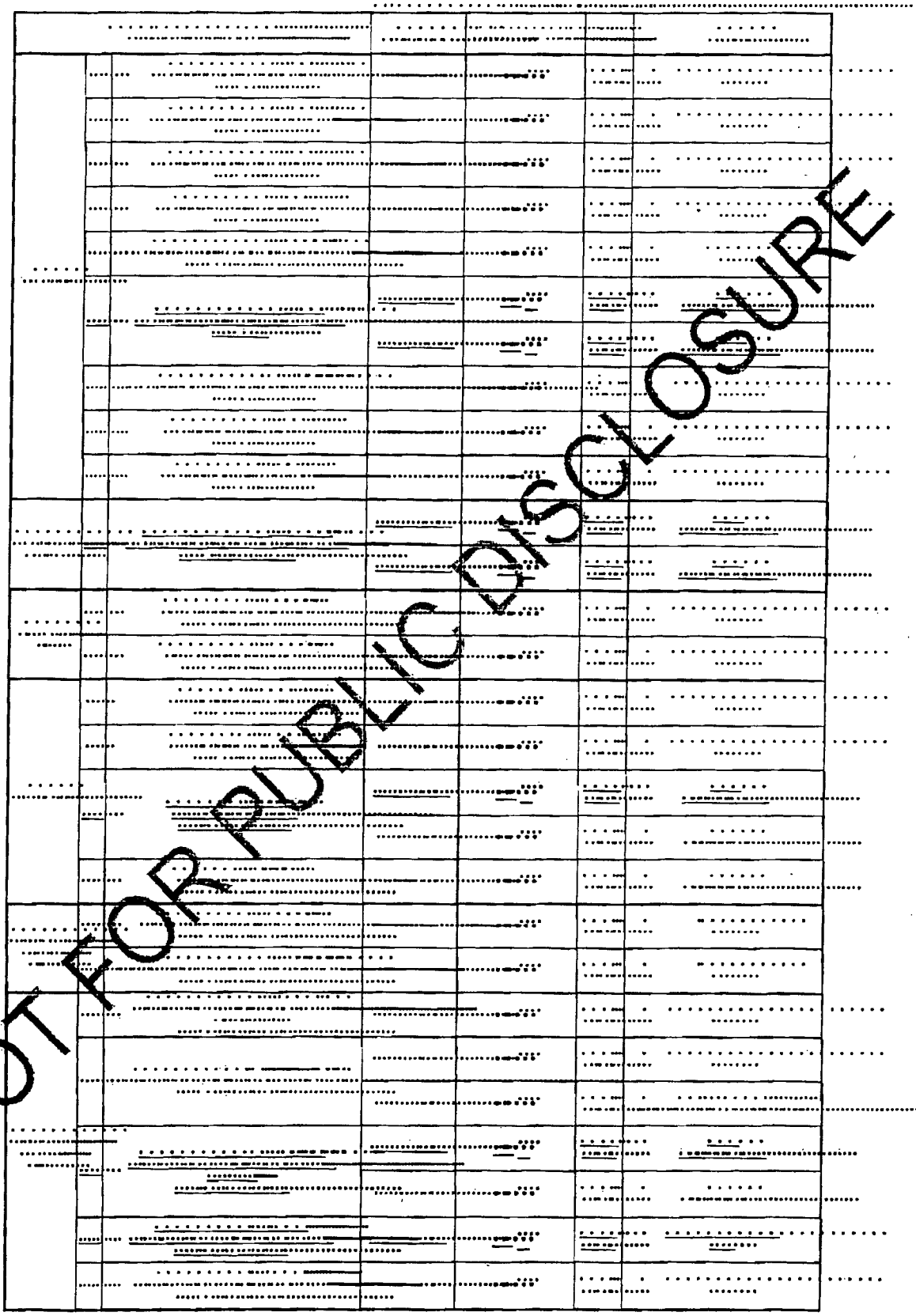
  http://www.tepco.co.jp/en/nu/fukushima-np/f1/images/f12np-gaiyou_e_2.pdf

Our official sources are:

- Office of The Prime Minister of Japan
- Nuclear and Industrial Safety Agency (NISA)
- Tokyo Electric Power Company (TEPCO) Press Releases
- Ministry of Education, Culture, Sports, Science and Technology (MEXT)
- Ministry of Defense (MOD)





(Readings at Reading point out of Fukushima Dai-ichi NPP)

(Circles indicate approximate range.)

Radiation in Daily-life

※Unit : μ Sv

Radiation dose (microsievert: μ Sv)

250,000

Upper limit of radiation dose permitted for people who engage in emergency work.

[250,000 μ Sv/year]

50,000

Upper limit of radiation dose permitted for radiation workers, police , and firefighters who engage in disaster prevention.

[50,000 μ Sv/year]

[~10,000 μ Sv/year]

10,000

Chest CT scan

[6,900 μ Sv/each time]

Radiation dose in Guarapari(Brazil) per year.

[~2,400 μ Sv/year]

Space 390 ingestion 290 Earth 480 Radon absorbed in air 1260

Global average

Natural radiation dose per year.

1,000

Dose limit for public per year (except for medical care).

[1,000 μ Sv/year]

Gifu ⟺ Kanagawa

Maximum difference of the average of natural radiation dose in each prefecture.

[~400 μ Sv/year]

gastrointestinal X-ray examination.

[600 μ Sv/each time]

An air travel between Tokyo and New York (RT).

(Increased cosmic radiation at high altitude.)

[~200 μ Sv/round trip]

100

[50 μ Sv/each time]

Chest X-ray examination.

[22 μ Sv/year]

Evaluated dose of radiation from radioactive substance emitted from the nuclear fuel reprocessing plant per year.

[50 μ Sv/year]

Standard dose of radiation around a nuclear plant (light water reactor).

(Actual result is far below the value.)

[10 μ Sv/year]

Standard radiation dose from Clearance level.

10

※ Sv [Sievert]=Constant of organism effect by kind of radiation(※) × Gy [gray]

※ It is 1 in case of X ray and γ ray.

MEXT makes this, based on "Nuclear power 2002" made by Agency of Natural Resources and Energy.

Sexton, Kimberly

From: Nieh, Ho
Sent: Thursday, June 09, 2011 7:15 AM
To: Bozin, Sunny
Subject: FW: Report of Japanese Government to the IAEA Ministerial Conference on Nuclear Safety, June 2011
Attachments: Japan Meti to IAEA June 2011.pdf

Two double-sided color copies please.

Thanks.

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Breskovic, Clarence
Sent: Tuesday, June 07, 2011 1:53 PM
To: Breskovic, Clarence
Subject: Report of Japanese Government to the IAEA Ministerial Conference on Nuclear Safety, June 2011

See attached PDF file from the METI website:
http://www.kantei.go.jp/foreign/kan/topics/201106/iaea_houkokusho_e.html

Clarence Breskovic
International Policy Analyst
U.S. Nuclear Regulatory Commission
Office of International Programs
11555 Rockville Pike
Rockville, MD 20852, USA
Tel: 1-301-415-2364
Fax: 1-301-415-2395
Alternate Email: (b)(6)

Sexton, Kimberly

From: Nieh, Ho
Sent: Thursday, June 09, 2011 10:12 AM
To: Bozin, Sunny
Subject: FW: U.S. Industry Leadership in Response to the Fukushima Daiichi Nuclear Accidents
Attachments: The Way Forward 060611 (public) FinalA2.pdf; FSC Charter 060811.docx

Sunny – can you please print me two double-sided color copies?

Thanks.

Ho

Ho Nieh
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From: PIETRANGELO, Tony [mailto:arp@nei.org]
Sent: Thursday, June 09, 2011 10:10 AM
To: Jaczko, Gregory; CMRSVINICKI Resource; Apostolakis, George; CMRMAGWOOD Resource; CMROSTENDORFF Resource; Borchardt, Bill; Virgilio, Martin
Cc: Batkin, Joshua; Sharkey, Jeffry; Bubar, Patrice; Nieh, Ho; Pace, Patti; Lepre, Janet; Blake, Kathleen; Crawford, Carrie; Herr, Linda; Taylor, Renee; Sosa, Belkys
Subject: U.S. Industry Leadership in Response to the Fukushima Daiichi Nuclear Accidents

In the aftermath of the March nuclear accident in Japan, the leadership of the U.S. nuclear energy industry has developed a comprehensive plan to guide and coordinate industry efforts. Attached for your information is *The Way Forward: U.S. Industry Leadership in Response to the Fukushima Daiichi Nuclear Accidents.* This document provides a description of our strategic goals, guiding principles, key stakeholders, and the structure and governance for the effort, which includes the related activities of NEI, INPO, EPRI and the NSSS Owners Groups.

Also attached for your information is the charter of the industry's Fukushima Response Steering Committee, which developed *The Way Forward* document and will provide direction and oversight of industry implementation. The Steering Committee is chaired by Chip Pardee of Exelon and the membership includes senior executives and chief nuclear officers from the industry organizations and several utilities.

We look forward to interactions with the NRC as we apply the lessons learned from Fukushima to our plants. If you have any questions regarding the attached documents, please contact me.

Anthony R. Pietrangelo
Senior Vice President and Chief Nuclear Officer

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nuclear

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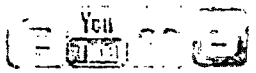
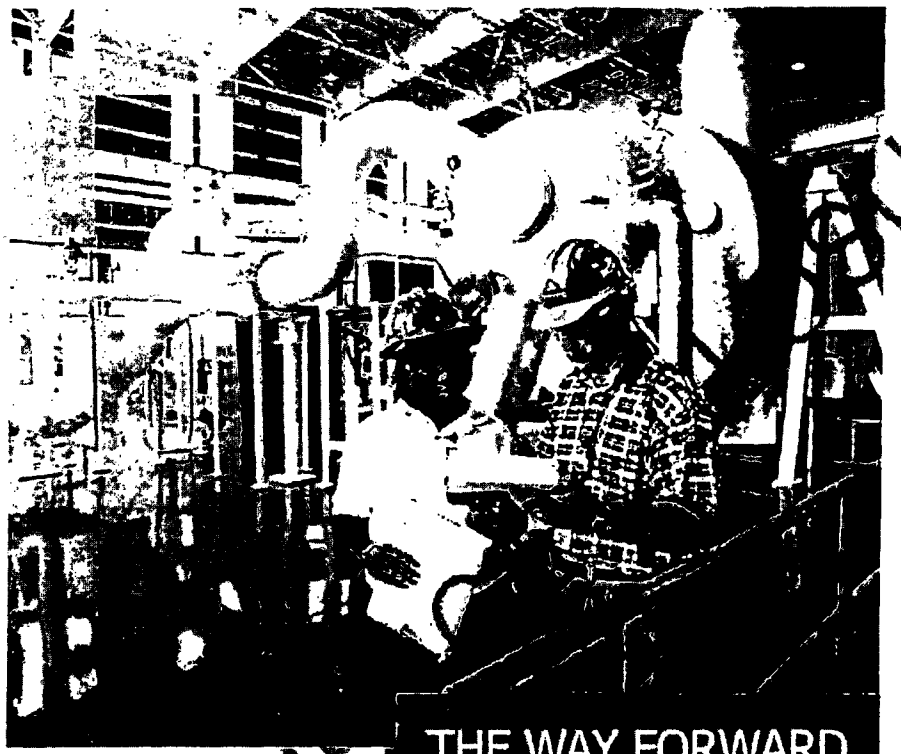


Sent through r.mail.messaging.microsoft.com



THE WAY FORWARD

U.S. Industry Leadership in Response to Events at the Fukushima Daiichi Nuclear Power Plant

NEI NUCLEAR ENERGY INSTITUTE

INPO®

EPRI ELECTRIC POWER RESEARCH INSTITUTE

June 8, 2011

1. EXECUTIVE SUMMARY

The earthquake and tsunami in Japan on March 11, 2011 and subsequent nuclear accident at Tokyo Electric Power Co.'s Fukushima Daiichi nuclear power plant have resulted in worldwide attention toward nuclear energy safety. The leadership of the U.S. commercial nuclear industry is dedicated to gaining a deep understanding of the events at Fukushima Daiichi and to taking the necessary actions to improve safety and emergency preparedness at America's nuclear energy facilities.

The Electric Power Research Institute (EPRI), Institute of Nuclear Power Operations (INPO), and Nuclear Energy Institute (NEI), in conjunction with senior utility executives, have created a joint leadership model to integrate and coordinate the U.S. nuclear industry's response to events at the Fukushima Daiichi nuclear energy facility. This will ensure that lessons learned are identified and well understood, and that response actions are effectively coordinated and implemented throughout the industry. This must be accomplished while electric companies continue to ensure that the safe and reliable operation of commercial reactors is our highest priority. This effort will not diminish the independent roles of the industry support groups, such as the role of INPO to promote the highest levels of safety in U.S. commercial reactors, as actions are taken to fulfill their missions.

An important and integral aspect of the industry's response is the awareness and involvement of the industry's many stakeholders, including industry vendors, architect-engineering companies, industry owners' groups and national consensus nuclear standards organizations. This will ensure that the interests of each stakeholder group are considered, understood and communicated to the public and policymakers.

A comprehensive investigation of the events at Fukushima Daiichi will take considerable time. Yet, there is also a need to act in a deliberate and decisive manner. Recognizing this, America's nuclear energy industry is taking action based on a preliminary understanding of the events. The industry's response is structured to ensure that emergency response strategies are updated based on new information and insights learned during subsequent event reviews.

Separately, the U.S. Nuclear Regulatory Commission (NRC) is conducting an independent assessment and will consider actions to ensure that its regulations reflect lessons learned from the Fukushima events. The industry's response will ensure that the NRC and industry remain informed of each other's respective activities so that any new regulatory requirements are implemented in the most efficient and effective manner.

This strategic overview describes how the industry will approach this challenge and is intended to serve as a reference point for the future. It articulates strategic goals and key stakeholders for the industry's integrated response. In addition, this overview describes the respective roles and coordination of industry organizations in managing the discrete elements of a comprehensive U.S. industry response plan.

2. STRATEGIC GOALS

The primary objective is to improve nuclear safety by learning and applying the lessons from the Fukushima Daiichi nuclear accident. In response, the U.S. nuclear industry has established the following strategic goals to maintain, and where necessary, provide added defense in depth for critical safety functions, such as reactor core cooling, spent fuel storage pool cooling and containment integrity:

1. The nuclear workforce remains focused on safety and operational excellence at all plants, particularly in light of the increased work that the response to the Fukushima event will represent.

2. Timelines for emergency response capability to ensure continued core cooling, containment integrity and spent fuel storage pool cooling are synchronized to preclude fuel damage following station blackout.

3. The U.S. nuclear industry is capable of responding effectively to any significant event in the U.S. with the response being scalable to support an international event, as appropriate.

4. Severe accident management guidelines, security response strategies (B.5.b), and external event response plans are effectively integrated to ensure nuclear energy facilities are capable of a symptom-based response to events that could impact multiple reactors at a single site.

5. Margins for protection from external events are sufficient based on the latest hazards analyses and historical data.

6. Spent fuel pool cooling and makeup functions are fully protective during periods of high heat load in the spent fuel pool and during extended station blackout conditions.

7. Primary containment protective strategies can effectively manage and mitigate post-accident conditions, including elevated pressure and hydrogen concentrations.

3. GUIDING PRINCIPLES

To achieve our strategic goals, the industry has established principles to guide the development of its response actions. These principles will be used to guide the resolution of issues and plant improvements and will ensure that a consistent expectation is established for incorporating lessons into the operations at each site. The strategic response actions will be designed to:

1. Ensure equipment and guidance, enhanced as appropriate, result in improvements in response effectiveness.

2. Address guidance, equipment and training to ensure long-term viability of safety improvements.

3. Develop response strategies that are performance-based, risk-informed and account for unique site characteristics.

4. Maintain a strong interface with federal regulators to ensure regulatory actions are consistent with safety significance and that compliance can be achieved in an efficient manner.

5. Coordinate with federal, state and local government and their emergency response organizations on industry actions to improve overall emergency response effectiveness.

6. Communicate aggressively the forthright approach the U.S. industry is taking to implement the lessons from the Fukushima Daiichi accident.

4. STAKEHOLDERS AND DESIRED OUTCOMES

The industry's strategic goals will be achieved by proactively engaging a variety of stakeholders.

[illegible]

The industry will ensure that the general public is well-informed of the collective approach in response to the Fukushima accidents. Special attention will be paid to engaging stakeholders (residents, elected officials and other stakeholders) immediately surrounding nuclear energy facilities to maintain confidence in their plant's continued safe operations and ability to protect public health and safety.

[illegible]

The industry will provide information to its employees to understand the operating experience from Fukushima as part of their training to execute their jobs with excellence and be advocates for nuclear safety.

[illegible] Organizations

The industry will continue to communicate and cooperate with federal, state and local emergency response organizations and government entities to ensure that emergency response plans reflect the lessons learned from the Fukushima Strategic Response Plan. These organizations include, but are not limited to, state and local police; fire officials; health officials/paramedics; federal, state and local governments; and transportation companies. Interactions will be focused on increasing confidence in the industry's and local government emergency preparedness programs.

[illegible]

Utilities, industry vendors and owners groups, architect-engineers, manufacturers and companies and organizations involved in the nuclear fuel cycle, working as a collective worldwide industry, will continue to strive for operational excellence. These actions and goals will continue the ongoing contribution to the legacy of safe, reliable, environmentally responsible production of electricity at nuclear energy facilities. The industry will work with all interested parties to ensure the benefits of nuclear energy for future generations.

[illegible]

The industry will maintain relationships with federal and state regulators to ensure the industry participates in the regulatory process and can effectively implement any regulatory changes.

[illegible]

The industry will continue to collaborate with technical associations and organizations to ensure information is disseminated and understood by all interested parties so that the benefits and positions of nuclear energy are appreciated and support the industry's long-term objectives.

The industry will proactively communicate lessons learned and industry actions such that policy and opinion leaders at the local, state and national level recognize the proactive, unwavering industry response to the Fukushima accident. The industry will continue to focus on improving confidence in the safety of U.S. nuclear energy facilities and assuring support for industry legislative proposals and programs that enhance safety.

The U.S. nuclear industry will interact with international nuclear energy companies and organizations to compile and assess recommendations and actions for applicability to U.S. facilities and to make the international industry aware of U.S. improvements.

5. LEADERSHIP MODEL OVERVIEW

The nuclear industry has successfully demonstrated the ability to identify and manage the response to various issues in a coordinated manner. Under normal circumstances, the structures are in place to successfully coordinate the response to significant issues among key industry groups. For the response to the Fukushima event, however, there is a need for a greater level of coordination with the number and complexity of potential issues that are identified by each of the key industry groups. As a result, we have developed a coordinating framework for the development and execution of actions in response to the lessons of the Fukushima event.

The leadership model is based on the following elements:

Organization – clear division of responsibilities among the involved parties. An industry steering committee will provide strategic direction and oversight. Ownership for analysis and execution will be organized around the industry's seven building blocks based on the type of issue being addressed.

Event Response Process – each industry organization (*see chart on page 9*) is responsible for identifying issues, plant and process improvements, and regulatory reviews of the Fukushima events. Issue descriptions, including action plans and recommendations, will be developed to implement improvements. The steering committee will approve the actions and designate an industry organization and building block to lead and implement the action to resolution.

Issue Action Plans – action plans with schedules and resource management tools will be developed and executed for each issue within its assigned building block.

Strategic Response Plan – all issues assigned to the seven building blocks constitute the nuclear industry's response. The action plans will be summarized by building block to form the strategic response plan.

Execution Oversight and Status Tracking – each industry organization and its building block(s) will regularly report the status of all issues to the steering committee.

Building Blocks

The leadership model is organized around seven areas called building blocks. Building blocks are temporary organizations created to develop and execute action plans for issues assigned to them by the steering committee. Building blocks led by an individual assigned by the industry organization will consist of assigned managers and designated personnel from the industry organizations, utilities, and suppliers. Building block oversight is provided by the steering committee, lead industry organization, and the assigned steering committee sponsor.

The seven building blocks along with the lead organization(s) and focus are identified below:

1. **Maintain Focus on Excellence in Existing Plant Performance (INPO):** focus on continued performance improvement of U.S. reactors.

2. **Develop and Issue Lessons Learned from the Fukushima Events (INPO):** focus on comprehensive analysis of the Fukushima event and that lessons learned are applied to the U.S. nuclear industry and shared with the World Association of Nuclear Operators (WANO).

3. **Improve the Effectiveness of U.S. Industry Response Capability to Global Nuclear Events (INPO/NEI):** focus on identified lessons learned from the U.S. industry response to the Fukush ima event, allowing for more effective integrated response to future events.

4. **Develop and Implement a Strategic Communications Plan (NEI):** focus on managing the industry's strategic communications and outreach campaigns to recover policymaker and public support for nuclear energy.

5. **Develop and Implement the Industry's Regulatory Response (NEI):** focus on managing the industry's regulatory interactions and resolution of applicable industry regulatory issues from the incident.

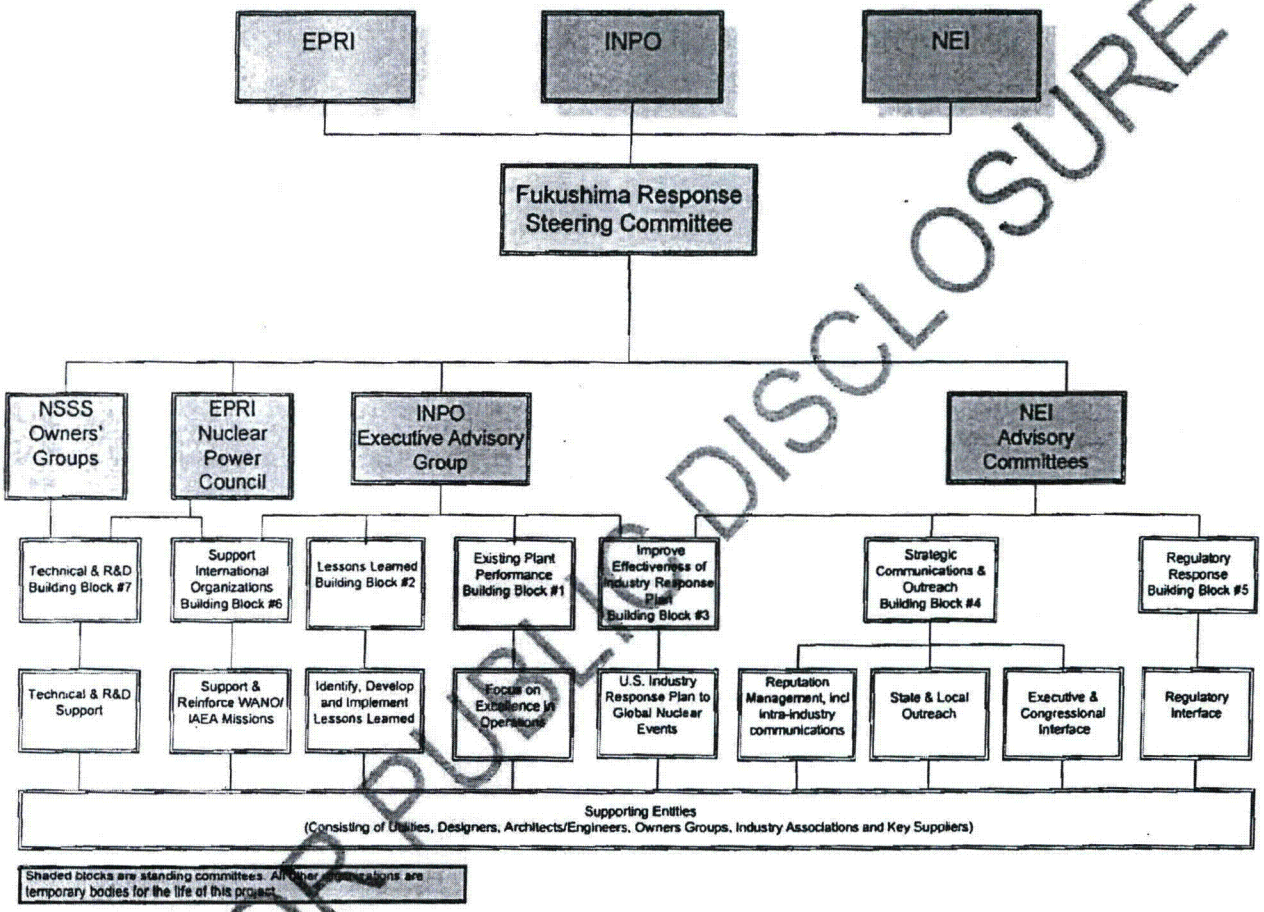
6. **Participate and Coordinate with International Organizations (INPO/EPRI):** focus on ensuring the results from international investigations are captured and effectively used to inform actions with the other building blocks.

7. **Provide Technical Support and R&D Coordination (EPRI/NSSS Owners' Groups):** focus on existing technical solutions and research and development activities and deliverables necessary to address recommended actions of this plan.

Each building block will be supported by nuclear and, in specific instances, non-nuclear industry organizations and companies, where specific technical, operational or other expertise is required.

6. LEADERSHIP RESPONSE ORGANIZATION AND BUILDING BLOCKS

The leadership model structure involves many industry participants and is outlined below:



Fukushima Response Steering Committee Charter

The U.S. nuclear industry has formed a Fukushima Response Steering Committee to coordinate the industry's overall response to the accident at Japan's Fukushima Daiichi nuclear plant. The steering committee is comprised of the chairpersons of the principal advisory groups to the industry associations (EPRI, INPO and NEI), a representative cross section of chief nuclear officers and executives from EPRI, INPO and NEI.

Members

- Chip Pardee, Chief Operating Officer, Exelon Generation Company, NEI NSIAC Chair, Fukushima Response Steering Committee Chairman
- Randy Edington, Executive Vice President and Chief Nuclear Officer, Arizona Public Service Company, INPO EAG Chair
- Maria Korsnick, Chief Nuclear Officer and Chief Operating Officer, Constellation Energy Nuclear Group, EPRI NPC Chair
- John Herron, President, Chief Executive Officer and Chief Nuclear Officer, Entergy Nuclear
- Ed Halpin, President and Chief Executive Officer, STP Nuclear Operating Company
- Dave Heacock, President and Chief Nuclear Officer, Dominion Nuclear
- Dennis Koehl, Vice President and Chief Nuclear Officer, Xcel Energy
- Mike Pacilio, Chief Nuclear Officer, Exelon Corporation
- Bill Webster, Senior Vice President, Industry Evaluations, INPO
- Rick Purcell, Senior Vice President, Industry Performance Improvement, INPO
- Neil Wilmshurst, Vice President and Chief Nuclear Officer, EPRI
- Tony Pietrangelo, Senior Vice President and Chief Nuclear Officer, NEI

The steering committee is chartered to:

1. Develop a strategic plan that articulates the strategic goals, structure and process for defining the industry's overall response to Fukushima;

2. Ensure that identified issues are appropriately coordinated between industry organizations and that lead and supporting roles are established; and

3. Monitor the status of action plans on key issues to ensure priorities and schedules are consistent with the strategic plan and that the overall impact on operating plants is balanced and appropriate to the industry's prime focus, excellence in safe operations.

Notes:

1. The development and management of actions plans for identified issues will be implemented under the purview and governance of the lead industry organization.

2. The formation of this steering committee shall in no way diminish the independent roles of the industry support groups as they take the actions necessary to fulfill their missions.

3. The steering committee chairman will assess the continued need for the steering committee at the conclusion of 2011, and every six months thereafter. A report will be made to the leadership of INPO, EPRI and NEI.

Sexton, Kimberly

From:	Nieh, Ho
Sent:	Thursday, June 16, 2011 8:36 AM
To:	Franovich, Mike
Subject:	Re: AWARENESS: Spent fuel pool never went dry in Japan quake - Sacramento News - Local and Breaking Sacramento News | Sacramento Bee

Mike - NYT quotes EDO as saying units 1 2 and 3 are to some extent ex-vessel. Is that correct?

Sent via BlackBerry

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Franovich, Mike
To: Ostendorff, William
Cc: Nieh, Ho; Kock, Andrea
Sent: Thu Jun 16 07:26:22 2011
Subject: AWARENESS: Spent fuel pool never went dry in Japan quake - Sacramento News - Local and Breaking Sacramento News | Sacramento Bee

NRC: Spent fuel pool never went dry in Japan quake

Share
By MATTHEW DALY
Associated Press
Published: Wednesday, Jun. 15, 2011 - 7:15 am
Last Modified: Wednesday, Jun. 15, 2011 - 3:48 pm

WASHINGTON – Water used to cool radioactive waste at the stricken nuclear complex in Japan did not dry up, as earlier feared, U.S. regulators said Wednesday in a reversal of a claim that pitted U.S. officials against Japan in the days following that country's nuclear disaster.

U.S. officials, most notably Nuclear Regulatory Commission Chairman Gregory Jaczko, had warned that all the water was gone from one of the spent fuel pools at Japan's troubled nuclear plant, raising the possibility of widespread nuclear fallout. Loss of cooling water in the reactor core could have exposed highly radioactive spent fuel rods, increasing the threat of a complete fuel meltdown and a catastrophic release of radiation.

Japanese officials denied the pool was dry and reported that the plant's condition was stable.

"I think deep-down there was a belief that you would never see an event like this, that just simply we had done everything to basically take this type of event completely off the table. And obviously, we haven't," Jaczko said.

A final report from the task force is due in mid-July.

Sexton, Kimberly

From: Nieh, Ho
Sent: Thursday, June 16, 2011 9:45 AM
To: Franovich, Mike
Cc: Ostendorff, William; Kock, Andrea
Subject: Fukushima

Mike - did SONGS also declare a UE?

Ho

Sent via BlackBerry

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Sexton, Kimberly

From: Caputo, Annie (EPW) [Annie_Caputo@epw.senate.gov]
Sent: Thursday, July 07, 2011 10:10 AM
To: Nieh, Ho
Subject: Re: FYI

Oh, yeah. I'd like to talk with Cmsr Ostendorff sometime today or tomorrow when he has a few minutes.

From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Thursday, July 07, 2011 09:50 AM
To: Caputo, Annie (EPW)
Subject: RE: FYI

On the day before the Commission meeting.

Ho Nieh
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ho.nieh@nrc.gov

From: Caputo, Annie (EPW) [mailto:Annie_Caputo@epw.senate.gov]
Sent: Thursday, July 07, 2011 8:41 AM
To: Svinicki, Kristine; Magwood, William; Ostendorff, William; Nieh, Ho; Bubar, Patrice; Sharkey, Jeffry
Subject: Fw: FYI

From: Michael Callahan [mailto:mike_callahan@govstrat.com]
Sent: Wednesday, July 06, 2011 10:06 PM
To: Caputo, Annie (EPW)
Subject: FYI

Nuclear Regulatory Commission Chairman Gregory Jaczko to Address the National Press Club July 18

THE NATIONAL
PRESS CLUB

WASHINGTON, July 6, 2011 /PRNewswire-USNewswire/ -- Gregory Jaczko, Chairman of the Nuclear Regulatory Commission, will address the National Press Club at a luncheon on Monday, July 18.

(Logo: http://photos.prnewswire.com/prnh/20080917/NPCLOGO)

Jaczko will talk about lessons learned by the nuclear power industry in the aftermath of Japan's March 11 Fukushima nuclear disaster, which stands as the most serious nuclear accident since the Chernobyl meltdown in 1986. The NRC is scheduled to meet on July 19 to consider a report on the Fukushima disaster and how it pertains to the U.S. nuclear industry.

In May of 2009, President Obama appointed Jaczko chairman of the NRC, where he had served as a commissioner since 2005. Before Fukushima, Jaczko and the commission had been working to reinvigorate the U.S. nuclear sector. Electric utilities had been planning to begin building nuclear plants again after 30 years of inactivity, but in light of the Japan disaster, new questions have arisen.

The July 18 luncheon will begin promptly at 12:30 p.m. and Jaczko's remarks will begin at 1:00, followed by a question-and-answer session. Advance reservations should be made by calling (202) 662-7501 or reservations@press.org. Cost of luncheon admission is $18 for National Press Club members, $29 for their guests and $36 for general admission.

National Press Club Luncheons are webcast live on press.org. Follow the conversation on Twitter using the hashtag #NPCLunch, or on Facebook (facebook.com/PressClubDC) and Twitter (@PressClubDC). Submit questions for speakers in advance and during the live event by sending them to @NPCLunch on Twitter, or email a question in advance, with JACZKO in the subject line, to president@press.org before 10 a.m. on July 18.

Credentialed press may cover this event with proper ID.

The Press Club is on the 13th floor, 529 14th Street, NW, Washington, D.C. Credentialed press may cover this event.

ABOUT THE NATIONAL PRESS CLUB

The National Press Club is the world's leading professional organization for journalists. Founded in 1908, the Club has 3,500 members representing most major news organizations. Each year, the Club holds more than 2,000 events including news conferences, luncheons and panels, and more than 250,000 guests come through its doors.

SOURCE National Press Club

Sexton, Kimberly

From: Nieh, Ho
Sent: Friday, July 08, 2011 10:44 AM
To: Rothschild, Trip
Subject: RE: Monday Lunch

No problem Trip.

Will send appt for another day.

Ho Nieh
Chief of Staff
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U.S. Nuclear Regulatory Commission
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(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Rothschild, Trip
Sent: Friday, July 08, 2011 9:48 AM
To: Nieh, Ho
Subject: Monday Lunch

With a TA brief at 12:30 on Japan Task force, I suggest we move our lunch to another day next week. I am open all week.

Sexton, Kimberly

From: Blanton, Stan [SBLANTON@balch.com]
Sent: Tuesday, July 12, 2011 2:03 PM
To: Nieh, Ho
Subject: Re: ABA Annual Meeting - PUCAT Events

Thanks Ho. Let me know if there are any questions.

Sent from my iPhone

On Jul 12, 2011, at 9:56 AM, "Nieh, Ho" <Ho.Nieh@nrc.gov> wrote:

> Thanks Stan. I will get back to you as soon as possible.
>
> Best wishes,
>
> Ho
>
> Ho Nieh
> Chief of Staff
> Office of Commissioner William C. Ostendorff U.S. Nuclear Regulatory
> Commission
> (301) 415-1811 (office)
> (b)(6) (mobile)
> (301) 415-1757 (fax)
> ho.nieh@nrc.gov
>
>
> -----Original Message-----
> From: Blanton, Stan [mailto:SBLANTON@balch.com]
> Sent: Tuesday, July 12, 2011 10:55 AM
> To: Nieh, Ho
> Subject: FW: ABA Annual Meeting - PUCAT Events
>
> Ho:
>
> For yours and the Commissioners information.
>
> SB
>
> M. Stanford Blanton
> Balch & Bingham LLP
> 1710 Sixth Avenue North
> Birmingham, Alabama 35203-2015
> (205) 226-3417 - Phone
> (205) 488-5879 - Fax
> Download vCard
> www.balch.com
>
> IRS CIRCULAR 230 DISCLOSURE: Unless explicitly stated to the contrary, this communication (including any attachments) is not intended or written to be used, and cannot be used, for the purpose of (i) avoiding penalties under the Internal Revenue Code or (ii) promoting, marketing, or recommending to another party any transaction or matter addressed herein. Click here for more information.

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>
>
>
> -----Original Message-----
> From: Public Utilities, Communications & Transportation Leader
> Discussion [mailto:PUCATLEADERSHIP@MAIL.AMERICANBAR.ORG] On Behalf Of
> Koz, Susan
> Sent: Thursday, May 26, 2011 9:59 AM
> To: PUCATLEADERSHIP@MAIL.AMERICANBAR.ORG
> Subject: ABA Annual Meeting - PUCAT Events
>
> Dear Council Group Members:
>
>
>
> This year's ABA Annual Meeting will be held in Toronto. The Section will meet August 5-6, and our hotel is the Four Seasons.
>
>
>
> On Saturday, August 6, 2:00-3:30 p.m., the Section is sponsoring a CLE program "Nuclear Regulation in North America after Fukushima Daiichi" The Section's Schedule of Events is attached. After the CLE program, we are sponsoring a speed mentoring for young lawyers. Finally, on Saturday, the Section's complimentary reception will be held at the Four Seasons.
>
>
>
> In order to attend the Section's CLE program, you will need to register for the Annual Meeting and purchase individual tickets or a CLE program pass. The early bird registration deadline is May 31, 2011.
>
>
>
> Registration link:
> http://www2.americanbar.org/annual/pages/default.aspx
>
>
>
>
>
> We hope to see you in Toronto. Please let me know if you have any questions or need more information.
>
>
>
>
>
>
>
> Susan Koz
> Director, Section of Public Utility, Communications & Transportation
> Law and Standing Committee on Armed Forces Law American Bar
> Association

> 321 North Clark Street
> Chicago, IL 60654
>
> T: 312.988.5604
> F: 312.988.5572
> susan.koz@americanbar.org <mailto:susan.koz@americanbar.org>
> www.americanbar.org <http://www.americanbar.org>
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> Thank you for your continued interest in this list. A summary of your discussion list subscriptions, including PUCATLEADERSHIP, can be found at http://apps.americanbar.org/elistserv/home.cfm . This new List Subscription Page allows you to manage your lists, as well as join others.
>
> If you have any issues you may either contact the list owner via email: PUCATLEADERSHIP-request@mail.americanbar.org, or the ABA Service Center at phone: 1-800-285-2221 or email: service@americanbar.org .
> _____
>

Sexton, Kimberly

From: Nieh, Ho
Sent: Tuesday, July 12, 2011 9:50 PM
To: Ostendorff, William
Subject: Fw: Inhofe Comments on NRCs 90 Day Post Fukushima Report

Wow.

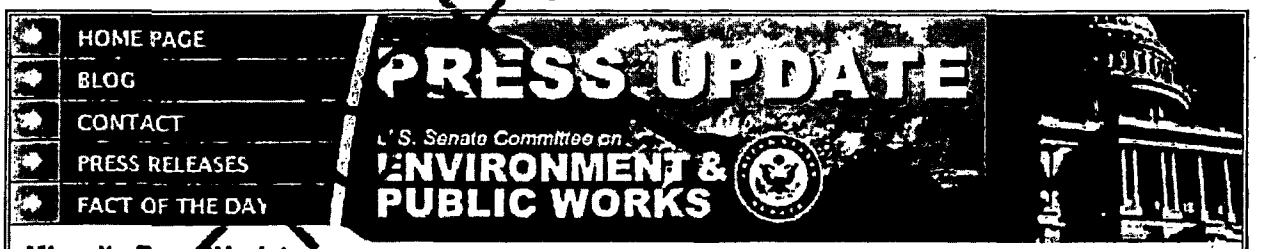
Sent via BlackBerry

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Caputo, Annie (EPW) <Annie_Caputo@epw.senate.gov>
To: Sharkey, Jeffry; Bubar, Patrice; Nieh, Ho
Sent: Tue Jul 12 21:38:07 2011
Subject: FW: Inhofe Comments on NRCs 90 Day Post Fukushima Report

---

From: matt_dempsey@epw.senate.gov [mailto:matt_dempsey@epw.senate.gov]
Sent: Tuesday, July 12, 2011 8:33 PM
To: Caputo, Annie (EPW)
Subject: Inhofe Comments on NRCs 90 Day Post Fukushima Report



Minority Press Update

Inhofe Comments on NRCs 90 Day Post Fukushima Report

Tuesday, July 12, 2011

Contact:

Matt Dempsey matt_dempsey@epw.senate.gov

Katie Brown katie_brown@epw.senate.gov

Inhofe Comments on NRC 90 Day Post Fukushima Report

Link to Press Release

Washington, D.C.-Senator James Inhofe (R-Okla.), Ranking Member of the Senate Committee on Environment and Public Works, commented today on the release of the Nuclear Regulatory Commission's (NRC's) "Near Term Task Force Review of Insights From the Fukushima Daiichi Accident".

"In the wake of the Fukushima accident NRC Chairman Greg Jaczko has assured us repeatedly that our nuclear reactors are safe," Senator Inhofe said. **"Jaczko testified before the EPW Committee in April saying, 'we believe that plants in the United States continue to operate safely' and he reaffirmed this statement again in his testimony in June. So why has the NRC suddenly recommended sweeping regulatory changes in this report apparently without an adequate technical or regulatory basis to justify these modifications? Even the task force acknowledges in the report that its understanding of the accident has been constrained by the fact that key information was, "...in many cases, unavailable, unreliable, or ambiguous..." Only last month, NRC staff admitted that the Fukushima Daiichi spent fuel pools were believed to be intact, contrary to Chairman Jaczko's testimony before Congress March 16 that at least one of the pools had lost most if not all of its water.**

"Also, a nuclear accident in Japan should not automatically be viewed as an indictment of U.S. institutional structures and nuclear safety requirements. Our regulatory systems and culture are fundamentally different, most notably with the establishment in the United States of the NRC early in the industry's history whose sole focus is to regulate the safe use of nuclear materials. A systematic and methodical regulatory comparison should determine if there are differences that either indicate necessary safety enhancements or provide added confidence that our nuclear safety regime adequately protects public health and safety. Changes in our system may be necessary, but sweeping revisions are premature without first taking into account the full extent of the differences between the United States' and Japan's nuclear safety regulations.

"Nuclear energy accounts for roughly 20% of US electricity generation — it is essential for providing reliable, clean energy for America. As this report comes to light, I am concerned that it will become another weapon in the Obama Administration's attack on affordable energy, or an excuse to unleash a regulatory agenda that will only harm our economy."

Sexton, Kimberly

From: Nieh, Ho
Sent: Wednesday, July 13, 2011 9:27 AM
To: 'Blanton, Stan'
Cc: Herr, Linda
Subject: RE: ABA Annual Meeting - PUCAT Events

My pleasure.

Regards,

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

-----Original Message-----
From: Blanton, Stan [mailto:SBLANTON@balch.com]
Sent: Wednesday, July 13, 2011 9:26 AM
To: Nieh, Ho
Cc: Herr, Linda
Subject: RE: ABA Annual Meeting - PUCAT Events

Ho:

I very much appreciate the Commissioner's and your consideration. Thanks for getting back to me so promptly.

SB

M. Stanford Blanton
Balch & Bingham LLP
1710 Sixth Avenue North
Birmingham, Alabama 35203-2015
(205) 226-3417 - Phone
(205) 488-5879 - Fax
Download vCard
www.balch.com

-----Original Message-----
From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Wednesday, July 13, 2011 8:25 AM
To: Blanton, Stan
Cc: Herr, Linda
Subject: RE: ABA Annual Meeting - PUCAT Events

Dear Stan,

We looked at Commissioner Ostendorff's schedule and unfortunately, he will not be able to support your event on August 6.

We very much appreciate the invitation and hope that you will keep Commissioner Ostendorff in mind for future speaking opportunities with your group.

Best wishes,

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

-----Original Message-----
From: Blanton, Stan [mailto:SBLANTON@balch.com]
Sent: Tuesday, July 12, 2011 2:03 PM
To: Nieh, Ho
Subject: Re: ABA Annual Meeting - PUCAT Events

Thanks Ho. Let me know if there are any questions.

Sent from my iPhone

On Jul 12, 2011, at 9:56 AM, "Nieh, Ho" <Ho.Nieh@nrc.gov> wrote:

> Thanks Stan. I will get back to you as soon as possible.
>
> Best wishes,
>
> Ho
>
> Ho Nieh
> Chief of Staff
> Office of Commissioner William C. Ostendorff U.S. Nuclear Regulatory
> Commission
> (301) 415-1811 (office)
> (b)(6) (mobile)
> (301) 415-1757 (fax)

> ho.nieh@nrc.gov
>
>
> -----Original Message-----
> From: Blanton, Stan [mailto:SBLANTON@balch.com]
> Sent: Tuesday, July 12, 2011 10:55 AM
> To: Nieh, Ho
> Subject: FW: ABA Annual Meeting - PUCAT Events
>
> Ho:
>
> For yours and the Commissioners information.
>
> SB
>
> M. Stanford Blanton
> Balch & Bingham LLP
> 1710 Sixth Avenue North
> Birmingham, Alabama 35203-2015
> (205) 226-3417 - Phone
> (205) 488-5879 - Fax
> Download vCard
> www.balch.com
>

>
>
>
> -----Original Message-----
> From: Public Utilities, Communications & Transportation Leader
> Discussion [mailto:PUCATLEADERSHIP@MAIL.AMERICANBAR.ORG] On Behalf Of
> Koz, Susan
> Sent: Thursday, May 26, 2011 9:59 AM
> To: PUCATLEADERSHIP@MAIL.AMERICANBAR.ORG
> Subject: ABA Annual Meeting - PUCAT Events
>
> Dear Council Group Members:
>
>
>
> This year's ABA Annual Meeting will be held in Toronto. The Section will meet August 5-6, and our hotel is the Four Seasons.
>
>
>
> On Saturday, August 6, 2:00-3:30 p.m., the Section is sponsoring a CLE program "Nuclear Regulation in North America after Fukushima Daiichi" The Section's Schedule of Events is attached. After the CLE

program, we are sponsoring a speed mentoring for young lawyers. Finally, on Saturday, the Section's complimentary reception will be held at the Four Seasons.
>
>
>
> In order to attend the Section's CLE program, you will need to register for the Annual Meeting and purchase individual tickets or a CLE program pass. The early bird registration deadline is May 31, 2011.
>
>
>
> Registration link:
> http://www2.americanbar.org/annual/pages/default.aspx
>
>
>
>
>
> We hope to see you in Toronto. Please let me know if you have any questions or need more information.
>
>
>
>
>
>
>
> Susan Koz
> Director, Section of Public Utility, Communications & Transportation
> Law and Standing Committee on Armed Forces Law American Bar
> Association
> 321 North Clark Street
> Chicago, IL 60654
>
> T: 312.988.5604
> F: 312.988.5572
> susan.koz@americanbar.org <mailto:susan.koz@americanbar.org>
> www.americanbar.org <http://www.americanbar.org>
>
>
>
>
> _____
> Thank you for your continued interest in this list. A summary of your discussion list subscriptions, including PUCATLEADERSHIP, can be found at http://apps.americanbar.org/elistserv/home.cfm . This new List Subscription Page allows you to manage your lists, as well as join others.
>
> If you have any issues you may either contact the list owner via email: PUCATLEADERSHIP-request@mail.americanbar.org, or the ABA Service Center at phone: 1-800-285-2221 or email: service@americanbar.org .
> _____
>

Sexton, Kimberly

From: Dave Lochbaum [DLochbaum@ucsusa.org]
Sent: Wednesday, July 13, 2011 12:10 PM
To: OPA Resource
Subject: NRC Near-Term Task Force meetings with INPO

Good Day:

On page 2 of the July 12, 2011, report by the NRC's Near Term Task Force, it states that "members of the Task Force met with representatives of the Institute of Nuclear Power Operations to gather information on the industry's post-Fukushima actions."

I searched ADAMS and did not find any public meeting notices or public meeting summaries of the cited meetings between NRC staff and INPO.

Were these meetings conducted in accordance with Management Directive 3.5?

Later on page 2, the report stathes that the task force's efforts were guided by the NRC's Principles of Good Regulation. One of those principles - one not followed by the task force - involves openness. The NRC's website says this about that principle: "Nuclear regulation is the public's business, and it must be transacted publicly and candidly. The public must be informed about and have the opportunity to participate in the regulatory processes as required by law."

Since the public, unlike INPO, was not given an oportunity to meet with the near term task force, does the NRC believe it even came close to meeting this Principle of Good Regulation?

Thanks,
David Lochbaum
Director, Nuclear Safety Project
Union of Concerned Scientists
PO Box 15316
Chattanooga, TN 37415
(423) 468-9272 office
(b)(6) cell
dlochbaum@ucsusa.org

Check out the UCS blog at nuclear weapons and nuclear power issues, including a weekly series called "Fission Stories" at http://allthingsnuclear.org/

Founded in 1969, the Union of Concerned Scientists is an independent, science-based nonprofit working for a healthy environment and a safer world.

Sexton, Kimberly

From: Herr, Linda
Sent: Thursday, July 14, 2011 9:43 AM
To: HAYES, Richiey
Cc: Nieh, Ho; Franovich, Mike
Subject: RE: Directions

Importance: High

Morning Richiey:

FYI – Ho Nieh and/or Mike Franovich will be meeting Cmr. Ostendorff at NEI tomorrow morning – both Ho and/or Mike will pick up the parking pass from you and wait for Cmr. Ostendorff at the street level to give to him when he arrives at the garage, ok???

Commissioner said last time he was there it was a little confusing trying to find the parking garage – any hints on what he should look for (i.e., garage name or placard on the bldg, etc) please be specific.

Many thanks!
Linda
301-415-1759

From: HAYES, Richiey [mailto:slh@nei.org]
Sent: Wednesday, July 13, 2011 1:09 PM
To: Herr, Linda
Subject: RE: Directions

I'm sorry Linda, the meeting is the Fukushima Steering Group meeting. It begins at 8 am – 2:30pm. Tony said that he would send something to Mr. Nieh (agenda items and participants) in advance of the meeting.

The meeting will be in conference room 3A/B, he will have to sign in.

Let me know if you need anything else.

Rich

Richiey Hayes
Senior Administrative Assistant
to the Chief Nuclear Officer
Nuclear Generation

Nuclear Energy Institute
1776 I Street NW, Suite 400
Washington, DC 20006
www.nei.org

P: 202.739.8029
F: 202.533.0115
(b)(6)
E: slh@nei.org

From: Herr, Linda [mailto:Linda.Herr@nrc.gov]
Sent: Wednesday, July 13, 2011 1:02 PM
To: HAYES, Richiey
Subject: RE: Directions
Importance: High

Thanks Richiey... could you please tell me what the meeting is called and what timeframe I need to schedule; who he's meeting with; room number or will someone meet him in the lobby... does he need to go thru Security?

Linda

From: HAYES, Richiey [mailto:slh@nei.org]
Sent: Wednesday, July 13, 2011 12:23 PM
To: Herr, Linda
Subject: Directions

Linda, below are the directions from the NRC to NEI. As for parking, we can validate. Just have him call me when he arrives and I'll meet him with the sticker.

Richiey

Richiey Hayes
Senior Administrative Assistant
to the Chief Nuclear Officer
Nuclear Generation

Nuclear Energy Institute
1776 I Street NW, Suite 400
Washington, DC 20006
www.nei.org

P: 202.739.8029
F: 202.533.0115
E: slh@nei.org

MapQuest directions have been sent to you by richieygrl@yahoo.com.
From: 11555 Rockville Pike, Rockville, MD 20852-2746 US
To: 1776 I St NW, Washington, DC 20006-3700 US

DRIVING DIRECTIONS

A) 11555 Rockville Pike, Rockville, MD 20852-2746 US

---

1. Start out going NORTH on ROCKVILLE PIKE/MD-355 N toward MARINELLI RD. (go 0.04 miles)
2. Make a U-TURN at MARINELLI RD onto ROCKVILLE PIKE/MD-355 S.
   - If you reach MD-187 you've gone about 0.1 miles too far

(go 2.08 miles)

3. Merge onto I-495 E/CAPITAL BELTWAY/I-495 INNERLOOP via the ramp on the LEFT toward BALTIMORE/SILVER SPRING. (go 1.51 miles)
4. Merge onto MD-185 S/CONNECTICUT AVE via EXIT 33 toward CHEVY CHASE. (go 2.72 miles)
5. Enter next roundabout and take the 4th exit onto CONNECTICUT AVE NW (Crossing into DISTRICT OF COLUMBIA). (go 5.02 miles)
6. CONNECTICUT AVE NW becomes 17TH ST NW. (go 0.09 miles)
7. Turn RIGHT onto I ST NW/EYE ST NW.
- I ST NW is just past K ST NW
(go 0.1 miles)
8. 1776 I ST NW is on the LEFT.
- If you reach 18TH ST NW you've gone a little too far
(go 0 miles)

B) 1776 I St NW, Washington, DC 20006-3700 US

>> TOTAL ESTIMATED TIME: 31 minutes | DISTANCE: 11.55 miles

nuclear

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nuclear

FOLLOW US ON

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Sent through mail.messaging.microsoft.com

Sexton, Kimberly

From: Nieh, Ho
Sent: Friday, July 15, 2011 5:17 AM
To: Caputo, Annie (EPW)
Subject: RE: Inhofe Asks Jaczko Why Task Force Report Not Focused on Accident in Japan

Thanks Annie.

Some crazy stuff going on here these days.

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Caputo, Annie (EPW) [Annie_Caputo@epw.senate.gov]
Sent: Wednesday, July 13, 2011 10:27 PM
To: Sharkey, Jeffry; Nieh, Ho; Bubar, Patrice
Subject: Fw: Inhofe Asks Jaczko Why Task Force Report Not Focused on Accident in Japan

From: matt_dempsey@epw.senate.gov [mailto:matt_dempsey@epw.senate.gov]
Sent: Wednesday, July 13, 2011 07:15 PM
To: Caputo, Annie (EPW)
Subject: Inhofe Asks Jaczko Why Task Force Report Not Focused on Accident in Japan

[http://epw.senate.gov/public/_images/release/btn_homepage.gif]<http://epw.senate.gov>
[http://epw.senate.gov/public/_images/release/btn_blog.gif]<http://epw.senate.gov/public/index.cfm?FuseAction=Minority.Blogs>
[http://epw.senate.gov/public/_images/release/btn_contact.gif]<http://epw.senate.gov/public/index.cfm?FuseAction=ContactUs.ContactForm>
[http://epw.senate.gov/public/_images/release/btn_pressreleases.gif]<http://epw.senate.gov/public/index.cfm?FuseAction=Minority.PressReleases>
[http://epw.senate.gov/public/_images/release/btn_fact.gif]<http://epw.senate.gov/public/index.cfm?FuseAction=Minority.Facts>
[http://epw.senate.gov/public/_images/release/img_pressupdate.gif]
[http://epw.senate.gov/public/_images/release/header.jpg]

Inhofe Asks Jaczko Why Task Force Report Not Focused on Accident in Japan Wednesday, July 13, 2011

Contacts:

Matt Dempsey Matt_Dempsey@epw.senate.gov<mailto:Matt_Dempsey@epw.senate.gov> (202) 224-9797

Katie Brown Katie_Brown@epw.senate.gov<mailto:Katie_Brown@epw.senate.gov> (202) 224-2160

Inhofe Asks Jaczko Why Task Force Report Not Focused on Accident in Japan

Chairman Jaczko refuses to conduct a study of the differences between Japanese and US regulatory systems because it is 'difficult and time-consuming'

Link to Press Release<http://epw.senate.gov/public/index.cfm?FuseAction=Minority.PressReleases&ContentRecord_id=25b1be80-802a-23ad-4500-ec296f507ae3&Region_id=&Issue_id=>

Link to July 8 letter from Inhofe to Jaczko<http://epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=ff9ede58-3463-435a-b883-63a377254644>

Washington, D.C.-Senator James Inhofe (R-Okla.), Ranking Member of the Senate Committee on Environment and Public Works, commented on his conversation today with Nuclear Regulatory Commission (NRC) Chairman, Greg Jaczko, concerning the NRC's report just released publically, "Near Term Task Force Review of Insights From the Fukushima Daiichi Accident". During the discussion, Senator Inhofe had the opportunity to ask the Chairman about a letter he had sent to him on July 8, in which he asked that the NRC conduct a full and systematic review of the differences in the regulatory systems of the United States and Japan before moving forward with sweeping regulatory changes. Chairman Jaczko replied that such an endeavor would be "difficult and time-consuming."

"I appreciate Chairman Jaczko taking the time to speak to me about the NRC task force report, but after our discussion I am even more concerned about the NRC's regulatory agenda going forward," Senator Inhofe said. "Up until it was released, I was under the strong impression that the report would focus on lessons for the United States regarding the nuclear accident in Japan - even the report's title suggests this. Instead it focuses almost completely on potential disasters in the United States and how they might affect our reactors. This is certainly not what we were led to believe it would be, especially considering that our plants are already required to be designed to withstand natural disasters."

"In a letter dated July 8, I asked Chairman Jaczko to make sure that the NRC engages in a thorough study of the fundamental differences between the regulatory systems of Japan and the United States. But instead, the NRC is poised to overhaul our regulatory system without having the full picture of what happened in Japan and without a clear understanding of our regulatory differences. When I asked Chairman Jaczko again today if the NRC would be willing to engage in this study, he refused saying that such an undertaking would be 'difficult and time-consuming.'

"If safety were truly the priority, the NRC would focus on learning lessons from the accident in Japan to determine whether these recommendations are the right ones. Instead, it is clear that this is just another case of 'regulate first, ask questions later' in an effort to stifle nuclear power and drive up the cost of energy for all Americans."

Inhofe EPW Press Blog<http://www.epw.senate.gov/public/index.cfm?FuseAction=Minority.Blogs> | YouTube<http://www.youtube.com/user/JimInhofePressOffice> | Twitter<http://twitter.com/inhofepress> | Facebook<http://www.facebook.com/pages/Senator-Jim-Inhofe/55018699421?ref=search&sid=516374791.190659610..1> | Podcast<http://epw.senate.gov/public/index.cfm?FuseAction=Minority.AudioVideo>

###

Sexton, Kimberly

From: Nieh, Ho
Sent: Friday, July 15, 2011 5:18 AM
To: Ostendorff, William; Franovich, Mike
Subject: GBJ discussion w/ Inhofe

Inhofe Asks Jaczko Why Task Force Report Not Focused on Accident in Japan

Posted 07/14/2011 01:35 PM ET

Jul 14, 2011 (Congressional Documents and Publications/ContentWorks via COMTEX) --Washington, D.C.- Senator James Inhofe (R-Okla.), Ranking Member of the Senate Committee on Environment and Public Works, commented on his conversation today with Nuclear Regulatory Commission (NRC) Chairman, Greg Jaczko, concerning the NRC's report just released publically, "Near Term Task Force Review of Insights From the Fukushima Daiichi Accident". During the discussion, Senator Inhofe had the opportunity to ask the Chairman about a letter he had sent to him on July 8, in which he asked that the NRC conduct a full and systematic review of the differences in the regulatory systems of the United States and Japan before moving forward with sweeping regulatory changes. Chairman Jaczko replied that such an endeavor would be "difficult and time consuming."

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"If safety were truly the priority, the NRC would focus on learning lessons from the accident in Japan to determine whether these recommendations are the right ones. Instead, it is clear that this is just another case of 'regulate first, ask questions later' in an effort to stifle nuclear power and drive up the cost of energy for all Americans."

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

Sexton, Kimberly

From: Nieh, Ho
Sent: Friday, July 15, 2011 8:11 AM
To: 'slh@nei.org'
Cc: 'arp@nei.org'
Subject: We are here

Hi Richie - we are here. Can you let Tony know?

We are early. We can wait until 830 or start whenever they are ready.

Thanks.

Sent via BlackBerry

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: HAYES, Richiey <slh@nei.org>
To: Herr, Linda
Cc: Nieh, Ho; Franovich, Mike
Sent: Thu Jul 14 09:51:54 2011
Subject: RE: Directions

Linda,

I've given the parking stickers to Tony; he'll give them to Cmr. Ostendorff when he arrives in our offices. The way our parking works is that when a guest arrives the parking attendants will valet his car and give him a claim ticket. He will bring the ticket with him into the office and Tony will give him the parking stickers to adhere to the back of the ticket.

When the commissioner leaves he will give the parking attendants his ticket, they will retrieve his car and he will not pay a penny unless he chooses to tip them.

Richiey

Richiey Hayes
Senior Administrative Assistant
to the Chief Nuclear Officer
Nuclear Generation

Nuclear Energy Institute
1776 I Street NW, Suite 400
Washington, DC 20006
www.nei.org

P: 202.739.8029

F: 202.533.0115
E: slh@nei.org

From: Herr, Linda [mailto:Linda.Herr@nrc.gov]
Sent: Thursday, July 14, 2011 9:43 AM
To: HAYES, Richiey
Cc: Nieh, Ho; Franovich, Mike
Subject: RE: Directions
Importance: High

Morning Richiey:

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Many thanks!
Linda
301-415-1759

From: HAYES, Richiey [mailto:slh@nei.org]
Sent: Wednesday, July 13, 2011 1:09 PM
To: Herr, Linda
Subject: RE: Directions

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The meeting will be in conference room 3A/B, he will have to sign in.

Let me know if you need anything else.

Rich

Richiey Hayes
Senior Administrative Assistant
to the Chief Nuclear Officer
Nuclear Generation

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P: 202.739.8029

F: 202.533.0115
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E: slh@nei.org

From: Herr, Linda [mailto:Linda.Herr@nrc.gov]
Sent: Wednesday, July 13, 2011 1:02 PM
To: HAYES, Richiey
Subject: RE: Directions
Importance: High

Thanks Richiey... could you please tell me what the meeting is called and what timeframe I need to schedule; who he's meeting with; room number or will someone meet him in the lobby... does he need to go thru Security?

Linda

From: HAYES, Richiey [mailto:slh@nei.org]
Sent: Wednesday, July 13, 2011 12:23 PM
To: Herr, Linda
Subject: Directions

Linda, below are the directions from the NRC to NEI. As for parking, we can validate. Just have him call me when he arrives and I'll meet him with the sticker.

Richiey

Richiey Hayes
Senior Administrative Assistant
to the Chief Nuclear Officer
Nuclear Generation

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Washington, DC 20006
www.nei.org

P: 202.739.8029
F: 202.533.0115
E: slh@nei.org

MapQuest directions have been sent to you by richieygrl@yahoo.com.
From: 11555 Rockville Pike, Rockville, MD 20852-2746 US
To: 1776 I St NW, Washington, DC 20006-3700 US

DRIVING DIRECTIONS

A) 11555 Rockville Pike, Rockville, MD 20852-2746 US

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1. Start out going NORTH on ROCKVILLE PIKE/MD-355 N toward MARINELLI RD. (go 0.04 miles)
2. Make a U-TURN at MARINELLI RD onto ROCKVILLE PIKE/MD-355 S.
- If you reach MD-187 you've gone about 0.1 miles too far
(go 2.08 miles)
3. Merge onto I-495 E/CAPITAL BELTWAY/I-495 INNERLOOP via the ramp on the LEFT toward BALTIMORE/SILVER SPRING. (go 1.51 miles)
4. Merge onto MD-185 S/CONNECTICUT AVE via EXIT 33 toward CHEVY CHASE. (go 2.72 miles)
5. Enter next roundabout and take the 4th exit onto CONNECTICUT AVE NW (Crossing into DISTRICT OF COLUMBIA). (go 5.02 miles)
6. CONNECTICUT AVE NW becomes 17TH ST NW. (go 0.09 miles)
7. Turn RIGHT onto I ST NW/EYE ST NW.
- I ST NW is just past K ST NW
(go 0.1 miles)
8. 1776 I ST NW is on the LEFT.
- If you reach 18TH ST NW you've gone a little too far
(go 0 miles)

B) 1776 I St NW, Washington, DC 20006-3700 US

>> TOTAL ESTIMATED TIME: 31 minutes | DISTANCE: 11.55 miles

nuclear

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Sexton, Kimberly

From: Nieh, Ho
Sent: Tuesday, July 19, 2011 8:51 AM
To: Ostendorff, William
Cc: Franovich, Mike; Kock, Andrea; Sexton, Kimberly
Subject: FW: NGO letter regarding Task Force's recommendations
Attachments: 20110719-ngo-group-letter-to-nrc.pdf

Sir – may want to do a quick read of this for awareness.

Ho

Ho Nieh
Chief of Staff
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(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Dave Lochbaum [mailto:DLochbaum@ucsusa.org]
Sent: Tuesday, July 19, 2011 8:17 AM
To: CHAIRMAN Resource; CMRSVINICKI Resource; CMRAPOSTOLAKIS Resource; CMRMAGWOOD Resource; CMROSTENDORFF Resource
Subject: NGO letter regarding Task Force's recommendations

Good Morning:

On behalf of 15 national, regional, and local public interest groups, I am submitting the attached electronic copy of a letter regarding the Task Force's recommendations. Hard copies of this letter will be in the mail today.

Thanks,

David Lochbaum
Director, Nuclear Safety Project
Union of Concerned Scientists
PO Box 15316
Chattanooga, TN 37415
(423) 468-9272 office
(b)(6)
dlochbaum@ucsusa.org

July 19, 2011

Gregory B. Jaczko, Chair
Kristine L. Svinicki, Commissioner
William D. Magwood IV, Commissioner
George Apostolakis, Commissioner
William C. Ostendorff, Commissioner

Dear Commissioners:

We the undersigned respectfully urge you to provide the NRC staff with the resources and direction necessary to fully implement the recommendations from the July 12, 2011, report by the Near-Term Task Force titled "Enhancing Reactor Safety in the 21st Century" as expeditiously as possible. Based on its assessment of the accident at Fukushima Daiichi and its consequences, the Task Force made numerous recommendations to better protect the American public from low probability, high consequence events by reducing vulnerabilities at U.S. reactors and upgrading mitigation measures. While we have significant concerns about the scope of the review undertaken and the adequacy of some of its recommendations, the Task Force's report provides a starting point for improving nuclear safety in the U.S. and should be acted upon by the Commission. Now that these issues have been identified and their resolution outlined, Americans are unnecessarily at elevated risk until the NRC successfully implements these recommendations.

We recognize and appreciate that the scope and complexity of some recommendations means they will take some time to address, even if the full resources of the agency were applied to that effort. We understand that the recommendations made by the NRC's 90-day review cannot be implemented within 90 days. We request that you set a deadline for the adoption of each recommendation, and take appropriate steps to ensure that robust public participation is an intrinsic element of this process. We also suggest you consider how you might answer the following question from Congress when scheduling these deadlines:

> *Commissioner, wasn't the safety issue that led to this accident specifically raised by the Task Force in July 2011? Why had you not resolved that very issue by the time _____ occurred?*

If you have an honest, solid answer, you will be able to look the Congress and the American public in the eyes and say that you took every reasonable action to protect against the tragic outcome. But when such an answer is lacking, there is clearly work to be done with deliberate haste to prevent the low probability event from causing its high consequences.

We commend the Task Force for dedicating their report to the people of Japan, especially those who responded to the accident at Fukushima. The Task Force concluded its dedication with this expression:

> *It is our strong desire and our goal to take the necessary steps to assure that the result of our labors will prevent the need for a repetition of theirs.*

We admire and respect this sentiment. Now it's time for the Commission to do its part and take the steps necessary for this commendable goal to be achieved.

Sincerely (arranged alphabetically by organization name),

Rochelle Becker, Executive Director
Alliance for Nuclear Responsibility
PO Box 1328
San Luis Obispo, CA 93406

Sandra Gavutis
Executive Director
C-10 Foundation
44 Merrimac St.
Newburyport, MA 01985

Deb Katz
Executive Director
Citizens Awareness Network
P.O. Box 83
Shelburne Fall, MA 01370

Michael J. Keegan
Don't Waste Michigan
PO Box 463
Monroe, Michigan 48161

Ray Shadis
Executive Director
Earth Day Commitment
Friends of the Coast-Opposing Nuclear Pollution
Post Office Box 98
Edgecomb, Maine 04556.

Jim Riccio
Greenpeace
Washington, DC

Manna Jo Greene, Environmental Director
Hudson River Sloop Clearwater, Inc.
724 Wolcott Ave.
Beacon, NY 12508

Geoffrey H. Fettus
Senior Project Attorney
Natural Resources Defense Council

Edward Childs, President
New England Coalition on Nuclear Pollution
Post Office Box 545
Brattleboro, Vermont 05302

Jim Warren, Executive Director
North Carolina Waste Awareness & Reduction
Network (NC WARN)
Durham, NC

David A. Kraft, Director
Nuclear Energy Information Service (NEIS)
3411 W. Diversey #16
Chicago, IL 60647

Michele Boyd
Physicians for Social Responsibility
Washington, DC

Phillip Musegaas, Esq.
Hudson River Program Director
Riverkeeper, Inc.
20 Secor Road
Ossining, NY 10562

Jane Swanson, spokesperson
San Luis Obispo Mothers For Peace
San Luis Obispo, CA

David Lochbaum
Director, Nuclear Safety Project
Union of Concerned Scientists
PO Box 15316
Chattanooga, TN 37415

Sexton, Kimberly

From: Nieh, Ho
Sent: Wednesday, July 20, 2011 11:44 AM
To: Ostendorff, William
Cc: Franovich, Mike
Subject: RE: TF recommendations and timetable to respond

Sir, I had a good discussion off the record with Phillip. Provided the points we discussed.

He did not have a deadline set for an editorial.

He was aware of the drama surrounding the SECY paper and said that the EDO's views appeared to be absent.

Ho

Ho Nieh
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From: Boffey, Philip [mailto:phboff@nytimes.com]
Sent: Tuesday, July 19, 2011 3:14 PM
To: Ostendorff, William
Cc: Franovich, Mike; Nieh, Ho
Subject: TF recommendations and timetable to respond

Hi Mr. Ostendorff and key aides:

You may recall that I interviewed you on background in Rockville three months ago. These questions, too, can be answered on background.

I need to write an editorial -- possibly on Wednesday or possibly later in the week -- focusing on the Task Force's 90-day report and what if anything the Commission should do in response to it.

Could you give me some quick impressions as to whether you think the task force recommendations should be approved more or less as they are now or require much more rigorous analysis before moving forward, as the industry contends.

Also, your thoughts on Chairman Yaczko's proposed 90-day period for the commission to vote on the task force recommendations. Is that feasible, or not?

I realize that more information needs to be gathered about the Fukushima incident and from stakeholders at further meetings but I assume you have heard enough by now to have at least preliminary thoughts on what the commission should do in response to the TF report, and on what timetable..

Thanks for any help you can give,

Philip M. Boffey
Editorial Writer
The New York Times
620 Eighth Avenue
New York, N.Y. 10018
Phone: (212) 556-4485

Fax: 212-556-3815
Email: phboff@nytimes.com

Sexton, Kimberly

From: Nieh, Ho
Sent: Monday, July 25, 2011 9:15 AM
To: Mamish, Nader
Cc: Bozin, Sunny; Herr, Linda
Subject: Task Force report

Nader – can someone in OEDO bring up a clean, bound copy of the TF report?

Thanks.

Ho

Ho Nieh
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Sexton, Kimberly

From:	Nieh, Ho
Sent:	Wednesday, July 27, 2011 7:29 AM
To:	Ostendorff, William; Franovich, Mike; Sexton, Kimberly; Kock, Andrea
Subject:	Call for House E&C hearing on TF report
Attachments:	Tab D 07-21-11 Congress to Rep.Upton 11-0431.pdf

FYI – Reps. Waxman, Rush, Green requesting Upton schedule a hearing on TF report.

Also signals support for GBJ roadmap.

Ho

Ho Nieh
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FRED UPTON, MICHIGAN
CHAIRMAN

HENRY A. WAXMAN, CALIFORNIA
RANKING MEMBER

ONE HUNDRED TWELFTH CONGRESS

Congress of the United States

House of Representatives

COMMITTEE ON ENERGY AND COMMERCE
2125 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515–6115

Majority (202) 225–2927
Minority (202) 226–3641

July 21, 2011

The Honorable Fred Upton
Chairman
Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Upton:

Last week, the Nuclear Regulatory Commission's Japan task force released a report summarizing its review of America's nuclear reactors and their ability to respond to a catastrophic event like the one that struck Japan in March. We are writing to request that you schedule a hearing on this report as soon as possible.

The task force found that "a sequence of events like the Fukushima accident is unlikely to occur in the United States."[1] The task force also concluded that "continued operation and continued licensing activities do not pose an imminent risk to public health and safety."[2] While this is good news, it does not provide an assurance of public safety. After all, the catastrophic events in Japan were unlikely but occurred nonetheless.

The task force appears to agree, concluding that NRC and the nuclear power industry need to do more to prevent or respond to events of low likelihood and high consequence, such as a prolonged loss of power resulting from a severe natural disaster. Such events pose an unacceptable risk to public health and safety should they occur.

[1] Nuclear Regulatory Commission, Near-Term Task Force, *Recommendations for Enhancing Reactor Safety in the 21st Century: The Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident* (July 12, 2011) at vii.

[2] *Id.*

The task force report includes 12 recommendations to strengthen safety requirements at nuclear power plants and, in effect, redefine what NRC considers an adequate level of protection. For example:

- The task force recommends that the NRC require licensees to reevaluate the seismic and flooding hazards at their sites and upgrade their reactors, as necessary, to protect against these hazards.[3]

- The task force recommends that the NRC strengthen the ability of nuclear reactors to cope with an extended loss of power, as occurred in Japan, and to pre-plan and pre-stage offsite resources to allow for core and spent fuel cooling during prolonged blackout conditions.[4]

- The task force recommends that NRC require that nuclear power plants install a seismically-qualified means to spray water into the spent fuel pools and improve their ability to monitor conditions in spent fuel pools if all power is lost.[5]

Chairman Gregory Jaczko has outlined a "road map" for Commission decision-making in order to obtain, in a timely manner, stakeholder input on the task force's recommendations. His stated goal is to provide clear Commission direction on each of the task force's recommendations within 90 days. He also has called on NRC and the nuclear industry to commit to implementing all lessons from the Fukushima accident within five years, half as long as it took the industry to implement improvements following the September 11 attacks.[6] That is a reasonable timeline given the potentially grave risks of delay.

[3] *Id.* at 30.

[4] *Id.* at 37-38.

[5] *Id.* at 45-46.

[6] Nuclear Regulatory Commission, *Remarks as Prepared for Delivery by Chairman Gregory B. Jaczko on Fukushima and U.S. Nuclear Safety at National Press Club, Washington, D.C.* (July 18, 2011).

During Committee consideration of H.R. 2401 on July 12, 2011, you mentioned that you had been briefed on the task force's recommendations and assured the Committee that we would "entertain those recommendations" in order to "learn constructively" from the events in Japan.[7] We agree that the Committee needs to hear from the task force members about their recommendations and the reasons for making them.

We urge you to schedule a hearing as soon as possible.

Sincerely,

Henry A. Waxman
Ranking Member

Bobby L. Rush
Ranking Member
Subcommittee on Energy
and Power

Gene Green
Ranking Member
Subcommittee on Environment
and the Economy

cc: The Honorable Ed Whitfield
Chairman
Subcommittee on Energy
and Power

The Honorable John Shimkus
Chairman
Subcommittee on Environment
and the Economy

[7] House Committee on Energy and Commerce, Remarks of Chairman Fred Upton, *Markup on H.R. 2401, the Transparency in Regulatory Analysis of Impacts on the Nation Act of 2011* (July 12, 2011).

Sexton, Kimberly

From: Nieh, Ho
Sent: Wednesday, July 27, 2011 7:34 AM
To: Ostendorff, William; Franovich, Mike; Kock, Andrea; Sexton, Kimberly
Subject: NYT - Fukushima and SFPs

Nothing new or surprising in here...note Marv's quote on 50-mile decision.

July 26, 2011, *5:50 pm*

Spent Fuel Pools as a Bright Spot in Fukushima's Crisis

By MATTHEW L. WALD

Politics & Policy

The staff of the Nuclear Regulatory Commission recently produced a list of safety improvements that might be undertaken at American nuclear plants in light of the Fukushima disaster in Japan. On Tuesday, the nuclear industry focused on two elements that were conspicuous by their absence.

In a presentation to Wall Street analysts, Marvin Fertel, the president and chief executive of the Nuclear Energy Institute, emphasized that spent fuel pools at the Fukushima Daiichi plant had "survived the accident quite well."

Early in the crisis, which began with an earthquake and tsunami on March 11, American regulators feared that water in one of the pools had almost completely boiled off, and the American Embassy in Tokyo advised Americans to stay 50 miles away. But "the pools may turn out to be a much better story at Fukushima than people envisioned," Mr. Fertel said.

Noting that fuel pools at American reactors have far more radioactive material in them than the ones at Fukushima, the accident focused new attention on the idea of moving spent fuel out of the pools and into dry casks, Something already done at most American reactors when they run out of space.

That idea first came to prominence after the terrorist attacks of Sept. 11, 2001.

But the Nuclear Regulatory Commission staff's report does not call for moving more of the fuel.

When the commission received an oral report from a six-member "task force" it appointed to study the safety implications of Fukushima, one commissioner, William C. Ostendorff, said he had received letters from members of Congress asking for wider use of the casks, however.

But Charles L. Miller, who led the task force, replied that removing the fuel would not do much to reduce the basic problem, which is that fuel rods remain in the pool, and if cooling is knocked out, the water that provides protection against melting and the release of radioactive materials will boil away.

"Before you can take it out of the pool, it has to be at least five years old, and by that time, we call it, for lack of a better word, cold fuel," Mr. Miller said.

At the briefing on Tuesday, Mr. Fertel mentioned other recommendations from the task force, including better instruments for altering operators to how much water is in the pools and new ways of adding water in an emergency. Pulling more fuel out, he said, would provide certain advantages but is also certain to expose workers to radiation in the course of the transfer.

Fukushima used dry casks as well, and those appear to have survived without damage, Mr. Fertel said, although they have not been thoroughly inspected. "They're fine, but so are the pools," he said.

They were not unscathed, however; debris flew into the pools after the buildings surrounding them blew up in hydrogen explosions.

The task force also refrained from recommending changes in emergency planning zones, despite the embassy's recommendation during the crisis for Americans to stay 50 miles away from Fukushima. In the United States, emergency evacuation planning is required within 10 miles of any reactor.

Mr. Fertel said the recommendation to evacuate to 50 miles "was based not on information, but on the lack thereof."

Opponents of nuclear power have argued that the commission should cease all extensions of reactors' operating licenses until it has digested the lessons of the accident in Japan. But Mr. Fertel noted that since March 11, the commission has issued 20-year license extensions for the Vermont Yankee, Palo Verde, Prairie Island, Salem and Hope Creek reactors, and allowed higher power outputs for Limerick and Point Beach.

Ho Nieh
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Sexton, Kimberly

From: Nieh, Ho
Sent: Wednesday, July 27, 2011 6:06 PM
To: annie_caputo@epw.senate.gov
Subject: FW: Commissioner Ostendorff's vote for SECY-11-0093 (Japan Task Force Report)
Attachments: WCO-SECY-11-0093 vote + cmts.pdf

Annie - for your eyes only. This will be made public tomorrow.

Thanks.

Ho

Ho Nieh
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From: Bozin, Sunny
Sent: Wednesday, July 27, 2011 5:06 PM
To: Wright, Darlene; Baggett, Steven; Batkin, Joshua; Blake, Kathleen; Bradford, Anna; Bubar, Patrice; Bupp, Margaret; Chairman Temp; Clark, Lisa; Coggins, Angela; Cordes, John; Crawford, Carrie; Davis, Roger; Fopma, Melody; Franovich, Mike; Gibbs, Catina; Hart, Ken; Herr, Linda; Hipschman, Thomas; KLS Temp; Kock, Andrea; Lepre, Janet; Loyd, Susan; Mamish, Nader; Marshall, Michael; Monninger, John; Orders, William; Pace, Patti; Poole, Brooke; Reddick, Darani; Laufer, Richard; Bavol, Rochelle; Rothschild, Trip; Savoy, Carmel; Sharkey, Jeffry; Shea, Pamela; Sosa, Belkys; Speiser, Herald; Svinicki, Kristine; Temp, WCO; Temp, WDM; Warren, Roberta; Apostolakis, George; Temp, GEA; Tadesse, Rebecca; Castleman, Patrick; Montes, David; Dhir, Neha; Adler, James; Jimenez, Patricia; Nieh, Ho; Ostendorff, William; Lui, Christiana; Lisann, Elizabeth; Gilles, Nanette; Le, Hong; Sexton, Kimberly; Beasley, Benjamin; Riddick, Nicole
Cc: Mitchell-Funderburk, Natalie; Sexton, Kimberly
Subject: Commissioner Ostendorff's vote for SECY-11-0093 (Japan Task Force Report)

Commissioner Ostendorff's vote is attached.

NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

FROM: COMMISSIONER OSTENDORFF

SUBJECT: SECY-11-0093 – NEAR-TERM REPORT AND RECOMMENDATIONS FOR AGENCY ACTIONS FOLLOWING THE EVENTS IN JAPAN

Approved __X___ Disapproved ___X__ Abstain _____

Not Participating _____

COMMENTS: Below ___ Attached _X_ None ___

SIGNATURE

7/27/11
DATE

Entered on "STARS" Yes _X__ No ___

Commissioner Ostendorff's Comments on SECY-11-0093
Near-Term Report and Recommendations for
Agency Actions Following the Events in Japan

I want to thank the Task Force for their dedicated efforts in completing their review in a relatively short period of time. Their report represents a very significant first step in learning from the events at Fukushima. That said, there is much more to be done. I would like to thank Dr. Charles Miller for his committed leadership of the Task Force. While I have some views that differ from those of the Task Force, that is expected and to be encouraged in an agency that prides itself on openness and transparency.

This is perhaps one of the most important votes I will cast as a Commissioner. The gravity of this subject mandates thoughtful reflection upon the NRC's *Principles of Good Regulation – Independence, Openness, Efficiency, Clarity,* and *Reliability.* With these principles in mind, I have carefully reviewed the Task Force report, sought input from the NRC staff, and listened to the views of my colleagues on the Commission. I will offer my views on SECY-11-0093 organized under these main areas: (I) Overarching decision-making principles; (II) Addressing the NRC's regulatory framework – Task Force recommendation 1; (III) Short-term regulatory actions; and (IV) Governance of the NRC's actions going forward and the long-term review.

I. Overarching decision-making principles

Following the March 23, 2011 tasking memorandum for COMGBJ-11-0002, I was keenly interested in what judgments the Task Force would make regarding the safety of U.S. operating reactors of all designs. To this very point, I highlight that the Task Force observed that (page 18):

> *Although complex, the current regulatory approach has served the Commission and the public well and allows the Task Force to conclude that a sequence of events like those occurring in the Fukushima accident is unlikely to occur in the United States and could be mitigated, reducing the likelihood of core damage and radiological releases.*
>
> *Therefore, in light of the low likelihood of an event beyond the design basis of a U.S. nuclear power plant and the current mitigation capabilities at those facilities, the Task Force concludes that continued operation and continued licensing activities do not pose an imminent risk to the public health and safety and are not inimical to the common defense and security.*

The above findings anchor my views on how to responsibly move forward in assessing the Task Force recommendations. Let me offer four additional observations:

1) In October 2010, an Integrated Regulatory Review Service team conducted an international peer review mission to assess the NRC's regulatory program and found that "the NRC has a comprehensive and consistent regulatory system that has been

developed in a determined manner" and that "the NRC has a strong drive for continuous improvement in its own performance and has well achieved its goals";

2) The Fukushima tragedy occurred in another country whose regulatory structure is quite different from that found in the U.S.;

3) I agree with the statements made by Commissioner Apostolakis at the July 19, 2011 Commission meeting, that the occurrence of the tsunami on March 11 was not an unthinkable external event; and

4) There is still a great deal that we do not know about Fukushima concerning the sequence of events, failure modes of equipment, functionality, and execution of procedures, etc.

These four observations helped frame my study of the Task Force report and recommendations.

As noted earlier, the NRC's *Principles of Good Regulation* are relevant to my decision-making on the Task Force report. Regarding the process for addressing the Task Force recommendations and the long-term review, I believe that three of these principles deserve specific mention. First, the principle of *Clarity* calls for the Commission to provide immediate direction to the staff on the philosophical approach that should guide the disposition of the Task Force recommendations. Second, the principle of *Reliability* leads me to conclude that to ensure that our regulations are not in an unjustifiable state of transition, the substantial institutional knowledge and operational experience of the NRC should be fully utilized in moving forward to address the Task Force recommendations. Third, the principle of *Openness* requires us to engage external stakeholders in a meaningful way. The spirit of this third principle underlies the June 23, 2011 COM on "Engagement of Stakeholders Regarding the Events in Japan" that I co-authored with Commissioner Magwood (COMWDM-11-0001/COMWCO-11-0001). In that light, I support the underlying premise of Chairman Jaczko's proposal for the Commission to have public meetings to engage stakeholders and to inform Commission decision-making in a timely, responsive manner. I look forward to working with all of my colleagues on the Commission to determine the appropriate subjects and schedule for such Commission meetings.

II. Addressing the NRC's regulatory framework – Task Force recommendation 1

I appreciate the Task Force's thoughtful accounting of the background for the NRC's current regulatory framework. Some in the press have focused on the use of the word "patchwork" in the report to describe the NRC's existing regulatory framework. I think that term diminishes the dynamic, evolving nature of the NRC's regulatory framework. Our predecessors took certain concrete actions in response to the events at Three Mile Island and the attacks of September 11, 2001. With the benefit of hindsight, one could suggest there may have been better ways to approach certain issues at the time. But, I am not a critic of those past actions. Rather, I personally believe that previous NRC staff and Commissions used their best judgment to frame

courses of action appropriate to address the problems they faced. While that regulatory approach, one of a dynamic and evolving nature, may not have the coherence of a framework that might be developed with the luxury of being done in a closed room at one static point in time, it does not mean that the framework is not effective. To the contrary, I believe that the NRC's Reactor Oversight Process (ROP) is a key example of an evolutionary change that has resulted in a rigorous oversight program that is focused on safety in the areas of greatest risk significance. Since 2000, NRC inspection findings in the ROP have brought to light substantive issues on nuclear reactor operations, plant design, maintenance, and defense-in-depth, and corresponding corrective actions to address such findings.

As stated earlier, the Task Force noted that "the current regulatory approach has served the Commission and the public well." I also reiterate what I stated at the July 19, 2011 public Commission meeting on the near-term report: "While I support thoughtful consideration of any potential safety enhancements in a systematic and holistic manner, I do not believe that our existing regulatory framework is broken."

Consistent with the NRC's organizational value of *Excellence* that drives us to be continuously improving and self-aware, I support moving forward, but not at this time, with Task Force recommendation 1. Such an effort would constitute a highly significant undertaking for the entire agency and realistically would take some number of years to accomplish. While I support the notion of enhancing our existing framework, I firmly believe that any such effort should be undertaken as a <u>separate, distinct</u> effort from the rest of the Fukushima Task Force recommendations. Acting upon recommendation 1 in the near-term will distract the NRC from timely and responsive action on those Task Force recommendations that would enhance safety in the near-term and are ripe for execution. Therefore, I propose that recommendation 1:

1) Be pursued independent of any activities associated with the review of the other Task Force recommendations; and

2) Be deferred for action and commence only after receiving future direction from the Commission. To facilitate this Commission direction, the EDO should submit a notation vote paper to the Commission that would take into account the cumulative lessons learned and stakeholder input from the review of other Task Force recommendations, and provide the Commission with a full range of options for addressing recommendation 1. This notation vote paper should be provided to the Commission no later than 18 months from the date of the final Staff Requirements Memorandum (SRM) for SECY-11-0093.

<u>III. Short-term regulatory actions</u>

I agree with Commissioner Magwood that there are short-term actions that the agency should consider to enhance safety. As such, I support Commissioner Magwood's recommendation with some modification. Specifically, I recommend that within 30 days (instead of 20 days) of the final SRM associated with this paper, the EDO should provide the Commission with a

notation vote paper that identifies and makes recommendations regarding any Task Force recommendations that can, and in the staff's judgment, should be implemented, in part or in whole, without unnecessary delay. I would add additional guidance that the staff should, in framing these short-term actions, consider the wide range of regulatory tools available. Again, these short-term actions should be assessed using the NRC's existing regulatory framework. Taking this step in the short-term will get the agency and licensees started down the path to implement appropriate safety enhancements sooner rather than later.

While I will carefully review the short-term actions that the EDO will submit in the notation vote paper described above, I believe I have an obligation to the NRC's external stakeholders and the NRC staff to communicate my view on certain Task Force recommendations. Based on my review and understanding of the accident at Fukushima, I believe the areas listed below warrant short-term regulatory attention and I offer them for consideration as appropriate by the EDO.

1) Reevaluate the seismic and flooding hazards at their sites against current NRC requirements and guidance (related to Task Force recommendation 2.1);

2) Perform seismic and flood protection walk-downs to identify and address plant-specific vulnerabilities and verify the adequacy of monitoring and maintenance for protection features such as watertight barriers in the interim period (related to Task Force recommendation 2.3);

3) Issue an advanced notice of proposed rulemaking and develop the technical basis to revise 10 CFR 50.63 to strengthen station blackout mitigation capability (related to Task Force recommendation 4.1);

4) Review 10 CFR 50.54(hh)(2) equipment protection from design-basis external events and additional equipment needs for multiunit events (related to Task Force recommendation 4.2);

5) Review venting capability and accessibility for Mark I and Mark II containments (related to Task Force recommendation 5.1); and

6) Maintain and train on Severe Accident Management Guidelines (related to Task Force recommendations 8.4 and 12.2).

IV. Governance of the NRC's actions going forward and the long-term review

In March, I applauded and supported Chairman Jaczko's prompt efforts to bring a proposal to the Commission for the NRC's response to the events in Japan. Now we find ourselves nearing the end of July, knowing more than what we knew in March. As I have learned more, my thinking about the NRC's response to Fukushima has certainly evolved since the Commission established the Task Force in March. Therefore, I find it timely for the Commission to build on

our earlier decisions and fine-tune our vision for the NRC's actions going forward and for the long-term review.

It is with this backdrop and the principles of *Clarity, Reliability,* and *Openness* in mind that I recommend the EDO provide the Commission with a notation vote paper with a charter for the structure, scope, and expectations for assessing the Task Force recommendations and the NRC's longer-term review. The draft charter should be based upon the concept envisioned by the EDO and Deputy EDO for Reactor and Preparedness Programs that establishes a senior level steering committee reporting to the EDO and supported by an internal advisory committee and an external panel of stakeholders. This charter should include as an objective that the steering committee would provide, through the EDO, an integrated, prioritized assessment of the Task Force recommendations along with its recommendations and bases for further regulatory actions. This model of review has effectively served the Commission in other significant efforts such as the Groundwater Task Force, the Davis-Besse Lessons Learned Task Force, and the Discrimination Task Force. The draft charter for Commission review should also incorporate any direction provided by the Commission in response to COMWDM-11-0001/COMWCO-11-0001. To support timely and clear Commission direction to the NRC staff, the paper should be provided to the Commission no later than two weeks after the date of the final SRM for SECY-11-0093.

In addition, I join Commissioners Magwood and Svinicki in directing the EDO within 45 days of the date of the final SRM for SECY-11-0093 to provide the Commission with a notation vote paper recommending a prioritization of the Task Force recommendations informed by the steering committee. This paper should include the technical and regulatory bases for the prioritization and include recommendations for appropriate stakeholder engagement as well as for Commission meetings.

Given that I have significant reservations about proceeding at this time to implement recommendation 1, I believe additional guidance to the envisioned steering committee and NRC staff is appropriate as they assess the Task Force report and provide their recommendations back to the Commission. At the July 19 Commission meeting, I specifically asked the Task Force the following question: "If the Commission did not approve Recommendation 1, would that change the Task Force recommendations for rulemaking and orders?" The answer I received was "yes." In that light, and given my position on deferring action on recommendation 1, I find it essential for the Commission to provide direction to the steering committee that they should assess the Task Force recommendations through the lens of the Task Force's finding that "the current regulatory approach has served the Commission and the public well." Therefore, consistent with existing practices, the staff should continue to consider risk insights and defense-in-depth to inform their recommendations on what actions may provide for a substantial increase in safety or are necessary to provide reasonable assurance of adequate protection.

Sexton, Kimberly

From: Caputo, Annie (EPW) [Annie_Caputo@epw.senate.gov]
Sent: Wednesday, July 27, 2011 6:19 PM
To: Nieh, Ho
Subject: RE: Commissioner Ostendorff's vote for SECY-11-0093 (Japan Task Force Report)

Thanks. I'll keep it to myself.

-----Original Message-----
From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Wednesday, July 27, 2011 6:06 PM
To: Caputo, Annie (EPW)
Subject: FW: Commissioner Ostendorff's vote for SECY-11-0093 (Japan Task Force Report)

Annie - for your eyes only. This will be made public tomorrow.

Thanks.

Ho

Ho Nieh
Chief of Staff
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(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Bozin, Sunny
Sent: Wednesday, July 27, 2011 5:06 PM
To: Wright, Darlene; Baggett, Steven; Batkin, Joshua; Blake, Kathleen; Bradford, Anna; Bubar, Patrice; Bupp, Margaret; Chairman Temp; Clark, Lisa; Coggins, Angela; Cordes, John; Crawford, Carrie; Davis, Roger; Fopma, Melody; Franovich, Mike; Gibbs, Catina; Hart, Ken; Herr, Linda; Hipschman, Thomas; KLS Temp; Kock, Andrea; Lepre, Janet; Loyd, Susan; Mamish, Nader; Marshall, Michael; Monninger, John; Orders, William; Pace, Patti; Poole, Brooke; Reddick, Darani; Laufer, Richard; Bavol, Rochelle; Rothschild, Trip; Savoy, Carmel; Sharkey, Jeffry; Shea, Pamela; Sosa, Belkys; Speiser, Herald; Svinicki, Kristine; Temp, WCO; Temp, WDM; Warren, Roberta; Apostolakis, George; Temp, GEA; Tadesse, Rebecca; Castleman, Patrick; Montes, David; Dhir, Neha; Adler, James; Jimenez, Patricia; Nieh, Ho; Ostendorff, William; Lui, Christiana; Lisann, Elizabeth; Gilles, Nanette; Le, Hong; Sexton, Kimberly; Beasley, Benjamin; Riddick, Nicole
Cc: Mitchell-Funderburk, Natalie; Sexton, Kimberly
Subject: Commissioner Ostendorff's vote for SECY-11-0093 (Japan Task Force Report)

Commissioner Ostendorff's vote is attached.

Sexton, Kimberly

From: Nieh, Ho
Sent: Wednesday, July 27, 2011 7:29 PM
To: 'annie_caputo@epw.senate.gov'
Subject: Re: Commissioner Ostendorff's vote for SECY-11-0093 (Japan Task Force Report)

Thanks Annie!

Sent via BlackBerry

Ho Nieh
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----- Original Message -----
From: Caputo, Annie (EPW) <Annie_Caputo@epw.senate.gov>
To: Nieh, Ho
Sent: Wed Jul 27 19:15:24 2011
Subject: RE: Commissioner Ostendorff's vote for SECY-11-0093 (Japan Task Force Report)

Wow. That's a great vote. That's leadership: crisp and concise direction.

-----Original Message-----
From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Wednesday, July 27, 2011 6:06 PM
To: Caputo, Annie (EPW)
Subject: FW: Commissioner Ostendorff's vote for SECY-11-0093 (Japan Task Force Report)

Annie - for your eyes only. This will be made public tomorrow.

Thanks.

Ho

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From: Bozin, Sunny
Sent: Wednesday, July 27, 2011 5:06 PM
To: Wright, Darlene; Baggett, Steven; Batkin, Joshua; Blake, Kathleen; Bradford, Anna; Bubar, Patrice; Bupp, Margaret; Chairman Temp; Clark, Lisa; Coggins, Angela; Cordes, John; Crawford, Carrie; Davis, Roger; Fopma, Melody; Franovich, Mike; Gibbs, Catina; Hart, Ken; Herr, Linda; Hipschman, Thomas; KLS Temp; Kock, Andrea; Lepre, Janet; Loyd, Susan; Mamish, Nader; Marshall, Michael; Monninger, John; Orders, William; Pace, Patti; Poole, Brooke; Reddick, Darani; Laufer, Richard; Bavol, Rochelle; Rothschild, Trip;

Savoy, Carmel; Sharkey, Jeffry; Shea, Pamela; Sosa, Belkys; Speiser, Herald; Svinicki, Kristine; Temp, WCO; Temp, WDM; Warren, Roberta; Apostolakis, George; Temp, GEA; Tadesse, Rebecca; Castleman, Patrick; Montes, David; Dhir, Neha; Adler, James; Jimenez, Patricia; Nieh, Ho; Ostendorff, William; Lui, Christiana; Lisann, Elizabeth; Gilles, Nanette; Le, Hong; Sexton, Kimberly; Beasley, Benjamin; Riddick, Nicole
Cc: Mitchell-Funderburk, Natalie; Sexton, Kimberly
Subject: Commissioner Ostendorff's vote for SECY-11-0093 (Japan Task Force Report)

Commissioner Ostendorff's vote is attached.

Sexton, Kimberly

From: Nieh, Ho
Sent: Thursday, July 28, 2011 4:42 PM
To: 'Hannah Northey'
Subject: RE: Ostendorff vote

Hi Hannah – links below. Best wishes, Ho

http://www.nrc.gov/reading-rm/doc-collections/commission/cvr/2011/2011-0093vtr-wco.pdf

http://www.nrc.gov/reading-rm/doc-collections/commission/cvr/2011/

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From: Hannah Northey [mailto:hnorthey@eenews.net]
Sent: Thursday, July 28, 2011 3:59 PM
To: Nieh, Ho
Subject: Ostendorff vote

Hi Ho,

I understand Mr. Ostendorff has voted on the chairman's recommendation for implementing the task force proposals == where can I find that?

Thanks, Hannah

Hannah M. Northey
Reporter
hnorthey@eenews.net
202-446-0468 (p)
202-737-5299 (f)
(b)(6) (c)

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Sexton, Kimberly

From: Nieh, Ho
Sent: Thursday, July 28, 2011 5:30 PM
To: Ostendorff, William; Franovich, Mike; Kock, Andrea; Sexton, Kimberly
Subject: Markey statement

FYI...

July 28, 2011: Markey: NRC Stands For "No Recommendations Considered"

Washington, D.C. (July 28) - Today, Congressman Edward J. Markey (D-Mass.), the top Democrat on the Natural Resources Committee and a senior member of the Energy and Commerce Committee, issued the following statement in response to news that a majority of Commissioners at the Nuclear Regulatory Commission (NRC) has voted to reject Chairman Greg Jaczko's proposal to act within 90 days on the recommendations of the NRC's Near Term Task Force reviewing Commission processes and regulations in the wake of the Fukushima nuclear meltdowns. Instead, Commissioners William Magwood, William Ostendorff, and Kristine Svinicki have voted to direct the NRC staff to endlessly study the NRC staff's own report before they will consider the recommendations made by the very same NRC staff.

"Commissioners Ostendorff, Magwood and Svinicki have made it all too clear that they believe that the Nuclear Regulatory Commission stands for "No Recommendations Considered," said Rep. Markey. "They have done this country a tremendous disservice in their collective votes to ensure that the NRC will not lead efforts to ensure the safety of the nuclear industry sector in this country, but will instead actively aid and abet the nuclear industry's dilatory efforts to ignore, perhaps indefinitely, the recommendations of the Commission's expert and dedicated staff."

Last week, Rep. Markey released a letter calling on Commissioners Svinicki and Magwood to reverse their earlier votes to stall action on the Fukushima Task Force recommendations. Today, Commissioner Ostendorff's vote was released, and with a 3-vote majority, it is now clear that the NRC will not act quickly to even vote on, let alone adopt, the safety upgrades recommended by some of the Commission's most senior technical staff.

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Sexton, Kimberly

From: Nieh, Ho
Sent: Friday, July 29, 2011 3:56 PM
To: 'Ohly, John'
Cc: Sexton, Kimberly; Herr, Linda
Subject: RE: Response to Chairman Issa

Roger. Thanks.

Have a good weekend.

Ho

Ho Nieh
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From: Ohly, John [mailto:John.Ohly@mail.house.gov]
Sent: Friday, July 29, 2011 3:55 PM
To: Nieh, Ho
Cc: Sexton, Kimberly; Herr, Linda
Subject: Re: Response to Chairman Issa

Ho,

Thank you for the heads-up.

Please mark the minority copy to the attention of Chris Knauer and/or Krista Boyd.

Regards,
John

From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Friday, July 29, 2011 03:48 PM
To: Ohly, John
Cc: Sexton, Kimberly <Kimberly.Sexton@nrc.gov>; Herr, Linda <Linda.Herr@nrc.gov>
Subject: Response to Chairman Issa

Hi John, I hope all is well.

Just wanted to let you know that Commissioner Ostendorff signed out a letter this afternoon in response to Chairman Issa's July 15, 2011 letter regarding the Fukushima Task Force Commission paper.

We will put the majority copy to your attention.

Can you let me know who we should specify as the minority contact?

539

Would have sent an electronic copies, but there are a lot of attachments.

Best regards,

Ho

Ho Nieh
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Sexton, Kimberly

From: Nieh, Ho
Sent: Friday, July 29, 2011 3:49 PM
To: 'John.Ohly@mail.house.gov'
Cc: Sexton, Kimberly; Herr, Linda
Subject: Response to Chairman Issa

Contacts: John Ohly

Hi John. I hope all is well.

Just wanted to let you know that Commissioner Ostendorff signed out a letter this afternoon in response to Chairman Issa's July 15, 2011 letter regarding the Fukushima Task Force Commission paper.

We will put the majority copy to your attention.

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Sexton, Kimberly

From: Nieh, Ho
Sent: Friday, July 29, 2011 6:03 AM
To: Ostendorff, William; Franovich, Mike; Kock, Andrea; Sexton, Kimberly
Subject: NYT - TF votes

Discussion about our "leisurely affairs"...

July 28, 2011, 9:04 PM
U.S. Regulator Says Fukushima Lessons Can Percolate By MATTHEW L. WALD

It's official: the chairman of the Nuclear Regulatory Commission has been outvoted on his proposal that the panel decide within 90 days on the recommendations it received from its Fukushima task force.

On Thursday morning, Commissioner William C. Ostendorff became the third of the five commissioners to announce officially that he had voted to go slow.

The recommendations on what regulatory actions to take in light of the Fukushima disaster were made by six senior commission staff members. One, the leader of the Fukushima task force, was so senior that he was supposed to have retired in March but was kept on for this task.

The group made a variety of proposals, the most far-reaching of which may have been to overhaul and integrate the commission's rules into a single, coherent structure melding the piecemeal improvements made over the years.

For example, after the terrorist attacks of Sept. 11, 2001, the industry agreed to add hoses, pumps and other temporary equipment that could be used in a pinch, but because this was done quickly, the improvements were not integrated into the commission's program of inspections and drills.

And because the equipment was added with terrorism in mind, some of it was put in places where it would be vulnerable to a flood or earthquake. Fukushima made clear, of course, that such equipment could be needed to recover from a natural catastrophe.

Mr. Ostendorff said it was too soon to do an overhaul.

Commission votes are rather leisurely affairs; members of the commission check a box "yes" or "no" and attach pages of comments on a Web page over the course of some days or sometimes weeks or even months.

Mr. Ostendorff stressed that while the task force members had made numerous wide-ranging recommendations, they had also said that there was no imminent risk from American reactors and that "the Fukushima tragedy occurred in another country whose regulatory structure is quite different from that found in the U.S."

"There is still a great deal that we do not know about Fukushima concerning the sequence of events, failure modes of equipment, functionality, and execution of procedures," he wrote.

The commission is an independent body, an agency of the federal government but not part of any department, and thus is less immune to outside pressures. Not that people won't try, ranging from those seeking stricter safeguards to those who say that the rules suffice as they exist now.

Representative Edward J. Markey of Massachusetts, a longtime critic of the Nuclear Regulatory Commission and now of its response to Fukushima, said that the commissioners were in effect telling their staff to endlessly study the 90-day staff report before the commissioners consider the recommendations.

"They have done this country a tremendous disservice in their collective votes to ensure that the N.R.C. will not lead efforts to ensure the safety of the nuclear industry sector in this country," he said on Thursday.

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Sexton, Kimberly

From: Nieh, Ho
Sent: Monday, August 01, 2011 2:53 PM
To: Ostendorff, William
Cc: Franovich, Mike
Subject: FW: UCS working on a report

FYI - for tomorrow's meeting

Ho Nieh
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-----Original Message-----
From: Caputo, Annie (EPW) [mailto:Annie_Caputo@epw.senate.gov]
Sent: Monday, August 01, 2011 2:50 PM
To: Nieh, Ho; Bubar, Patrice; Sharkey, Jeffry
Subject: UCS working on a report

I'm sitting in a briefing with David Lochbaum covering their report "U.S. Nuclear Power After Fukushima: Common Sense Recommendations for Safety and Security". There is a paragraph that states:

The President must appoint people to the NRC who will make public safety their top priority. This is not the case today. For example: four out of five commissioners recently voted to extend the deadline for nuclear power reactors to comply with fire protection regulations until 2016 at the earliest.

When I asked him about that, he indicated UCS is working on a report that will argue that case by summarizing all the votes where Jaczko is in the minority. I wanted you to know that's in the works, in case you hadn't heard already.

Sexton, Kimberly

From: Nieh, Ho
Sent: Monday, August 01, 2011 5:18 PM
To: 'LITVACK, Merle'
Cc: 'PIETRANGELO, Tony'
Subject: RE: Letter for Commissioner Ostendorff

Thanks Merle.

Ho

Ho Nieh
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U.S. Nuclear Regulatory Commission
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ho.nieh@nrc.gov

From: LITVACK, Merle [mailto:mxl@nei.org]
Sent: Monday, August 01, 2011 4:56 PM
To: Nieh, Ho
Subject: Letter for Commissioner Ostendorff

Good afternoon Ho,

Attached please find a letter from Marv Fertel, President and CEO of the Nuclear Energy Institute, to Senate Environment and Public Works Committee Chairwoman Barbara Boxer and Ranking Member James Inhofe.

You will notice that the NRC Commissioners are copied on this letter. Can you please forward this letter to Commissioner Ostendorff. I apologize for sending this letter to you for distribution to Commissioner Ostendorff, but our database does not list his Executive Assistant's name or contact information. As a result, you are my only link to the Commissioner and I ask you forward this letter to him.

Mindful of the constraints on your time, thank you very much for your assistance with this request.

Respectfully,

Merle Litvack

Merle Litvack
Senior Executive Assistant
Governmental Affairs

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F: 202-533-0223

E: mxl@nei.org

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Sexton, Kimberly

From: Nieh, Ho
Sent: Monday, August 01, 2011 5:26 PM
To: 'Caputo, Annie (EPW)'
Subject: RE: UCS working on a report

Thanks for the heads up Annie. BTW, WCO has a courtesy visit with Lochbaum tomorrow.

See you at the hearing.

Ho

Ho Nieh
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-----Original Message-----
From: Caputo, Annie (EPW) [mailto:Annie_Caputo@epw.senate.gov]
Sent: Monday, August 01, 2011 2:50 PM
To: Nieh, Ho; Bubar, Patrice; Sharkey, Jeffry
Subject: UCS working on a report

I'm sitting in a briefing with David Lochbaum covering their report: "U.S. Nuclear Power After Fukushima: Common Sense Recommendations for Safety and Security". There is a paragraph that states:

The President must appoint people to the NRC who will make public safety their top priority. This is not the case today. For example: four out of five commissioners recently voted to extend the deadline for nuclear power reactors to comply with fire protection regulations until 2016 at the earliest.

When I asked him about that, he indicated UCS is working on a report that will argue that case by summarizing all the votes where Jaczko is in the minority. I wanted you to know that's in the works, in case you hadn't heard already.

Sexton, Kimberly

From: Nieh, Ho
Sent: Tuesday, August 02, 2011 9:38 PM
To: Ostendorff, William; Franovich, Mike; Kock, Andrea; Sexton, Kimberly
Subject: FW: Google Alert - ostendorff

Rather balanced article from Matt Wald...team WCO showed well today!

Seeking Consensus in a Squabbling Nuclear Family By MATTHEW L. WALD

Reuters
Lessons learned: systems for absorbing cesium from highly radioactive water in fuel pools arrived last week at the Fukushima Daiichi nuclear plant in Japan.

Months after the triple meltdown at Fukushima Daiichi, an agenda for American reactors is beginning to take shape.

The five members of the Nuclear Regulatory Commission have been divided about how rapidly they should decide on the recommendations made by its six-member task force on Fukushima. All five appeared on Tuesday morning before the Senate Environment and Public Works committee, whose members pushed them to decide what steps should be taken promptly.

The commission chairman, Gregory B. Jaczko, had called on his colleagues to rule on all 12 recommendations made by the task force within 90 days, the same period of time that it took the task force to study Fukushima's implications for the safety of American reactors. Three commissioners voted against that, including William C. Ostendorff, but on Tuesday, Mr. Ostendorff laid out six that he said could be acted on "in a matter of weeks." Those included:

Re-evaluating earthquake and flooding hazards.
Carrying out "walk-downs" in the plants to look for areas vulnerable to earthquake and flooding.

Issuing an advance notice that the commission will propose a new rule on so-called station blackouts, or the loss of all electricity, which is what caused the meltdowns at Fukushima.
Reviewing the status of extra pumps, hoses and other emergency equipment added after the terrorist attacks of Sept. 11, 2001, to make sure that they are on hand and that they are not stored in a place that is vulnerable to flood or earthquake.
Making sure operators are trained in the use of that emergency equipment.
Reviewing with operators the location and operation of "hardened vents" that are supposed to get rid of any hydrogen created in an accident so that it does not cause explosions, as it did at the Japanese reactors.
This list seemed to meet with the agreement of the commissioners.

That would leave several issues to be decided later. One is improvements to spent fuel pools at nuclear plants. Senator Barbara Boxer, Democrat of California, urged that some of the fuel be moved from the pools to dry casks to reduce the risk in case of an accident. But the task force report did not call for that, and none of the commissioners has expressed much enthusiasm for the idea.

They have, however, talked about adding more monitoring equipment so that control room operators have a clearer idea of how much water is in the pools and new mechanisms for keeping the pools full of water. At one point in the Fukushima accident, commission staff members were convinced that Unit 4's pool was nearly empty, which led to a recommendation that Americans stay at least 50 miles from the plant; later, they concluded that the pool still had water in it.

Another question is whether the vents that are installed at most American reactors of the Fukushima type are adequate. In an interview after the hearing, Mr. Ostendorff pointed to one line in the recommendations noting that it was unclear to American experts whether Japanese operators tried to operate the vents at the appropriate time. The commission should not "act abruptly in areas where we don't have adequate information," he said.

Another open question is whether all reactors like Fukushima's, called boiling water reactors because they boil water directly in reactor vessels, should have vents. In this country, all of the older, smaller plants have such vents now, but five younger ones with bigger containment shells do not. Whether they need them is now under re-examination.

Also deferred would be a more contentious issue, a recommendation that the commission's regulations be reorganized to integrate all of the rules added over the last few decades into a single code, with uniform requirements for inspections, training and maintenance. Equipment added after 9/11, for example, is not formally subject to the regular training and inspection routine.

Generally, Democrats on the committee called for fast action and Republicans did not. Senator James M. Inhofe of Oklahoma, the ranking Republican minority member, called for a "structured review process" before action is taken on the recommendations. "I don't believe that an accident in a country with a different regulatory process and practices means that ours are broken," he said.

Referring to the task force's recommendations, another Republican Senator John Barrasso of Wyoming, said he was unsurprised "that if you put six career regulators in a room for 90 days that you're going to get a lot of Washington red tape."

Senator Bernard Sanders, an independent from Vermont, countered: "Some people may think this is, quote unquote, government red tape. Some of us think we have to do everything we can."

Most of the recommendations, he said, are "no-brainers."

Ho Nieh
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From: Google Alerts [googlealerts-noreply@google.com]
Sent: Tuesday, August 02, 2011 5:04 PM
To: Nieh, Ho
Subject: Google Alert - ostendorff

News 1 new result for ostendorff

Seeking Consensus in a Squabbling Nuclear Family
<http://www.google.com/url?sa=X&q=http://green.blogs.nytimes.com/2011/08/02/seeking-consensus-in-a-squabbling-nuclear-family/&ct=ga&cad=CAcQARgAIAAoATAAOABA8czh8QRIAVgBYgVlbi1VUw&cd=wey_gpBx_jw&usg=AFQjCNEzE4JjRNJch0G8jHXv1Oys1JF6NQ>
New York Times
Three commissioners voted against that, including William C. Ostendorff, but on Tuesday, Mr. Ostendorff laid out six that he said could be acted on "in a ...

Tip: Use site restrict in your query to search within a site (site:nytimes.com or site:.edu). Learn more<http://www.google.com/support/websearch/bin/answer.py?answer=136861&hl=en&source=alertsmail&cd=wey_gpBx_jw&cad=CAcQARgAQPHM4fEESAE>.

Remove<http://www.google.com/alerts/remove?hl=en&gl=us&source=alertsmail&s=AB2Xq4hwk--TnPf7UwbzlidIlotprobfVT6bbZs&cd=wey_gpBx_jw&cad=CAcQARgAQPHM4fEESAE> this alert.
Create<http://www.google.com/alerts?hl=en&gl=us&source=alertsmail&cd=wey_gpBx_jw&cad=CAcQARgAQPHM4fEESAE> another alert.
Manage<http://www.google.com/alerts/manage?hl=en&gl=us&source=alertsmail&cd=wey_gpBx_jw&cad=CAcQARgAQPHM4fEESAE> your alerts.

Sexton, Kimberly

From: Nieh, Ho
Sent: Tuesday, August 02, 2011 7:14 AM
To: Ostendorff, William
Subject: FYI - E&E re. hearing

Note discussion of votes, including yours, and some views from Carper at the end.

Committee To Weigh In On Calls For Increased Nuclear Safety (EED)

By Hannah Northey

E&E Daily, August 2, 2011

A panel of senators, many of whom have nuclear plants peppered throughout their states, tomorrow will review US regulators' implementation of safety recommendations in the wake of Japan's nuclear crisis in March.

The full Senate Environment and Public Works Committee and the subpanel on Clean Air and Nuclear Safety will hold a joint hearing to examine safety proposals from a task force within the Nuclear Regulatory Commission.

NRC assembled the task force to review the earthquake and tsunami that struck Japan's Fukushima Daiichi nuclear complex in March, triggering explosions, radioactive leaks and evacuations. The panel released a dozen safety recommendations this month (Greenwire, July 13).

The task force said NRC should clarify and strengthen a "patchwork of regulatory requirements" and apply them more evenly to consider multiple crises.

The panel also said plant operators should re-evaluate and upgrade earthquake and flood risks to their facilities, secure backup power and instrumentation to monitor and cool spent fuel pools after a disaster, and add equipment to ensure they can tackle lengthy losses of electric power to the plants and address damage to more than one reactor.

But the findings have drawn a range of reactions from within the commission and industry.

NRC Chairman Gregory Jaczko has called on the commission to digest and prioritize the safety recommendations within three months and make any necessary changes within five years, which garnered applause from Rep. Ed Markey (D-Mass.), the ranking member on the House Natural Resources Committee.

But Republican Commissioner Kristine Svinicki and Democratic Commissioner William Magwood have voted against such quick implementation, calling for more public input and increased collaboration and participation of a larger number of NRC staff. Magwood also said the task force did not have sufficient time to consider all relevant issues (E&E Daily, July 21).

Republican Commissioner William Ostendorff released his vote Thursday, also cautioning that moving too quickly could have unintended consequences. Ostendorff said his understanding of the Fukushima disaster has evolved as more information comes to light and that he agrees with Magwood and Svinicki that steps should be taken cautiously.

Calling it "one of the most important votes" he would cast as a commissioner, Ostendorff said he has "significant reservations" about the panel's recommendations to rethink the basis on which NRC's regulatory structure is founded. Such widespread changes are questionable after the task force report found that the current structure has served NRC well, he said.

Ostendorff also sided with Magwood and Svinicki that top NRC staff should weigh in on the report and help decide how the commission should move forward.

A senior NRC official said the votes are a "starting" point of discussion and that commissioners will now work to find common ground.

The nuclear industry has also taken issue with the report. Adrian Heymer, the Nuclear Energy Institute's senior director for new plant deployment, said at a public NRC hearing last week that the commission and the Energy Department only recently announced they will piece together the timeline of what happened at the Fukushima plant.

Heymer asked if the task force recommendations might change after more information comes to light, but members of the task force said they have a basic understanding of the catastrophe that helped guide the short- and long-term proposals.

Sen. Tom Carper (D-Del.), chairman of the Senate Subcommittee on Clean Air and Nuclear Safety, has urged the commission to talk to stakeholders and get public reaction on the report.

Carper also said that he would be "very disappointed if we are six months or a year down the road and have not seen any actions from the Nuclear Regulatory Commission on any of the recommendations" (E&E Daily, July 21).

Click here to view Commissioner Ostendorff's vote on the task force recommendations.

Schedule: The hearing is tomorrow at 10 a.m. in 406 Dirksen.

Witnesses: TBA.

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Sexton, Kimberly

From: Nieh, Ho
Sent: Wednesday, August 03, 2011 3:27 PM
To: 'Jeffrey.Beattie@ihs.com'
Subject: Re: Energy Daily article

Thanks for the follow up Jeff.

Let's keep our lines of communications open for future articles.

Best regards,

Ho

Sent via BlackBerry

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From: Beattie, Jeff <Jeffrey.Beattie@ihs.com>
To: Nieh, Ho
Sent: Wed Aug 03 11:59:40 2011
Subject: RE: Energy Daily article

Thanks for the call. I acknowledge that the way I wrote the story doesn't acknowledge the commissioners thoughtful treatment of the "patchwork" and "defense in depth versus risk informed" questions in his vote and in recent public meeting....I was aware of his thinking in those areas but for this story was focused on those six recs that were discussed in the hearing as areas where there seemed to be consensus.

Let me assure you and the commissioner that I'll be sure to give him full credit in the future for his treatment of those larger issues as well.

Jeff

From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Wednesday, August 03, 2011 11:43 AM
To: Beattie, Jeff
Subject: RE: Energy Daily article

can I call you around 12:30?

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From: Beattie, Jeff [mailto:Jeffrey.Beattie@ihs.com]
Sent: Wednesday, August 03, 2011 11:42 AM
To: Nieh, Ho
Subject: RE: Energy Daily article

I'm at 703 236 2405 if you wanna call

From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Wednesday, August 03, 2011 11:40 AM
To: Beattie, Jeff
Subject: Energy Daily article

Hi Jeff – do you have time for a call today on your article on yesterday's hearing?

Thanks.

Ho

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Sexton, Kimberly

From: Epley, Mark [Mark.Epley@mail.house.gov]
Sent: Wednesday, August 03, 2011 5:39 PM
To: Ostendorff, William
Subject: Greetings

Hey Bill. Saw you on C-SPAN re: Japan nuclear crisis. Hope you're well. I've been back on the Hill since February. Be glad for a chance to visit with you sometime. Take care.

Mark Epley
Chief Oversight Counsel
Committee on Financial Services
B303 Rayburn House Office Building
Phone: 202-226-4375
Cell: (b)(6)

Sexton, Kimberly

From: Nieh, Ho
Sent: Friday, September 02, 2011 1:04 PM
To: Ostendorff, William; Franovich, Mike; Kock, Andrea; Sexton, Kimberly
Subject: FW: UCS comments on NRC task force near-term recommendations
Attachments: 20110902-ucs-nrc-comments-near-term-task-force-recommendations.pdf

fyi

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From: Dave Lochbaum [mailto:DLochbaum@ucsusa.org]
Sent: Friday, September 02, 2011 12:28 PM
To: Dave Lochbaum
Subject: UCS comments on NRC task force near-term recommendations

Good Day:

UCS submitted the attached comments via www.regulations.gov regarding the near term recommendation from the NRC's Japan task force to meet the very short public comment period deadline.

Thanks,
Dave Lochbaum
UCS

Union of Concerned Scientists
Citizens and Scientists for Environmental Solutions

September 2, 2011

Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
Attn: Rulemakings and Adjudications Staff

SUBJECT: **Docket ID NRC-2011-0196: Comments on Near Term Task Force Recommendations 2, 4, 5, 7, 8, and 9**

Comments submitted via www.regulations.gov

Good Day:

In response to the notice of the August 31, 2011, public meeting conducted by the Nuclear Regulatory Commission (NRC), I am submitting the attached comments on behalf of the Union of Concerned Scientists (UCS). These comments include input from Dr. Edwin Lyman, my colleague at UCS.

We have two general comments. The first involves the pace of the proposed rulemaking. If the NRC is still "pursusing" rulemaking on its Fukushima lessons learned 10 years from now, the agency will have let the American public down. All rulemaking initiated to implement the Task Force's recommendations must be completed without undue delay. A decade-plus completion internal has no excuse and is quite simply unacceptable.

Our second general comment is that the process for development and compliance with orders needs to be as transparent as possible. The secrecy surrounding the 2002 Interim Compensatory Measures orders following the 9/11 attacks gave the nuclear industry the cover it needed to delay implementation of the orders for years in private while telling the public that it was rapidly upgrading security to address terrorism concerns. While we agree that it is important that the requirements contained within orders need to be carefully and clearly formulated, this process should take months, not years, to resolve.

Sincerely,

David A. Lochbaum

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Enclosure: Comments on Near Term Task Force Recommendations 2, 4, 5, 7, 8 and 9

No.	Comments on Near-Term Task Force Recommendations 2, 4, 5, 7, 8 and 9 Comment
2	***The Task Force recommends that the NRC require licensees to reevaluate and upgrade as necessary the design-basis seismic and flooding protection of SSCs for each operating reactor***
2.1	*Task Force's Recommendation: Order licensees to reevaluate the seismic and flooding hazards at their sites against current NRC requirements and guidance, and if necessary, update the design basis and SSCs important to safety to protect against the updated hazards.* UCS's Comment: This recommendation has limited value until the NRC resolves Generic Issue 199 (GI-199). For example, the last paragraph on page 26 of the task force's report begins with these sentences: *In 1996, the NRC established two new seismic regulations for applications submitted on or after January 10, 1997. These regulations were not applied to existing reactors.* In the first full paragraph on page 27, the task force stated: *In 1996, the staff also established a new requirement in 10 CFR 100.20, "Factors To Be Considered When Evaluating Sites," for the evaluation of the nature and proximity of man-related hazards, such as dams for applications submitted on or after January 10, 1997. This regulation was not applied to existing reactors.* In the second full paragraph on page 27, the task force stated: *Since the last SRP update in 2007, the staff has established interim staff guidance (ISG) in three areas related to protection from natural phenomena: (1) DC/COL-ISG-1, "Interim Staff Guidance on Seismic Issues of High Frequency Ground Motion," (2) DC/COLISG7, "Assessment of Normal and Extreme Winter Precipitation Loads on the Roofs of Seismic Category I Structures," and (3) DC/COL-ISG-20, "Seismic Margin Analysis for New Reactors Based on Probabilistic Risk Assessment." This interim guidance has been applied only to new reactor reviews.* The recurring theme is that the NRC has taken several steps to protect future reactors from heightened seismic hazards, but has not taken these steps for existing reactors. GI-199 was initiated by the NRC staff more than seven (7) years ago to reconcile the gap between the seismic protection levels required for new reactors and the lower seismic protection levels required for existing reactors. GI-199 remains unresolved, so that gap still exists. Until GI-199 is resolved, the reevaluations would, at best, merely confirm that existing reactors conform to the outdated, obsolete, and inadequate seismic hazard levels. The NRC must resolve GI-199 to define the agency's expectations regarding current seismic hazards that owners of existing reactors can then incorporate into the answer keys for their reevaluations. The NRC must resolve GI-199 in order for this recommendation to realize the intended benefit.

2.2	*Task Force's Recommendation: Initiate rulemaking to require licensees to confirm seismic hazards and flooding hazards every 10 years and address any new and significant information. If necessary, update the design basis for SSCs important to safety to protect against the updated hazards.* UCS's Comment: As explained above for Recommendation 2.1, GI-199 must be resolved for periodic reevaluations to be constructive. Resolution of GI-199 would establish the NRC's expectations that plant owners could then use to inform decisions about when new information warrants updates to the design basis. Resolution would also provide NRC inspectors and reviewers the guidance they need when assessing whether licensees' reevaluations were adequate. Absent resolution of GI-199, any reevaluations would likely become exercises in futility. We agree with the following statements made by NRDC and NEI during the August 31st public meeting. We agree with NRDC that the scope of the periodic revisits must be broader than merely flooding and seismic information to also include other hazards such as tornadoes and fire hazards. We also agree with NEI that a better alternative to the 10-year revisits would be to define thresholds when new information triggers re-evaluations of hazards and associated protections.
2.3	*Task Force's Recommendation: Order licensees to perform seismic and flood protection walkdowns to identify and address plant-specific vulnerabilities and verify the adequacy of monitoring and maintenance for protection features such as watertight barriers and seals in the interim period until longer term actions are completed to update the design basis for external events.* UCS's Comment: The need for walkdowns strongly suggests that the existing inspection and testing regimes used by plant owners for seismic and flood protection measures are inadequate. It also strongly suggests that the NRC's oversight methods are equally defective. Thus, in addition to these one-time walkdowns, the NRC must also address the deficiencies in the licensees' inspection and testing regimes and its own oversight processes that enabled these vulnerabilities to go undetected to date.
4	***The Task Force recommends that the NRC strengthen SBO mitigation capability at all operating and new reactors for design-basis and beyond-design-basis external events.***
4.1	*Task Force's Recommendation: Initiate rulemaking to revise 10 CFR 50.63 to require each operating and new reactor licensee to (1) establish a minimum coping time of 8 hours for a loss of all ac power, (2) establish the equipment, procedures, and training necessary to implement an "extended loss of all ac" coping time of 72 hours for core and spent fuel pool cooling and for reactor coolant system and primary containment integrity as needed, and (3) preplan and prestage offsite resources to support uninterrupted core and spent fuel pool cooling, and reactor coolant system and containment integrity as needed, including the ability to deliver the equipment to the site in the time period allowed for extended coping, under conditions involving significant degradation of offsite transportation infrastructure associated with significant natural disasters.* UCS's Comment: Overall, the 8-hour, 72-hour, and 72-plus-hour approaches to the loss of ac power problem is a sound framework for managing this risk, with the caveats described below.

	The 72-hour extended loss of all ac coping time permits reliance on non-safety-related equipment for reactor core and spent fuel cooling. Unless this equipment is specifically included under the Maintenance Rule (10 CFR 50.65), the availability and reliability of this equipment cannot be assured. For example, if a coping plan relies on a non-safety-related widget not covered by the technical specifications, Updated Final Safety Analysis Report, and maintenance rule program, then a licensee could ship the widget offsite for repairs for an indefinite period without any compensatory measures being taken. The use of non-safety-related equipment increases the likelihood that a single failure or sub-standard part prevents reactor core and/or spent fuel cooling from being successfully achieved during this 72-hour coping period. We also note that a member of the ACRS has disputed the Task Force's assertion regarding the magnitude of the seismic safety margin that can be assumed for SSCs designed to withstand a safe shutdown earthquake (SSE). This is a serious issue because it contradicts the Task Force's confidence in the availability of SBO mitigation equipment following beyond-design-basis seismic events. It may be necessary to add additional seismic protection (in addition to flood protection) to SBO mitigation equipment to maintain the necessary safety level. The provisions for offsite resources assuring reactor core and spent fuel cooling involve some details to be addressed. For example, resources at an offsite location would require periodic testing and inspection to verify their continued functionality. In addition, these resources might be needed to support a site stricken by a severe natural disaster, there may be competing needs for them (e.g., to provide temporary power to a local hospital or to a local emergency response center). One aspect of the Task Force's proposed rule should actually be implemented as an Order: the requirement for reliable provision of power to hydrogen igniters in ice-condenser and Mark III containments during an SBO. Via Generic Issue 189, the NRC determined nearly a decade ago that a rule to require backup power to the igniters was justified; yet it never enacted the rule. Instead, licensees installed the equipment under a voluntary initiative. No more analysis is required on this issue, and it should be a relatively simple effort to upgrade the current voluntary measures to inspectable and enforceable regulatory requirements.
4.2	*Order licensees to provide reasonable protection for equipment currently provided pursuant to 10 CFR 50.54(hh)(2) from the effects of design-basis external events and to add equipment as needed to address multiunit events while other requirements are being revised and implemented.* UCS's Comment: This recommendation, depending on how it is implemented, could address the caveats identified in our comments on Recommendation 4.1. What is "reasonable protection?" How would a plant worker or NRC inspector assess whether non-safety-related equipment added per 10 CFR 50.54(hh)(2) is reasonably protected from design-basis external events? There are decades-old requirements and conventions for assessing whether safety-related components will function during design-basis events. There are decades-old requirements and conventions for assessing whether non-safety-related components will function during licensing-basis fires (e.g, Appendix R). Would applying either of these standards suffice, or is some new standard to be applied? Absent such detail, it is hard to gauge the value of this recommendation. UCS's view is that, absent strong and compelling reasons to the contrary (i.e., not just that it costs too much), this equipment installed to protect the lives of workers and the public should be classified as safety-related. Since that's the role it plays, that's the classification it must be given.

5	***The Task Force recommends requiring reliable hardened vent designs in BWR facilities with Mark I and Mark II containments.***
5.1	*Task Force's Recommendation: Order licensees to include a reliable hardened vent in BWR Mark I and Mark II containments.* UCS's Comment: We agree.
5.2	*Task Force's Recommendation: Reevaluate the need for hardened vents for other containment designs, considering the insights from the Fukushima accident. Depending on the outcome of the reevaluation, appropriate regulatory action should be taken for any containment designs requiring hardened vents.* UCS's Comment: We agree.
7	***The Task Force recommends enhancing spent fuel pool makeup capability and instrumentation for the spent fuel pool.***
7.1	*Task Force's Recommendation: Order licensees to provide sufficient safety-related instrumentation, able to withstand design-basis natural phenomena, to monitor key spent fuel pool parameters (i.e., water level, temperature, and area radiation levels) from the control room.* UCS's Comment: We agree. While the NRC is not currently soliciting comments on Task Force Recommendation 6 regarding hydrogen, we believe that the NRC should require licensees to provide sufficient safety-related instrumentation, able to withstand design-basis natural phenomena, to monitor key hydrogen parameters from the control room on the same pace as for spent fuel pool parameters. While the pathway(s) are currently uncertain, what is certain today is that hydrogen gas got into the reactor buildings on Fukushima Dai-Ichi Units 1, 3, and 4 and ignited, causing secondary containment integrity to be lost at a time when it was needed. By design, hydrogen should not exist in the free space of the reactor building. During normal and post-accident venting of the primary containment, hydrogen might be present in the flow carried through the reactor building within piping and ducting. But it is not supposed to get into the free space of the reactor building. Yet it did. While identification of the pathway(s) through which hydrogen reached the reactor building free spaces should, via Recommendation 6, trigger fixes to lessen recurrence at U.S. reactors, the defense-in-depth philosophy espoused by the Task Force supports the needs for control room operators to be able to detect the unwanted, undesired, and unexpected buildup of hydrogen inside the reactor buildings (secondary containments) of boiling water reactors and the fuel handling buildings of pressurized water reactors. Hopefully, this instrumentation would allow the operators to verify the absence of significant concentrations of hydrogen. But if hydrogen were to collect for

	whatever reasons, the instrumentation would enable the operators to detect this situation and take pro-active steps to mitigate it. At Fukushima, the detection method was the explosion inside the Unit 1 reactor building. To combat recurrence, workers opened a hole in the side of the Unit 2 reactor building and open vents in the roofs of the Unit 5 and 6 reactor buildings to control hydrogen accumulations. Operators at U.S. reactors must not wait for an explosion to alert them to hydrogen collecting in unwanted places. They must be provided the means to monitor hydrogen levels in structures containing safety-related equipment where hydrogen may collect.
7.2	*Task Force's Recommendation: Order licensees to provide safety-related ac electrical power for the spent fuel pool makeup system.* UCS's Comment: This recommendation, along with the rest of the recommendations in the Task Force's report, are not sufficient protection for boiling water reactors (BWRs) with Mark I and Mark II containment designs. If the spent fuel pool at a BWR Mark I/II plant was allowed to boil but its irradiated fuel protected from damage by providing makeup flow to compensate for the water inventory lost via boil-off, the irradiated fuel in the reactor core may be sacrificed. The NRC must not force the operators to make a Faustian choice between catastrophic damage to the spent fuel and catastrophic damage to the reactor core. Both catastrophes should be avoided if possible. The spent fuel pool in a BWR Mark I/II plant is located inside the reactor building, or secondary containment. All the emergency core cooling system pumps (high pressure coolant injection, core spray, and residual heat removal) along with the reactor core isolation cooling system and control rod drive pumps are also located inside the reactor building, typically at its lowest elevation. The water evaporating from a boiling spent fuel pool at a BWR Mark I/Mark II containment eventually condenses back into water. Much of that condensed water drains by gravity down into the lower elevations of the reactor building. The rising water levels eventually disable the emergency core cooling systems for the reactor core due to submergence. Therefore, this recommendation of a panacea for spent fuel pools is a pandemic for reactor cores at BWR Mark I/II plants. The NRC must ensure that BWR Mark I/II plants comply with existing regulations applicable to this situation. As the Task Force stated on page 17 of its report: *... the current NRC regulatory approach includes (1) requirements for design-basis events with features controlled through specific regulations or the general design criteria (GDC) (10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants") ...* General Design Criterion 44 (GDC 44) in Appendix A to 10 CFR Part 50 states: *A system to transfer heat from structures, systems, and components important to safety, to an ultimate heat sink shall be provided. The system safety function shall be to transfer the combined heat load of these structures, systems, and components under normal operating and accident conditions.*

	BWR Mark I/II plants do not comply with this requirement if their GDC 44 cooling water systems cannot transfer the "combined heat load," including the heat load from the spent fuel pool, from the reactor building to the ultimate heat sink. Note that this requirement is for design bases events, not extended design basis, beyond design basis, or other similar moniker. Merely assuring makeup flow to a boiling spent fuel pool at a BWR Mark I/II plant is also inconsistent with the defense-in-depth philosophy expressed on page 25 of the Task Force's report: *The key to a defense-in-depth approach is creating multiple independent and redundant layers of defense to compensate for potential failures and external hazards so that no single layer is exclusively relied on to protect the public and the environment.* The environmental conditions inside the reactor building when its spent fuel pool is boiling are very likely to disable the standby gas treatment system. The standby gas treatment system is a safety system normally in standby. In event of a design basis accident, the reactor building's normal ventilation system is shut down and the standby gas treatment system started. The standby gas treatment system draws air from the refueling floor and lower elevations of the reactor building, passes it through a series of HEPA and charcoal filters, before discharging it from an elevated release point. The filters are designed to reduce the radioactivity levels by a factor of 100. The elevated discharge further protects plant workers and the public by diluting radioactively contaminated air with clean air. A spent fuel pool boiling during a design basis event at a BWR Mark I/II plant can cause the standby gas treatment system to fail. This collapses the desired defense-in-depth layers to a single one – the spent fuel pool not boiling. If the pool boils, reactor core damage is more likely to occur and secondary containment integrity is more likely to be lost.
7.3	*Task Force's Recommendation: Order licensees to revise their technical specifications to address requirements to have one train of onsite emergency electrical power operable for spent fuel pool makeup and spent fuel pool instrumentation when there is irradiated fuel in the spent fuel pool, regardless of the operational mode of the reactor.* UCS's Comment: This recommendation lacks sufficient scope. As stated on page 43 of the Task Force's report: *When the reactor is shut down and defueled for maintenance work and all of the fuel is placed in the spent fuel pool, the LCOs* [limiting conditions for operation specified in the technical specifications, an implicit part of a reactor's operating license] *do not require any electrical power systems to be operable.* This is true. It is also true that when a reactor is defueled, there are no applicable technical specification requirements and associated LCOs for containment integrity and even water level in the spent fuel pool. These shortcomings in the technical specification requirements must also be addressed in addition to the one about onsite emergency electrical power.

7.4	*Task Force's Recommendation: Order licensees to have an installed seismically qualified means to spray water into the spent fuel pools, including an easily accessible connection to supply the water (e.g., using a portable pump or pumper truck) at grade outside the building.* UCS's Comment: For plants other than BWR Mark I/II plants, this recommendation has value with limited downside. For BWR Mark I/II plants, this recommendation has the same potential adverse consequences as articulated in the comments for Recommendation 7.2 above. The Task Force emphasized defense-in-depth provisions frequently in its report, but abandoned that concept with regard to spent fuel pool safety. The Task Force noted on page 44 that "*... the U.S. spent fuel pools are filled with spent fuel pools up to approximately three-quarters of their capacity*" with "*an average storage capacity of approximately 3,000 spent fuel assemblies.*" Spraying water into a spent fuel pool is a desperate measure. Lots of things had to have gone wrong to employ this last-ditch act. If this last-ditch act fails, it is likely that irradiated fuel – and considerable amounts of it – located outside primary containment in both pressurized water reactor and boiling water reactor plants will be damaged. Proper application of the defense-in-depth philosophy would seek to reduce both the probability of such an outcome and its consequences. The recommended water spray provision addresses the probability aspect. Accelerating the transfer of irradiated fuel from spent fuel pools to dry storage would address the consequence aspect of defense-in-depth. The NRC must act to reduce the inventory of irradiated fuel in spent fuel pools to responsibly manage the spent fuel risk.
7.5	*Task Force's Recommendation: Initiate rulemaking or licensing activities or both to require the actions related to the spent fuel pool described in detailed recommendations 7.1–7.4.* UCS's Comment: We agree on one condition – that the rulemaking be completed without undue delay. We watched the NRC take over a decade to plod through the working hours rulemaking. It should not, and must not, take so long to resolve known safety issues.
8	***The Task Force recommends strengthening and integrating onsite emergency response capabilities such as EOPs, SAMGs, and EDMGs.***
8.1	*Task Force's Recommendation: Order licensees to modify the EOP technical guidelines (required by Supplement 1, "Requirements for Emergency Response Capability," to NUREG-0737, issued January 1983 (GL 82-33), to (1) include EOPs, SAMGs, and EDMGs in an integrated manner, (2) specify clear command and control strategies for their implementation, and (3) stipulate appropriate qualification and training for those who make decisions during emergencies.* UCS's Comment: We agree.

8.2	*Task Force's Recommendation: Modify Section 5.0, "Administrative Controls," of the Standard Technical Specifications for each operating reactor design to reference the approved EOP technical guidelines for that plant design.* UCS's Comment: We agree.
8.3	*Task Force's Recommendation: Order licensees to modify each plant's technical specifications to conform to the above changes.* UCS's Comment: We agree.
8.4	*Task Force's Recommendation: Initiate rulemaking to require more realistic, hands-on training and exercises on SAMGs and EDMGs for all staff expected to implement the strategies and those licensee staff expected to make decisions during emergencies, including emergency coordinators and emergency directors.* UCS's Comment: We agree.
9	***The Task Force recommends that the NRC require that facility emergency plans address prolonged SBO and multiunit events.***
9.1	*Task Force's Recommendation: Initiate rulemaking to require EP enhancements for multiunit events in the following areas:* • *personnel and staffing* • *dose assessment capability* • *training and exercises* • *equipment and facilities* UCS's Comment: We agree.
9.2	*Task Force's Recommendation: Initiate rulemaking to require EP enhancements for prolonged SBO in the following areas:* • *communications capability* • *ERDS capability* • *training and exercises* • *equipment and facilities* UCS's Comment: We agree.

9.3	*Task Force's Recommendation: Order licensees to do the following until rulemaking is complete:* • *Determine and implement the required staff to fill all necessary positions for responding to a multiunit event.* • *Add guidance to the emergency plan that documents how to perform a multiunit dose assessment (including releases from spent fuel pools) using the licensee's site-specific dose assessment software and approach.* • *Conduct periodic training and exercises for multiunit and prolonged SBO scenarios. Practice (simulate) the identification and acquisition of offsite resources, to the extent possible.* • *Ensure that EP equipment and facilities are sufficient for dealing with multiunit and prolonged SBO scenarios.* • *Provide a means to power communications equipment needed to communicate onsite (e.g., radios for response teams and between facilities) and offsite (e.g., cellular telephones, satellite telephones) during a prolonged SBO.* • *Maintain ERDS capability throughout the accident.* UCS's Comment: We agree.
9.4	*Task Force's Recommendation: Order licensees to complete the ERDS modernization initiative by June 2012 to ensure multiunit site monitoring capability.* UCS's Comment: We agree about the need to modernize the ERDS without undue delay. We lack information to determine whether the June 2012 deadline is appropriate.

Sexton, Kimberly

From: Joe Neto [joen@infocastevents.com]
Sent: Friday, September 02, 2011 1:57 PM
To: Herr, Linda
Cc: Nieh, Ho
Subject: RE: Contact info

Dear Ms. Herr,

Hope this e-mail finds you well.
Since our conference will be mostly oriented towards the guidelines specified in the United States National Regulatory Commission Near-Term Task Force Report, we would like to kindly ask Commissioner Ostendorff to submit a brief quote about the current environment of the nuclear community post-Fukushima Daiichi incident, that makes it so crucial for the sector to gather and discuss the next steps that will be taken to enhance safety. This quote will be featured on the conference's brochure.

I appreciate your attention to this matter.
With my best regards,

Joe Neto
Event Producer

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Woodland Hills, CA, 91367

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From: Joe Neto [mailto:joen@infocastevents.com]
Sent: Thursday, August 18, 2011 3:28 PM
To: 'Herr, Linda'
Cc: 'Nieh, Ho'
Subject: RE: Contact info

Good afternoon Ms. Herr.

Thank you very much for sending me Commissioner Ostendorff's picture and the NRC Logo.

Best Regards,

Joe Neto
Event Producer

☎ 1 (818) 888-4444
20931 Burbank Blvd., Suite B
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INFOCAST
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www.infocastinc.com

From: Herr, Linda [mailto:Linda.Herr@nrc.gov]
Sent: Thursday, August 18, 2011 12:21 PM
To: 'joen@infocastevents.com'
Cc: Nieh, Ho
Subject: RE: Contact info
Importance: High

Good afternoon Mr. Neto:

Attached are Commissioner Ostendorff's picture and the NRC Logo you requested from Mr. Nieh. Please don't hesitate to call or email me if I can assist further.

Regards,

Linda S. Herr
Administrative Assistant to
Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
PH: 301-415-1759
FAX: 301-415-1757

From: Nieh, Ho
Sent: Thursday, August 18, 2011 3:13 PM
To: Herr, Linda
Cc: 'joen@infocastevents.com'
Subject: FW: Contact info

Linda – could you please provide Joe with the material he is requesting?

Thanks,

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission

(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Joe Neto [mailto:joen@infocastevents.com]
Sent: Thursday, August 18, 2011 3:12 PM
To: Nieh, Ho
Subject: RE: Contact info

Dear Ho,

We are delighted to confirm Commissioner Ostendorff's participation as a Keynote Speaker of our Nuclear Safety Post-Fukushiima Policy Conference.
To properly feature the Commissioner and the NRC in our conference brochure and website, would you be kind enough to send me his picture, along with the NRC logo (in high-resolution)?

I appreciate that.

Best Regards,

Joe Neto
Event Producer

☎ 1 (818) 888-4444
✉ 20931 Burbank Blvd., Suite B
Woodland Hills, CA, 91367

INFOCAST
The Leading Source
www.infocastinc.com

From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Thursday, August 18, 2011 11:57 AM
To: 'joen@infocastevents.com'
Subject: Contact info

Dear Joe – good talking to you, will get back to you to confirm.

Best wishes,

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)

(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

Sexton, Kimberly

From: Herr, Linda
Sent: Tuesday, September 06, 2011 8:14 AM
To: Nieh, Ho
Cc: Franovich, Mike
Subject: FW: Contact info

Ho:
Will you handle this or shall I ask Mike to respond?
Thanks,
Linda

From: Joe Neto [mailto:joen@infocastevents.com]
Sent: Friday, September 02, 2011 1:57 PM
To: Herr, Linda
Cc: Nieh, Ho
Subject: RE: Contact info

Dear Ms. Herr,

Hope this e-mail finds you well.
Since our conference will be mostly oriented towards the guidelines specified in the United States National Regulatory Commission Near-Term Task Force Report, we would like to kindly ask Commissioner Ostendorff to submit a brief quote about the current environment of the nuclear community post-Fukushima Daiichi incident, that makes it so crucial for the sector to gather and discuss the next steps that will be taken to enhance safety. This quote will be featured on the conference's brochure.

I appreciate your attention to this matter.
With my best regards,

Joe Neto
Event Producer

☎ 1 (818) 888-4444
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Woodland Hills, CA, 91367

INFOCAST
The Leading Source
www.infocastinc.com

From: Joe Neto [mailto:joen@infocastevents.com]
Sent: Thursday, August 18, 2011 3:28 PM
To: 'Herr, Linda'
Cc: 'Nieh, Ho'
Subject: RE: Contact info

Good afternoon Ms. Herr.

Thank you very much for sending me Commissioner Ostendorff's picture and the NRC Logo.

Best Regards,

Joe Neto
Event Producer

☎ 1 (818) 888-4444
20931 Burbank Blvd., Suite B
Woodland Hills, CA, 91367

INFOCAST
The Leasing Source
www.infocastinc.com

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Sent: Thursday, August 18, 2011 12:21 PM
To: 'joen@infocastevents.com'
Cc: Nieh, Ho
Subject: RE: Contact info
Importance: High

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U.S. Nuclear Regulatory Commission
PH: 301-415-1759
FAX: 301-415-1757

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Cc: 'joen@infocastevents.com'
Subject: FW: Contact info

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Thanks.

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Joe Neto
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U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

Sexton, Kimberly

From: Dave Lochbaum [DLochbaum@ucsusa.org]
Sent: Monday, September 19, 2011 9:21 AM
To: Nieh, Ho
Subject: RE: Foot-dragging follow-up

Hello Ho:

Sorry for the delay getting back to you. I took Friday off as a vacation day.

This week, my schedule is open on Monday except for 2-3pm, all day on Tuesday, any time Thursday morning, and all day Friday.

If there's a date/time this week that works for you, let me know. If not, let me know of convenient times for you next week and I'll see if that works.

Thanks for following up on my email,
Dave
(b)(6) cell
423-468-9272, office

From: Nieh, Ho [Ho.Nieh@nrc.gov]
Sent: Friday, September 16, 2011 8:05 AM
To: Dave Lochbaum
Subject: RE: Foot-dragging follow-up

Hello Dave.

Thanks for your insights. I would like to understand better the issue you raise regarding exclusion of severe accident risk.

Is there a good time for you for us to have a phone call?

Best wishes,

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Dave Lochbaum [mailto:DLochbaum@ucsusa.org]
Sent: Thursday, September 15, 2011 10:09 AM
To: Nieh, Ho
Subject: Foot-dragging follow-up

Hello Ho:

I've seen two recent media reports concerning the same "foot-dragging" statement I provided them. Bloomberg reported that I'd commented the staff's take on the task force's recommendations looked like foot-dragging, but left off the qualifier that I'd give the staff benefit of the doubt. Steve Dolley in today's Nucleonics Week reported the fuller context.

In any case, I am concerned about the NRC's approach to the task force's recommendations.

I caught the last portion of yesterday's Commission briefing via webcast. Ed Lyman filled me in the the earlier portion I'd missed.

I can understand and appreciate that the staff's resources do not allow all recommendations to be undertaken simultaneously. I also recognize that not all of the recommendations are equal in terms of complexity and their starting points.

Thus, I accept that there will be different timelines for implentation/resolution of the recommendations.

What concerns me is the staff's stated process for prioritizing its efforts. Eric Leeds and Bill Borchardt repeatedly said they'd risk-informed their regulatory decision-making (perhaps not stated soon enough for Commissioner Apostolakis, but stated and restated nonetheless).

The problem, to me, is that the integration of design basis and beyond design basis arenas sought by task force recommendation 1 has been deferred. Thus, the risk tools available to the staff to risk-inform decisions on the other recommendations exclude the severe accident risks, for the most part. Bill Borchardt touched upon this point with his comments about re-defining adequate protection. But that re-definition likely won't happen anytime soon.

Bottom line -- I am very concerned that the recommendations made by the task force to lessen U.S. reactors' vulnerability to the severe accident that happened at Fukushima will be wrongly delayed/dismissed if the NRC staff risk informs decision-making using tools and processes that do not consider severe accident risks.

Thanks,
Dave Lochbaum
UCS

Sexton, Kimberly

From: Nieh, Ho
Sent: Friday, September 23, 2011 5:44 PM
To: Ostendorff, William
Subject: Re: Greetings

You too sir!

Ho

Sent via BlackBerry

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Ostendorff, William
To: Nieh, Ho
Sent: Fri Sep 23 17:32:04 2011
Subject: Fw: Greetings

Let's discuss Monday. Have a great weekend!

From: Ostendorff, William
To: 'jeff.merrifield@shawgrp.com' <jeff.merrifield@shawgrp.com>
Sent: Fri Sep 23 17:31:22 2011
Subject: Re: Greetings

Jeff-Thanks for the note. Let me get back to you with some options for scheduling. Best wishes, Bill

---

From: Merrifield, Jeff <jeff.merrifield@shawgrp.com>
To: Ostendorff, William
Sent: Fri Sep 23 17:20:59 2011
Subject: Greetings

Bill,

I hope all is well with you. I wanted to follow up on a conversation you had with Mike O'Connell regarding our activities related to Fukushima. I was looking at the calendar and was wondering if we might find a time on either November 1st or 2nd that we could make to work. I would also be interested in your suggestions as to how we might schedule this with the other members of the Commission. My thought was that it would be Mike, Bob Holland (with whom I am told you also went to school) and me. In the past, some of these meetings have taken place as joint Commissioner meetings (i.e., 2 x2 X 1 - presumptively Greg) so that we aren't there all day, but yet stay within the guidelines of closed meetings. Let me know what you think.

Have a great weekend,

Jeff

Jeffrey S. Merrifield
Senior Vice President
Shaw Power Group
128 S. Tryon Street, 22nd Floor
Charlotte, NC 28202
704.378.5227 direct
(b)(6) cell
704.378.5107 fax

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http://www.shawgrp.com

Sexton, Kimberly

From: Nieh, Ho
Sent: Monday, September 26, 2011 2:15 PM
To: Herr, Linda
Subject: FW: Greetings

fyi

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Ostendorff, William
Sent: Friday, September 23, 2011 5:32 PM
To: Nieh, Ho
Subject: Fw: Greetings

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704.378.5101 fax

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Sexton, Kimberly

From: Dave Lochbaum [DLochbaum@ucsusa.org]
Sent: Tuesday, September 27, 2011 8:32 AM
To: Nieh, Ho
Subject: RE: Foot-dragging follow-up

Good Morning Ho:

Thursday at 3pm eastern time works fine for me. I can call you or you can reach me at my cell (b)(6) or office (423-468-9272).

Thanks,
Dave

From: Nieh, Ho [Ho.Nieh@nrc.gov]
Sent: Tuesday, September 27, 2011 6:55 AM
To: Dave Lochbaum
Subject: RE: Foot-dragging follow-up

Good morning Dave.

I lost control of last week, sorry for that.

Would a phone call at 3:00 PM on Thursday, September 29, work for you?

Best wishes,

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Dave Lochbaum [mailto:DLochbaum@ucsusa.org]
Sent: Monday, September 19, 2011 9:21 AM
To: Nieh, Ho
Subject: RE: Foot-dragging follow-up

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If there's a date/time this week that works for you, let me know. If not, let me know of convenient times for you next week and I'll see if that works.

Thanks for following up on my email,

Dave
(b)(6) cell
423-468-9272, office

From: Nieh, Ho [Ho.Nieh@nrc.gov]
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Ho

Ho Nieh
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Office of Commissioner William C. Ostendorff
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(301) 415-1757 (fax)
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To: Nieh, Ho
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Sexton, Kimberly

From:	Nieh, Ho
Sent:	Thursday, September 29, 2011 8:07 AM
To:	Herr, Linda
Cc:	Ostendorff, William; Franovich, Mike
Subject:	FW: Nuclear Industry Input on the Approach to, and Prioritization of, NRC Actions Associated with the Fukushima Daiichi Accident; Docket Number NRC-2011-0196
Attachments:	09-26-11_NRC_Nuclear Industry Input on the Approach to, Prioritization of, NRC Actions Associated with the Fukushima Daiichi Accident.pdf; 09-26-11_NRC_Nuclear Industry Input on the Approach to, Prioritization of, NRC Actions Associated with the Fukushima Daiichi Accident_Attachment 1.pdf; 09-26-11_NRC_Nuclear Industry Input on the Approach to, Prioritization of, NRC Actions Associated with the Fukushima Daiichi Accident_Attachment 2.pdf

Linda – pls print copies of attachments for WCO.

Thanks.

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: HEYMER, Adrian [mailto:aph@nei.org]
Sent: Monday, September 26, 2011 6:01 PM
Subject: Nuclear Industry Input on the Approach to, and Prioritization of, NRC Actions Associated with the Fukushima Daiichi Accident; Docket Number NRC-2011-0196

September 26, 2011

Ms. Cindy K. Bladey
Chief, Rules, Announcements and Directives Branch
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Subject: Nuclear Industry Input on the Approach to, and Prioritization of, NRC Actions Associated with the Fukushima Daiichi Accident; Docket Number NRC-2011-0196

Project Number: 689

Dear Ms. Bladey:

Actions Should Match Information Available

History—especially the NRC and industry experience following the 1979 accident at Three Mile Island—teaches the importance of first understanding what happened, defining the problem to be solved, and then taking an action. This reduces the likelihood of missing what is truly important to safety and rework. As discussed at the September 21 meeting, the industry is developing a timeline—in conjunction with the Tokyo Electric Power Company—of the events at Fukushima Daiichi. This is expected to be completed by early November 2011. It is our intent to share the timeline with the NRC. It is important that the NRC, the industry and the public have a common understanding of the progression of events and actions at Fukushima Daiichi. A common timeline would be the basis for discussions of lessons learned and needed actions.

Near-term actions and the setting of priorities should be based on what is known. Where information is incomplete, additional actions should await a more complete understanding of the accidents.

The Fukushima spent fuel pools are an example of where facts have invalidated earlier conclusions. Shortly following the initial events, many believed that water levels in the pools—the Unit 4 pool, in particular—had fallen to the point that the spent fuel had overheated, failed and contributed to the accident. Now, with the benefit of visual inspections and samples from the four affected fuel pools, it is evident that the spent fuel rods did not experience major and significant failure.

Preparations for Beyond Design Basis Events

In addressing the wide range of potential beyond design bases events, such as large fires and explosions, approaches that encompass diversity and flexibility with redundancy have proven to be the most effective. Beyond design basis events are, by their very nature, "...sequences that are possible but were not fully considered in the design process because they were judged to be too unlikely."[2] This suggests that we should be enhancing the means for our operating crews to react to beyond design basis event symptoms with flexibility and agility, which requires diverse and redundant equipment, not single, fixed systems that are designed for a limited set of circumstances.

An example of this point is the NRC's Near-Term Task Force recommendation that NRC "[o]rder licensees to have an installed seismically qualified means to spray water into the spent fuel pools, including an easily accessible connection to supply the water (*e.g.,* using a portable pump or pumper truck) at grade outside the building."[3] A permanent standpipe with a connection at grade outside the building would be effective for spraying water into the pools only under limited circumstances. It would not be effective if the pipe connection was, for example, inundated with flood waters that exceeded the flooding design basis; was blocked by debris deposited by a tornado; the portable pump could not access the connection due to any number of reasons, including debris, earthquake damage, etc.; was damaged or destroyed by an explosion

[2] NRC Glossary (http://www.nrc.gov/reading-rm/basic-ref/glossary/beyond-design-basis-accidents.html).
[3] USNRC, Recommendations for Enhancing Reactor Safety in the 21st Century: The Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident (July 21, 2011) at 46.

or aircraft crash. A question to contemplate is whether such a standpipe would have remained intact and operable at Fukushima Daiichi given the explosions in Units 1, 3 and 4.

A far better enhancement would be to increase the amount of B.5.b equipment (consistent with the number of units with operating licenses on a site), place the B.5.b equipment in diverse locations and train operating crews to be flexible and agile in their approach to such events. This requires that the operators know the water level and temperature in the pools. As discussed in the attachment, the industry supports enhancing spent fuel pool monitoring through diverse and redundant means with the flexibility to accommodate varying plant configurations.

"Adequate Protection" for Post-Fukushima Requirements

NRC's Near-Term Task Force Report concluded that "...continued operation and continued licensing activities [at nuclear power plants] do not impose an imminent risk to the public health and safety and are not inimical to the common defense and security."[4] The report also states that all the recommendations in the report should be implemented through an expansion of adequate protection.[5] Under the Atomic Energy Act, the Backfit Rule and related court decisions, the NRC has broad authority to determine what is meant by adequate protection.[6]

Under the NRC's Backfit Rule, there is an exception to the requirement for cost-benefit analysis and justification for imposing new requirements if the NRC determines that the change is needed to provide adequate protection.[7] As part of its determination, the NRC is required to provide a "documented evaluation" of the backfit stating the objectives of, and reasons for, the modification and the basis for invoking the exception.[8] The NRC should adhere to the long-established regulatory requirements of the Backfit Rule and prepare the required evaluations as it makes those determinations. Further, even recognizing NRC's broad discretion in determining what protection is adequate, the industry nonetheless suggests that the agency engage with stakeholders prior to reaching a determination regarding adequate protection and any additional regulatory actions.

If NRC ultimately determines that a post-Fukushima requirement should be imposed based on what is necessary for adequate protection, the NRC should consider, as is provided for under the Backfit Rule, the cost-benefit among different methodologies for meeting the requirement.[9] This will be particularly important as the agency evaluates flexible regulatory approaches to address beyond design basis events.

[4] *Id.* at 18.
[5] *Id.*
[6] *For example,* the D.C. Circuit has opined that "the determination of what constitutes 'adequate protection' under the Act ... is just such a situation where the Commission should be permitted to have discretion to make case-by-case judgments based on its technical expertise ...." *Union of Concerned Scientists v. Nuclear Regulatory Comm'n., 880 F. 2d 552, 558 (D.C. Cir. 1989).*
[7] 10 C.F.R. § 50.109(a)(5)
[8] 10 C.F.R. § 50.109(a)(6)
[9] 10 C.F.R. § 50.109(a)(7)

Prioritization of Post-Fukushima Regulatory Actions

The attachment to this letter discusses the industry's views on the priorities for action, which remain the items discussed in our September 2, 2011 letter.

As the NRC considers the priorities of the post-Fukushima recommended regulatory actions, the industry strongly suggests that potential actions be ranked by contribution to safety. The individual post-Fukushima regulatory actions should also be compared to all the other regulatory actions the NRC and the industry are pursuing on the same basis such that an overall priority can be developed.

In closing, the industry commits to continuing our efforts to work closely with the NRC in devising the needed response to what is learned from events in Japan. We look forward to additional discussions with NRC staff on these and related topics.

Sincerely,

Adrian P. Heymer

Attachments

c: The Honorable Gregory B. Jaczko, Chairman, U.S. Nuclear Regulatory Commission
The Honorable Kristine L. Svinicki, Commissioner, U.S. Nuclear Regulatory Commission
The Honorable William D. Magwood, IV, Commissioner, U.S. Nuclear Regulatory Commission
The Honorable George Apostolakis, Commissioner, U.S. Nuclear Regulatory Commission
The Honorable William C. Ostendorff, Commissioner, U.S. Nuclear Regulatory Commission
Mr. R. William Borchardt, EDO, NRC
Mr. Martin J. Virgilio, EDO, NRC
Mr. Eric J. Leeds, NRR, NRC
Mr. Brian W. Sheron, RES, NRC
Mr. Michael R. Johnson, NRO, NRC
Mr. David L. Skeen, NRR/DE, NRC

NUCLEAR ENERGY INSTITUTE

Adrian P. Heymer
SENIOR DIRECTOR
STRATEGIC PROGRAMS
NUCLEAR GENERATION DIVISION

September 26, 2011

Ms. Cindy K. Bladey
Chief, Rules, Announcements and Directives Branch
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Subject: Nuclear Industry Input on the Approach to, and Prioritization of, NRC Actions Associated with the Fukushima Daiichi Accident; Docket Number NRC-2011-0196

Project Number: 689

Dear Ms. Bladey:

The Nuclear Energy Institute[1] appreciates the opportunity to follow-up the September 21, 2011 public meeting between NRC senior management and representatives of the industry's Fukushima Response Steering Committee. The purpose of this letter is to provide input on the approach to, and prioritization of, NRC actions associated with the Fukushima Daiichi accident, especially in light of the industry actions taken to date following the accident.

The industry agrees that there are important lessons to be learned and implemented from the Fukushima Daiichi accident. As described at the September 21 meeting, the industry has developed a strategic plan, *The Way Forward*, to manage its response to the Fukushima crisis; a copy is attached. The plan emphasizes the importance of maintaining the high safety performance of the 104 operating reactors and covers the development and implementation of lessons learned from Fukushima, research and development, technical support, international cooperation, communications, emergency planning and preparedness, training, and regulatory interactions and response.

Following the accident at Fukushima Daiichi, the nuclear industry took immediate actions in the areas needing attention based on the earliest lessons learned. These actions were discussed by industry representatives on September 21. As more is learned, the industry will not hesitate to take additional actions.

[1] NEI is the organization responsible for establishing unified industry policy on matters affecting the nuclear energy industry. NEI's members include all entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, nuclear material licensees, and other organizations and entities involved in the nuclear energy industry.

1776 I Street, NW | Suite 400 | Washington, DC | 20006-3708 | P: 202.739.8094 | F: 202.533.0147 | aph@nei.org | www.nei.org

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Adrian Heymer
Senior Director, Strategic Programs

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Washington, DC 20006
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nuclear

FOLLOW US ON

Sexton, Kimberly

From: Herr, Linda
Sent: Thursday, September 29, 2011 8:13 AM
To: Nieh, Ho
Subject: RE: Nuclear Industry Input on the Approach to, and Prioritization of, NRC Actions Associated with the Fukushima Daiichi Accident; Docket Number NRC-2011-0196

Done ☺

From: Nieh, Ho
Sent: Thursday, September 29, 2011 8:07 AM
To: Herr, Linda
Cc: Ostendorff, William; Franovich, Mike
Subject: FW: Nuclear Industry Input on the Approach to, and Prioritization of, NRC Actions Associated with the Fukushima Daiichi Accident; Docket Number NRC-2011-0196

Linda – pls print copies of attachments for WCO.

Thanks.

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: HEYMER, Adrian [mailto:aph@nei.org]
Sent: Monday, September 26, 2011 6:01 PM
Subject: Nuclear Industry Input on the Approach to, and Prioritization of, NRC Actions Associated with the Fukushima Daiichi Accident; Docket Number NRC-2011-0196

September 26, 2011

Ms. Cindy K. Bladey
Chief, Rules, Announcements and Directives Branch
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Subject: Nuclear Industry Input on the Approach to, and Prioritization of, NRC Actions Associated with the Fukushima Daiichi Accident; Docket Number NRC-2011-0196

Project Number: 689

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From: Nieh, Ho
Sent: Friday, September 30, 2011 7:00 AM
To: Kock, Andrea
Subject: FW: Nuclear Industry Input on the Approach to, and Prioritization of, NRC Actions Associated with the Fukushima Daiichi Accident; Docket Number NRC-2011-0196
Attachments: 09-26-11_NRC_Nuclear Industry Input on the Approach to, Prioritization of, NRC Actions Associated with the Fukushima Daiichi Accident.pdf; 09-26-11_NRC_Nuclear Industry Input on the Approach to, Prioritization of, NRC Actions Associated with the Fukushima Daiichi Accident_Attachment 1.pdf; 09-26-11_NRC_Nuclear Industry Input on the Approach to, Prioritization of, NRC Actions Associated with the Fukushima Daiichi Accident_Attachment 2.pdf

Here ya go.

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
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Sent: Monday, September 26, 2011 6:01 PM
Subject: Nuclear Industry Input on the Approach to, and Prioritization of, NRC Actions Associated with the Fukushima Daiichi Accident; Docket Number NRC-2011-0196

September 26, 2011

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Chief, Rules, Announcements and Directives Branch
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

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Project Number: 689

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NUCLEAR ENERGY INSTITUTE

Adrian P. Heymer
SENIOR DIRECTOR
STRATEGIC PROGRAMS
NUCLEAR GENERATION DIVISION

September 26, 2011

Ms. Cindy K. Bladey
Chief, Rules, Announcements and Directives Branch
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Subject: Nuclear Industry Input on the Approach to, and Prioritization of, NRC Actions Associated with the Fukushima Daiichi Accident; Docket Number NRC-2011-0196

Project Number: 689

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[1] NEI is the organization responsible for establishing unified industry policy on matters affecting the nuclear energy industry. NEI's members include all entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, nuclear material licensees, and other organizations and entities involved in the nuclear energy industry.

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[2] NRC Glossary (http://www.nrc.gov/reading-rm/basic-ref/glossary/beyond-design-basis-accidents.html).
[3] USNRC, Recommendations for Enhancing Reactor Safety in the 21st Century: The Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident (July 21, 2011) at 46.

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[4] *Id.* at 18.
[5] *Id.*
[6] *For example,* the D.C. Circuit has opined that "the determination of what constitutes 'adequate protection' under the Act ... is just such a situation where the Commission should be permitted to have discretion to make case-by-case judgments based on its technical expertise ...." *Union of Concerned Scientists v. Nuclear Regulatory Comm'n., 880 F. 2d 552, 558 (D.C. Cir. 1989).*
[7] 10 C.F.R. § 50.109(a)(5)
[8] 10 C.F.R. § 50.109(a)(6)
[9] 10 C.F.R. § 50.109(a)(7)

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Adrian P. Heymer

Attachments

c: The Honorable Gregory B. Jaczko, Chairman, U.S. Nuclear Regulatory Commission
The Honorable Kristine L. Svinicki, Commissioner, U.S. Nuclear Regulatory Commission
The Honorable William D. Magwood, IV, Commissioner, U.S. Nuclear Regulatory Commission
The Honorable George Apostolakis, Commissioner, U.S. Nuclear Regulatory Commission
The Honorable William C. Ostendorff, Commissioner, U.S. Nuclear Regulatory Commission
Mr. R. William Borchardt, EDO, NRC
Mr. Martin J. Virgilio, EDO, NRC
Mr. Eric J. Leeds, NRR, NRC
Mr. Brian W. Sheron, RES, NRC
Mr. Michael R. Johnson, NRO, NRC
Mr. David L. Skeen, NRR/DE, NRC

Attachment

Nuclear Industry Input on the Approach to, and Prioritization of, NRC Actions Associated with the Fukushima Daiichi Accident
Docket Number NRC-2011-0196

Industry Response to the Fukushima Daiichi Accident

In light of the events in Japan and the industry's need to understand and take appropriate actions at U.S. nuclear power plants in response to the accident, the industry leadership formed the Fukushima Response Steering Committee—a set of nine chief nuclear officers and senior executives from the three industry associations, INPO,[1] EPRI[2] and NEI[3]—to lead the U.S. nuclear power industry's response to the events in Japan. The steering group:

- developed a strategic plan[4] that articulates the strategic goals, structure and process for defining the industry's overall response to Fukushima;
- ensures that identified issues are appropriately coordinated among industry organizations and that lead and supporting roles are clearly established;
- monitors the status of action plans on key issues to ensure priorities and schedules are consistent with the strategic plan and that the overall impact on operating plants is balanced and appropriate to the industry's prime focus, excellence in safe operations; and
- works with NRC and other parties to establish a common understanding of the events that took place in Japan and a congruent as possible vision of needed changes going forward.

Immediately following the accident, INPO took several actions to ensure that the equipment each plant must have on-site for responding to terrorist attacks (pursuant to 10 CFR 50.54(hh)) was available and operating crews were knowledgeable in its use;[5] to require each plant to

[1] The Institute of Nuclear Power Operations (INPO) promotes the highest levels of safety and reliability – to promote excellence – in the operation of commercial nuclear power plants by establishing performance objectives, criteria and guidelines for the nuclear power industry, conducting regular detailed evaluations of nuclear power plants, and providing assistance to help nuclear power plants continually improve their performance.

[2] The Electric Power Research Institute, Inc. (EPRI) conducts research and development relating to the generation, delivery and use of electricity for the benefit of the public. An independent, nonprofit organization, EPRI brings together its scientists and engineers as well as experts from academia and industry to help address challenges in electricity, including reliability, efficiency, health, safety and the environment. EPRI's members represent more than 90 percent of the electricity generated and delivered in the United States, and international participation extends to 40 countries.

[3] NEI is the organization responsible for establishing unified industry policy on matters affecting the nuclear energy industry. NEI's members include all entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, nuclear material licensees, and other organizations and entities involved in the nuclear energy industry.

[4] "The Way Forward – U.S. Industry Leadership in Response to Events at the Fukushima Daiichi Nuclear Power Plant" (Washington, D.C.) June 8, 2011.

[5] The NRC parallel inspections of these items and procedures, and the results have been well documented and not described here.

have available in the control room information on how long it would take the spent fuel pools to reach 200°F given the parameters in the pool at the time and to ensure that the pool would not reach 200°F for 72 hours following loss of active cooling; and to assess how long station blackout coping times can be extended. Future actions will be taken based on the information reported back to INPO combined with additional knowledge about the events that transpired at Fukushima.

Fukushima Event Timeline

As discussed at the September 21, 2011 meeting between NRC senior management and representatives of the industry's Fukushima Response Steering Committee, the industry agrees that there are important lessons to be learned and implemented from the Fukushima Daiichi accident. Near-term actions and the setting of priorities should be based on what is known. Additional actions should be studied, but held in abeyance until there is a more complete understanding of the accidents.

In this regard, the industry is developing a timeline—in conjunction with the Tokyo Electric Power Company—of the events at Fukushima Daiichi. This is expected to be completed by early November 2011. It is our intent to share the timeline with the NRC. It is important that the NRC, the industry and the public have a common understanding of the progression of events and actions at Fukushima Daiichi. A common timeline would be the basis for discussions of lessons learned and needed actions.

Beyond Design Basis Events

In dealing with beyond design bases events and accident management, the industry has recognized that it is not possible to identify the specific accident progression among a very broad set of potential events. Therefore, it makes little sense to permanently install fixed equipment and systems that can, by their very nature of being fixed, be useful in only a limited number of beyond design basis scenarios. As a result, we have adopted a diverse, redundant, risk-informed, performance-based approach to severe accident management relying on dispersed, portable equipment and guidelines rather than fixed equipment and prescriptive criteria and detailed procedures, so that operating crews can react with flexibility and agility to the symptoms of the events. In other words, multiple different types of equipment (with appropriate training) located in different places that allow operating crews to respond to the symptoms being able to use the same equipment for different conditions or different equipment for the same conditions.

This approach would also allow for individual plants to take into account the variations in siting, geographical and geological locations, and plant designs for implementing post-Fukushima accident enhancements. It would allow specific plant operators and emergency response organizations to develop successful mitigation measures based on knowing their technical knowledge, their specific plant and its systems, and general guidance.

Priority of Post-Fukushima Actions

Nuclear generating plants are complex with a myriad of systems and numerous inter-dependencies. Thus, many of the 34 recommendations made by the NRC Near-Term Task Force

have an impact on, or are dependent upon, other recommendations or plant aspects. Such interdependencies call for an integrated understanding of the plants and the effect expected of the recommended actions and enhancements.

Based on a coarse, qualitative risk assessment, many of the 34 recommendations have small or negligible risk significance. However, there are six priority recommendations that we consider to have need for immediate action.

The priority recommendations are:

- Recommendation 2.3 – Verification of capability to meet current design basis for external flooding and seismic and verification of monitoring and maintenance for protective features.
- Recommendation 4.1 – Enhanced capability to cope with multi-unit loss of ac power conditions.
- Recommendation 5.1 – Enhanced capability to vent BWR Mark I containments under loss of AC conditions.
- Recommendation 8.1 – Integration of EDMGs and SAMGs and enhanced training on the EOP-SAMG/EDMG interface.[6]
- Recommendation 7.1 – Spent fuel pool monitoring
- Recommendations 9 and 10 – Emergency Planning (EP) as they relate to implementation of the new EP rule.

Discussion of the High-Priority Recommendations

- **Recommendation 2:** Verification of capability to meet current design basis for external flooding and seismic and verification of monitoring and maintenance of protective features.
  - Conduct walk-downs to assure that plant conforms to its design. Separate regulatory interactions on flooding and seismic should take place in advance of the walk-downs to reach a common understanding on the approach and acceptance criteria prior to commencing the activity.
  - Specific 10-year updates are unnecessary. Any new and pertinent information is always assessed as it is identified to determine if there is a potential impact on the plant and the design bases. A generic process with predetermined criteria for identifying and assessing new information and a process for updating the design bases, if required, with a suitable time period for implementation needs to be developed. However, the industry firmly believes that from a safety perspective, we

[6] EDMG = Extensive Damage Mitigation Guideline; SAMG = Severe Accident Management Guideline; EOP = Emergency Operating Procedure

should not wait to perform a review and update every 10 years. New information should be evaluated as it is identified and, if necessary, action—including the update of the design bases—should be taken.

- **Recommendation 4**: Rulemaking to enhance the capability to cope with an extended and complete loss of ac power at all units on a site.

  - This is a complex and low-probability issue with varying impact and outcomes dependent on the numerous design configurations and potential site-specific solutions. With varying grid and plant configurations, geographical, geological and transportation infrastructure differences, the potential for a complete loss of AC power at all units varies from site to site, as does the capability to restore that power. While the industry supports the need for improving the coping duration for a complete loss of AC power, there needs to be recognition of site-specific differences. A flexible, diverse, performance-based approach that takes into account site- and design-specific nuances would address this issue.

  - A performance-based approach would not support a specific, prescribed duration interval of 72 hours. The duration should be based on a determination of how long it would take to either restore a reliable AC power supply from the grid or from portable offsite support.

  - Importantly, the NRC staff recognizes the value of the 10 CFR 50.54(hh) equipment. The industry will assess the adequacy of this equipment to deal with a multi-unit event and will adjust its approach accordingly.

  - Some new plant designs have the capability to cope with a complete loss of AC power for 72 hours. Other new designs have additional safety systems or enhanced protection features that could assure safety-related emergency electrical equipment is adequately protected. This reinforces the need for a performance-based approach as opposed to a prescriptive set of generic requirements for new or existing plants. In addition, the Near-Term Task Force report provides no basis for requiring new plants to extend the coping duration beyond 72 hours using portable 10 CFR 50.54(hh) equipment. Well-documented processes for imposing new requirements on new designs are provided in 10 CFR Part 52: 10 CFR 52.83, 52.98 and 50.109. ITAAC[7] are not the appropriate vehicle for imposing new regulatory requirements on new plants.

  - We agree that new plants should meet 10 CFR 50.54(hh) for each unit, yet such equipment should not have to be procured and commissioned before the authorization to load fuel (10 CFR 52.103 finding) has been made.

- **Recommendation 5**: BWR Mark I hardened venting systems should remain reliable and functional under a complete loss of AC power.

[7] ITAAC = Inspections, Tests, Analyses, and Acceptance Criteria

- Even though there is a lack of understanding of the exact progression of events and decision-making at Fukushima Daiichi, the industry agrees that there must be confidence in the reliability of operation of BWR Mark I hardened vent systems.

- The industry will take action to ensure that the hardened vents on BWR Mark I containments are accessible and functional during a loss of AC power. We strongly recommend that this is the definition of "reliable" in the meaning of Recommendation 5. Regulatory interactions are needed prior to taking this action to assure a common understanding of the requirements and acceptance criteria for reliable hardened vents.

- Any additional changes to BWR Mark I containment vents should not be determined until better information is available about the venting process at Fukushima Daiichi.

- As with implementing other recommendations, there is a need for flexibility in implementation to take into account the varying system configurations at individual sites.

- **Recommendation 8**: Integration of SAMGs and EDMGS with EOPs with additional training.

  - There would be benefit in enhancing operator awareness on the relationships among EOPs, SAMGs and EDMGs. It is important that operating crews and the emergency response organizations understand how to move from EOPs into SAMGs and EDMGs. This is especially important since the EOPs are step-wise procedures, while—owing to the types of events they cover (see discussion above concerning beyond design basis events)—the SAMGs and EDMGs are guidelines. The industry intends to provide additional training within the industry's accreditation program on SAMGs, while recognizing that the standard for operators should be one of familiarization, not in-depth detailed knowledge. From a safety perspective, it is critical that operator training emphasis be on normal, abnormal and EOPs, which are the far more likely events.

Discussion of the Lower-Priority Items

- **Recommendation 7**: Spent fuel pools.

  - Based on the events at Fukushima Daiichi, as they are now understood, there is clearly a benefit to remote monitoring of the spent fuel pool during the evolution of a reactor accident to prevent incorrect conclusions and actions. Such action could result in the diversion of needed resources away from more safety-significant activities. Remote monitoring would enable operators to know when actions are needed to provide additional water to the pools. This recommendation is consistent with the action already taken by the industry on knowing the time until the pool will reach 200°F.

  - The power supplies, however, do not have to be safety-related. Based on the thermal inertia, the time it takes for the spent fuel pool water level to reach a point

of concern for public health and safety, and coupled with the experiences at Fukushima Daiichi where safety-related power supplies would not have changed the situation, it is difficult to understand why safety-related power supplies for spent fuel pool monitoring are needed. Diversity and redundancy would appear to be a more important attributes than the more traditional equipment qualification and special treatment requirements.

- The commission should allow flexibility in implementation based on the variety of spent fuel pool cooling system configurations.

- Regulatory interactions should take place in advance of plants providing spent fuel pool monitoring to reach a common understanding on the approach and acceptance criteria for the monitoring.

- **Recommendations 9 and 10**: Emergency preparedness.

  - The first priority should be to implement the EP improvements prescribed in the newly-amended EP regulations. As the industry moves forward with implementing the new requirements, regulatory interactions can take place to assess the need, benefit and implementation of additional staffing to manage simultaneous multi-unit events in parallel with implementing the amended rule. An action plan for implementing the other task force recommendations will be developed in 2012, with implementation to follow once licensees have implemented the amended EP rule requirements.

Other Recommendations

- **Recommendation 1**: Development of a new regulatory framework to better balance the risk-informed approach with defense-in-depth.

  - This is not a high-priority item and is not directly related to the Fukushima accidents. The industry will provide input to the NRC staff on the additional detailed proposals for this item over the next 18 months.

  - The industry encourages the NRC staff to build on the work performed in the 2001 to 2007 time frame. The purpose of the risk-insight is to focus the NRC and industry attention on those items truly important to safety. Risk-insights and defense-in-depth are not opposites, with risk-insights influencing the need and application of defense-in-depth attributes.

- **Recommendation 5.2**: Reevaluate the need for hardened vents for other containment designs (Non-BWR Mark I containments).

  - Once more information is known and validated about the events at Fukushima Daiichi, the NRC and industry will be in a better position to make a determination on the need for additional evaluations on containment integrity, heat removal, combustible gas control and pressure control capabilities for all containment designs.

Before agency and industry resources are committed to an extensive reevaluation of other designs, the basis for requiring such an evaluation should be fully understood.

- **Recommendation 6**: Hydrogen control and mitigation.
  - As stated for Recommendation 5.2, once there is a better understanding of the pathway of hydrogen into the reactor buildings at Fukushima Daiichi, the NRC and industry will be in a better position to determine whether there is a need for plant modifications and reassessment of hydrogen control and mitigation capabilities. We hope to be in a position to make that determination in the next few months.
- **Recommendation 7.4**: Addition of a seismically-qualified spray line for spent fuel pool cooling.
  - The provision of a permanent, seismically-qualified spray line would not provide a significant improvement in safety benefit when considering the other measures that are available for supplying make-up water to the spent fuel pool during a beyond design basis event. Additional spent fuel make-up capacity is better assured through enhancing the means for operating crews to react to beyond design basis event symptoms with flexibility and agility, which requires diverse and redundant equipment, not single, fixed systems that are designed for a limited set of circumstances.
  - Spent fuel pool cooling events are slowly evolving. 10 CFR 50.54(hh) contingency measures already provide for additional spent fuel pool make-up water; such measures will be enhanced.
- **Recommendation 11**: NRC staff action related to EP decision-making, radiation protection and public education.
  - While this recommendation is more related to the NRC and other government agencies, the industry believes it has an important role in educating and informing the public, especially in areas surrounding the power plants, in regard to radiation protection.
  - The industry is already taking steps to identify nationally-recognized practitioners and medical experts in the radiological protection and health field. Education and awareness is an area where a combined industry-government approach would be beneficial.
  - The industry outreach and information would recognize the variations in licensee programs and local circumstances and the guidance should allow for flexibility in implementation at the site, fleet or regional level.
- **Recommendation 11.3**: Study the efficacy of real-time radiation monitoring onsite and within the Emergency Planning Zones (including consideration of AC power independence and real-time availability on the Internet).

- Additional discussion among stakeholders is needed to fully understand the intent and benefit of this recommendation.

- **Recommendation 11.4**: Training, in coordination with the appropriate federal partners, on radiation, radiation safety and the appropriate use of potassium iodide (KI) in the local community around each nuclear power plant.

  - This should be part of a national campaign for all nuclear incidents (not just power plants) that involve radioactive products and not limited to communities near nuclear power plants.

  - Training and public information in the vicinity of nuclear power plants needs to be coordinated by the licensee in conjunction with state and local public health organizations.

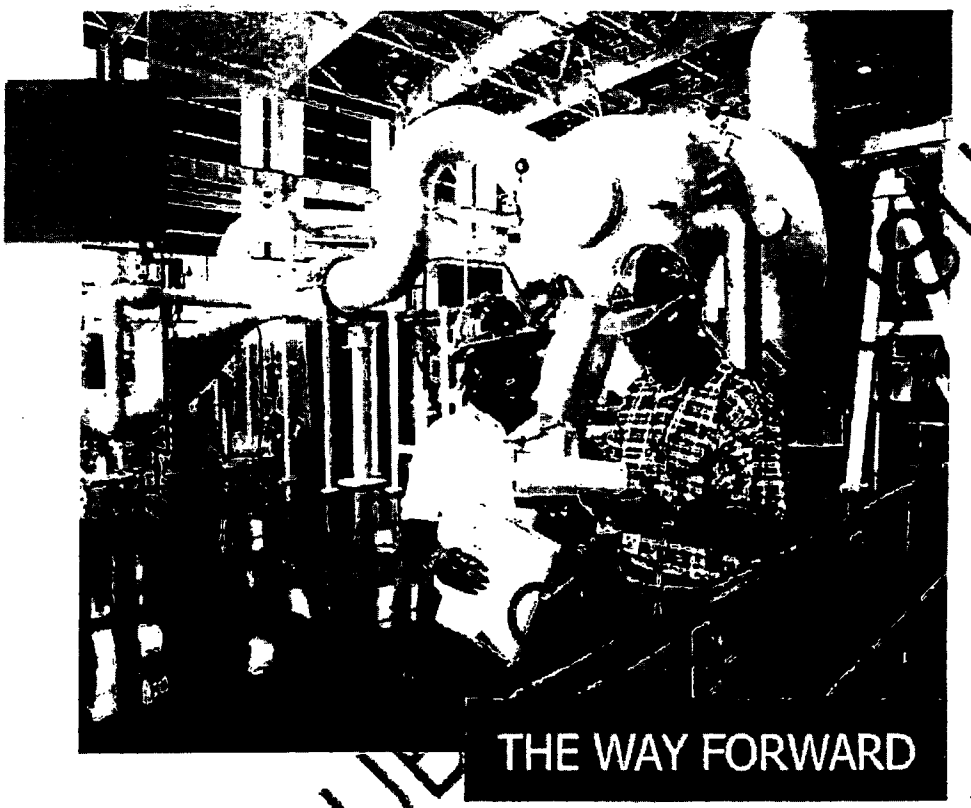
- **Recommendation 12**: The NRC strengthen regulatory oversight of licensee safety performance (*i.e.*, the Reactor Oversight Program) by focusing more attention on defense-in-depth requirements consistent with the recommended defense-in-depth framework.

  - This is labeled as a NRC staff action, yet it will have significant resource and operational impact on the industry.

  - The ROP was established in 2000 to provide a logical rationale for what the NRC inspects and how it assesses violations. As new information becomes available through operating experience and events such as the accident at Fukushima Daiichi, inspection modules are reviewed and updated as necessary along with the NRC process for assessing violations. The industry has continued to interact with the NRC staff on updating and strengthening the ROP process since 2000.

  - The events at Fukushima Daiichi need to be understood in greater detail to determine what changes need to be made to the inspection process, including areas of defense-in-depth. There needs to be careful consideration of what to change in the areas of inspection. Risk-informed assessment—not risk-based—of where to place inspection emphasis should not be lightly discarded. We recommend that the NRC work with its stakeholders to ensure that operating experience is appropriately included in any changes to the ROP (see discussion above concerning Recommendation 1).

- **Loss of Ultimate Heat Sink**: This is an issue that warrants further review and discussion in view of the events in Japan. At the moment, there is insufficient information to warrant a specific recommendation on this topic. Once there is a common understanding on what happened at the Fukushima Daiichi and Daini stations, a better determination can be made on whether U.S. plants need to assess and, if necessary, take steps to enhance prevention or mitigation capabilities associated with such an event.



THE WAY FORWARD

U.S. Industry Leadership in Response to Events at the Fukushima Daiichi Nuclear Power Plant

NEI NUCLEAR ENERGY INSTITUTE

INPO®

EPRI ELECTRIC POWER RESEARCH INSTITUTE

June 8, 2011

1. EXECUTIVE SUMMARY

The earthquake and tsunami in Japan on March 11, 2011 and subsequent nuclear accident at Tokyo Electric Power Co.'s Fukushima Daiichi nuclear power plant have resulted in worldwide attention toward nuclear energy safety. The leadership of the U.S. commercial nuclear industry is dedicated to gaining a deep understanding of the events at Fukushima Daiichi and to taking the necessary actions to improve safety and emergency preparedness at America's nuclear energy facilities.

The Electric Power Research Institute (EPRI), Institute of Nuclear Power Operations (INPO), and Nuclear Energy Institute (NEI), in conjunction with senior utility executives, have created a joint leadership model to integrate and coordinate the U.S. nuclear industry's response to events at the Fukushima Daiichi nuclear energy facility. This will ensure that lessons learned are identified and well understood, and that response actions are effectively coordinated and implemented throughout the industry. This must be accomplished while electric companies continue to ensure that the safe and reliable operation of commercial reactors is our highest priority. This effort will not diminish the independent roles of the industry support groups, such as the role of INPO to promote the highest levels of safety in U.S. commercial reactors, as actions are taken to fulfill their missions.

An important and integral aspect of the industry's response is the awareness and involvement of the industry's many stakeholders, including industry vendors, architect-engineering companies, industry owners' groups and national consensus nuclear standards organizations. This will ensure that the interests of each stakeholder group are considered, understood and communicated to the public and policymakers.

A comprehensive investigation of the events at Fukushima Daiichi will take considerable time. Yet, there is also a need to act in a deliberate and decisive manner. Recognizing this, America's nuclear energy industry is taking action based on a preliminary understanding of the events. The industry's response is structured to ensure that emergency response strategies are updated based on new information and insights learned during subsequent event reviews.

Separately, the U.S. Nuclear Regulatory Commission (NRC) is conducting an independent assessment and will consider actions to ensure that its regulations reflect lessons learned from the Fukushima events. The industry's response will ensure that the NRC and industry remain informed of each other's respective activities so that any new regulatory requirements are implemented in the most efficient and effective manner.

This strategic overview describes how the industry will approach this challenge and is intended to serve as a reference point for the future. It articulates strategic goals and key stakeholders for the industry's integrated response. In addition, this overview describes the respective roles and coordination of industry organizations in managing the discrete elements of a comprehensive U.S. industry response plan.

2. STRATEGIC GOALS

The primary objective is to improve nuclear safety by learning and applying the lessons from the Fukushima Daiichi nuclear accident. In response, the U.S. nuclear industry has established the following strategic goals to maintain, and where necessary, provide added defense in depth for critical safety functions, such as reactor core cooling, spent fuel storage pool cooling and containment integrity:

1. The nuclear workforce remains focused on safety and operational excellence at all plants, particularly in light of the increased work that the response to the Fukushima event will represent.

2. Timelines for emergency response capability to ensure continued core cooling, containment integrity and spent fuel storage pool cooling are synchronized to preclude fuel damage following station blackout.

3. The U.S. nuclear industry is capable of responding effectively to any significant event in the U.S. with the response being scalable to support an international event, as appropriate.

4. Severe accident management guidelines, security response strategies (B.5.b), and external event response plans are effectively integrated to ensure nuclear energy facilities are capable of a symptom-based response to events that could impact multiple reactors at a single site.

5. Margins for protection from external events are sufficient based on the latest hazards analyses and historical data.

6. Spent fuel pool cooling and makeup functions are fully protective during periods of high heat load in the spent fuel pool and during extended station blackout conditions.

7. Primary containment protective strategies can effectively manage and mitigate post-accident conditions, including elevated pressure and hydrogen concentrations.

3. GUIDING PRINCIPLES

To achieve our strategic goals, the industry has established principles to guide the development of its response actions. These principles will be used to guide the resolution of issues and plant improvements and will ensure that a consistent expectation is established for incorporating lessons into the operations at each site. The strategic response actions will be designed to:

1. Ensure equipment and guidance, enhanced as appropriate, result in improvements in response effectiveness.

2. Address guidance, equipment and training to ensure long-term viability of safety improvements.

3. Develop response strategies that are performance-based, risk-informed and account for unique site characteristics.

4. Maintain a strong interface with federal regulators to ensure regulatory actions are consistent with safety significance and that compliance can be achieved in an efficient manner.

5. Coordinate with federal, state and local government and their emergency response organizations on industry actions to improve overall emergency response effectiveness.

6. Communicate aggressively the forthright approach the U.S. industry is taking to implement the lessons from the Fukushima Daiichi accident.

4. STAKEHOLDERS AND DESIRED OUTCOMES

The industry's strategic goals will be achieved by proactively engaging a variety of stakeholders.

General Public

The industry will ensure that the general public is well-informed of the collective approach in response to the Fukushima accidents. Special attention will be paid to engaging stakeholders (residents, elected officials and other stakeholders) immediately surrounding nuclear energy facilities to maintain confidence in their plant's continued safe operations and ability to protect public health and safety.

Employees

The industry will provide information to its employees to understand the operating experience from Fukushima as part of their training to execute their jobs with excellence and be advocates for nuclear safety.

Emergency Response Organizations

The industry will continue to communicate and cooperate with federal, state and local emergency response organizations and government entities to ensure that emergency response plans reflect the lessons learned from the Fukushima Strategic Response Plan. These organizations include, but are not limited to, state and local police; fire officials; health officials/paramedics; federal, state and local governments; and transportation companies. Interactions will be focused on increasing confidence in the industry's and local government emergency preparedness programs.

Industry

Utilities, industry vendors and owners groups, architect-engineers, manufacturers and companies and organizations involved in the nuclear fuel cycle, working as a collective worldwide industry, will continue to strive for operational excellence. These actions and goals will continue the ongoing contribution to the legacy of safe, reliable, environmentally responsible production of electricity at nuclear energy facilities. The industry will work with all interested parties to ensure the benefits of nuclear energy for future generations.

Regulators

The industry will maintain relationships with federal and state regulators to ensure the industry participates in the regulatory process and can effectively implement any regulatory changes.

Technical Partners

The industry will continue to collaborate with technical associations and organizations to ensure information is disseminated and understood by all interested parties so that the benefits and positions of nuclear energy are appreciated and support the industry's long-term objectives.

Policymakers and Opinion Leaders

The industry will proactively communicate lessons learned and industry actions such that policy and opinion leaders at the local, state and national level recognize the proactive, unwavering industry response to the Fukushima accident. The industry will continue to focus on improving confidence in the safety of U.S. nuclear energy facilities and assuring support for industry legislative proposals and programs that enhance safety.

International Community

The U.S. nuclear industry will interact with international nuclear energy companies and organizations to compile and assess recommendations and actions for applicability to U.S. facilities and to make the international industry aware of U.S. improvements.

5. LEADERSHIP MODEL OVERVIEW

The nuclear industry has successfully demonstrated the ability to identify and manage the response to various issues in a coordinated manner. Under normal circumstances, the structures are in place to successfully coordinate the response to significant issues among key industry groups. For the response to the Fukushima event, however, there is a need for a greater level of coordination with the number and complexity of potential issues that are identified by each of the key industry groups. As a result, we have developed a coordinating framework for the development and execution of actions in response to the lessons of the Fukushima event.

The leadership model is based on the following elements:

- **Organization** – clear division of responsibilities among the involved parties. An industry steering committee will provide strategic direction and oversight. Ownership for analysis and execution will be organized around the industry's seven building blocks based on the type of issue being addressed.

- **Event Response Process** – each industry organization (*see chart on page 9*) is responsible for identifying issues, plant and process improvements, and regulatory reviews of the Fukushima events. Issue descriptions, including action plans and recommendations, will be developed to implement improvements. The steering committee will approve the actions and designate an industry organization and building block to lead and implement the action to resolution.

- **Issue Action Plans** – action plans with schedules and resource management tools will be developed and executed for each issue within its assigned building block.

- **Strategic Response Plan** – all issues assigned to the seven building blocks constitute the nuclear industry's response. The action plans will be summarized by building block to form the strategic response plan.

- **Execution Oversight and Status Tracking** – each industry organization and its building block(s) will regularly report the status of all issues to the steering committee.

Building Blocks

The leadership model is organized around seven areas called building blocks. Building blocks are temporary organizations created to develop and execute action plans for issues assigned to them by the steering committee. Building blocks led by an individual assigned by the industry organization will consist of assigned managers and designated personnel from the industry organizations, utilities, and suppliers. Building block oversight is provided by the steering committee, lead industry organization, and the assigned steering committee sponsor.

The seven building blocks along with the lead organization(s) and focus are identified below:

1. **Maintain Focus on Excellence in Existing Plant Performance (INPO):** focus on continued performance improvement of U.S. reactors.

2. **Develop and Issue Lessons Learned from the Fukushima Events (INPO):** focus on comprehensive analysis of the Fukushima event and that lessons learned are applied to the U.S. nuclear industry and shared with the World Association of Nuclear Operators (WANO).

3. **Improve the Effectiveness of U.S. Industry Response Capability to Global Nuclear Events (INPO/NEI):** focus on identified lessons learned from the U.S. industry response to the Fukush ima event, allowing for more effective integrated response to future events.

4. **Develop and Implement a Strategic Communications Plan (NEI):** focus on managing the industry's strategic communications and outreach campaigns to recover policymaker and public support for nuclear energy.

5. **Develop and Implement the Industry's Regulatory Response (NEI):** focus on managing the industry's regulatory interactions and resolution of applicable industry regulatory issues from the incident.

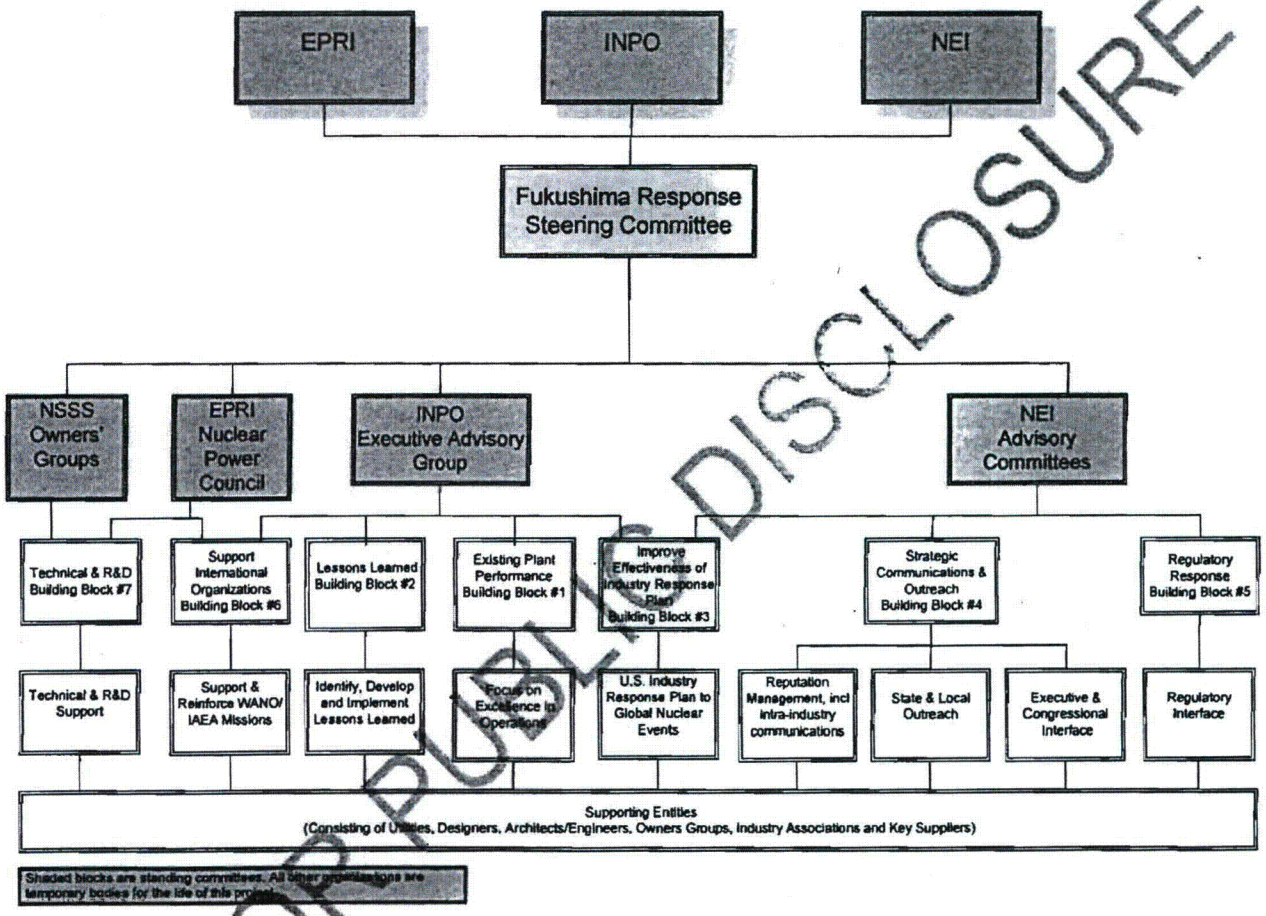
6. **Participate and Coordinate with International Organizations (INPO/EPRI):** focus on ensuring the results from international investigations are captured and effectively used to inform actions with the other building blocks.

7. **Provide Technical Support and R&D Coordination (EPRI/NSSS Owners' Groups):** focus on existing technical solutions and research and development activities and deliverables necessary to address recommended actions of this plan.

Each building block will be supported by nuclear and, in specific instances, non-nuclear industry organizations and companies, where specific technical, operational or other expertise is required.

6. LEADERSHIP RESPONSE ORGANIZATION AND BUILDING BLOCKS

The leadership model structure involves many industry participants and is outlined below:



Sexton, Kimberly

From: Nieh, Ho
Sent: Monday, October 03, 2011 8:32 PM
To: Ostendorff, William
Subject: Fw: Rep. Ed Markey Confirmed For Wednesday's Discussion On U.S. Nuclear Policy

Sir, fyi.

Will see what get's picked up in the trade press.

Ho

Sent via BlackBerry

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Caputo, Annie (EPW) <Annie_Caputo@epw.senate.gov>
To: Bubar, Patrice; Sharkey, Jeffry; Nieh, Ho
Sent: Mon Oct 03 10:42:21 2011
Subject: FW: Rep. Ed Markey Confirmed For Wednesday's Discussion On U.S. Nuclear Policy

Well, this looks balanced...

From: Ohly, John [mailto:John.Ohly@mail.house.gov]
Sent: Monday, October 03, 2011 9:51 AM
To: Alexander, Erin (Fellow); Caputo, Annie (EPW)
Subject: FW: Rep. Ed Markey Confirmed For Wednesday's Discussion On U.S. Nuclear Policy

Pretty balanced panel for this one.

From: National Journal LIVE [mailto:rsvp@nationaljournal.com]
Sent: Monday, October 03, 2011 9:32 AM
To: Ohly, John
Subject: Rep. Ed Markey Confirmed For Wednesday's Discussion On U.S. Nuclear Policy

FEATURE INTERVIEWS WITH:
Gregory B. Jaczko, Chairman, U.S. Nuclear Regulatory Commission
Rep. Ed Markey, Member, House Energy & Commerce Committee (D-MA)

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LESSONS FROM JAPAN

Global Implications of Nuclear Disaster

As we approach the seven month anniversary of the Great East Japan earthquake and tsunami and the ensuing nuclear crisis, Americans still question what happened, why, and what an event of this magnitude means for U.S. nuclear policy and our relative state of preparedness.

National Journal will convene experts to discuss the latest on the current nuclear situation, the U.S. government's efforts to assist Japan, and the public health and economic lessons learned as a result of the disaster.

RSVP: njsummit100511.eventbrite.com

FEATURE INTERVIEW:
Gregory B. Jaczko, Chairman, U.S. Nuclear Regulatory Commission
Rep. Ed Markey, Member, House Energy & Commerce Committee (D-MA)

MODERATED BY:
James Kitfield, Senior Correspondent, National Journal

PANEL:

- Richard W. Caperton, Senior Policy Analyst, Energy Opportunity, Center for American Progress
- Allison Macfarlane, Associate Professor of Environmental Science and Policy, George Mason University

Wednesday, October 5, 2011
8:00 AM Registration
8:30 – 10:30 AM Program

National Press Club
First Amendment Room
529 14th Street NW
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Note to Government Employees: In deference to the letter and spirit of applicable ethics regulations, this educational event is not intended for state and local government employees. A description of this event - written for government ethics office review - may be requested by writing jhostetter@nationaljournal.com.

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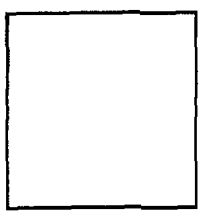

Sexton, Kimberly

From: Caputo, Annie (EPW) [Annie_Caputo@epw.senate.gov]
Sent: Monday, October 03, 2011 12:05 PM
To: Nieh, Ho
Subject: RE: Rep. Ed Markey Confirmed For Wednesday's Discussion On U.S. Nuclear Policy

yup

From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Monday, October 03, 2011 11:45 AM
To: Caputo, Annie (EPW)
Subject: RE: Rep. Ed Markey Confirmed For Wednesday's Discussion On U.S. Nuclear Policy

Oh yeah, that looks very balanced!

Looking forward to tomorrow – still good for you?

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Caputo, Annie (EPW) [mailto:Annie_Caputo@epw.senate.gov]
Sent: Monday, October 03, 2011 10:42 AM
To: Bubar, Patrice; Sharkey, Jeffry; Nieh, Ho
Subject: FW: Rep. Ed Markey Confirmed For Wednesday's Discussion On U.S. Nuclear Policy

Well, this looks balanced...

From: Ohly, John [mailto:John.Ohly@mail.house.gov]
Sent: Monday, October 03, 2011 9:51 AM
To: Alexander, Erin (Fellow); Caputo, Annie (EPW)
Subject: FW: Rep. Ed Markey Confirmed For Wednesday's Discussion On U.S. Nuclear Policy

Pretty balanced panel for this one...

From: National Journal LIVE [mailto:rsvp@nationaljournal.com]
Sent: Monday, October 03, 2011 9:32 AM
To: Ohly, John
Subject: Rep. Ed Markey Confirmed For Wednesday's Discussion On U.S. Nuclear Policy

FEATURE INTERVIEWS WITH:
Gregory B. Jaczko, Chairman, U.S. Nuclear Regulatory Commission
Rep. Ed Markey, Member, House Energy & Commerce Committee (D-MA)

NATIONAL JOURNAL LIVE POLICY SUMMIT

LESSONS FROM JAPAN

Global Implications of Nuclear Disaster

As we approach the seven month anniversary of the Great East Japan earthquake and tsunami and the ensuing nuclear crisis, Americans still question what happened, why, and what an event of this magnitude means for U.S. nuclear policy and our relative state of preparedness.

National Journal will convene experts to discuss the latest on the current nuclear situation, the U.S. government's efforts to assist Japan, and the public health and economic lessons learned as a result of the disaster.

RSVP: njsummit100511.eventbrite.com

FEATURE INTERVIEW:
Gregory B. Jaczko, Chairman, U.S. Nuclear Regulatory Commission
Rep. Ed Markey, Member, House Energy & Commerce Committee (D-MA)

MODERATED BY:
James Kitfield, Senior Correspondent, National Journal

PANEL:

- Richard W. Caperton, Senior Policy Analyst, Energy Opportunity, Center for American Progress
- Allison Macfarlane, Associate Professor of Environmental Science and Policy, George Mason University

Wednesday, October 5, 2011
8:00 AM Registration
8:30 – 10:30 AM Program

National Press Club
First Amendment Room
529 14th Street NW
Washington DC

RSVP: njsummit100511.eventbrite.com

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WITH SPECIAL THANKS TO OUR UNDERWRITER: FLIR

Note to Government Employees: In deference to the letter and spirit of applicable ethics regulations, this educational event is not intended for state and local government employees. A description of this event - written for government ethics office review - may be requested by writing jhostetter@nationaljournal.com.

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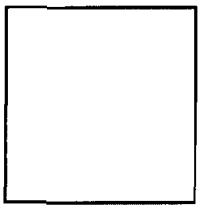

Sexton, Kimberly

From: Nieh, Ho
Sent: Friday, October 07, 2011 5:18 AM
To: Ostendorff, William; Franovich, Mike; Kock, Andrea; Sexton, Kimberly
Subject: Post opinion - Nuclear energy after Fukushima

fyi...

Nuclear energy after Fukushima

By Jim Hoagland, Published: October 6

PALO ALTO, Calif.

The environmental disaster at Japan's Fukushima nuclear power plant this spring is creating a new global divide over the safety of nuclear energy. Sharply differing responses to Fukushima from the world's wealthiest and poorest nations will bring diminished safety for all.

Countries that should be best equipped to deal with nuclear mishaps are turning away from atomic energy after the meltdown of three reactors in northern Japan on March 11. Europeans, most notably in Germany, and Americans are abandoning or delaying plans to replace or upgrade their electricity-producing nuclear plants — and extending the operational life of existing, less-safe reactors well beyond their original 40-year licensing period.

But developing countries with little nuclear experience and spotty industrial safety records are moving ahead with ambitious plans to expand generating capacity. China and India — after pausing briefly to review safety arrangements — are adding about 80 new reactors over the next two decades. (The United States has 104 of the 436 reactors worldwide.)

India's expanding use of electricity obtained from enriched uranium — an essential ingredient in building nuclear weapons — is certain to spur Pakistan's already well-established atomic ambitions, at a time when many see Iran's nuclear research program as a prelude to a triangular nuclear arms race involving Israel and Arab states that covet nuclear power.

In short, the proliferation of nuclear reactors across Asia is certain to facilitate and encourage nuclear weapons proliferation as well.

"We are holding a pair of nuclear tigers by the tail," said George Shultz, secretary of state in the Reagan administration, at a conference on nuclear risk this week at Stanford University's Hoover Institution. The disaster at Fukushima, he said, "should prompt a deeper appreciation of ... weak links in nuclear weapons ... and in the humans who are charged with making decisions, not to mention those seeking to cause mass murder."

It is progress of a kind that the nuclear disarmament movement is headed today by such establishment figures as Shultz, Henry Kissinger, William Perry and Sam Nunn. This "Gang of Four" elder statesmen have for the past five years authored sober op-ed columns calling for the eventual abolition of nuclear weapons and given a more realistic cast to a cause once dominated by the street theater and emotionalism of pacifist movements of the Cold War era.

Shultz and his Hoover colleague Sidney Drell, a nuclear physicist, organized this gathering of physicists, nuclear engineers, academics and journalists to try to extend the rational, cost-benefit analytical approach to the less-examined area of civil nuclear power.

The calamity at Fukushima spread fears of radiation poisoning around the world — even though all but one or two of the estimated 14,000 deaths were thought to have been caused by the earthquake and tsunami that triggered the reactor meltdowns.

Germany nonetheless has ordered its 17 nuclear reactors shut down by 2022. Polls in other countries show that there too anti-nuclear sentiment has regained ground that it had lost in recent years, as concern mounted in developed countries about atmospheric pollution caused by carbon dioxide and the instability of petroleum prices and supplies.

This swing is notable even in countries that depend heavily on nuclear power, such as France, where Socialist Party leaders say they will raise the issue in next year's presidential elections. In Japan, public approval of adding more nuclear plants stood at 82 percent six years ago. After Fukushima, that number has plunged to 30 percent, according to Japanese newspaper polls.

Industry representatives argued to the experts here that higher safety standards and tighter regulation protect U.S. reactors from a Fukushima-type disaster. No consensus was reached on the reliability of those assertions. Japan made similar claims before Fukushima revealed the deadly weaknesses in its crisis-management abilities and in the International Atomic Energy Agency's oversight capabilities.

Next week marks the 25th anniversary of the Reykjavik summit, where Mikhail Gorbachev proposed that the United States and the Soviet Union abolish all their nuclear weapons — six months after he had seen the destruction and havoc wrought by a nuclear meltdown at Chernobyl.

The primary threat of irremediable damage to the planet no longer comes from rocket forces commanded by the Kremlin and the Pentagon but from nuclear bureaucracies in Tehran, Jerusalem, New Delhi, Islamabad and other capitals in the developing world, as well as from terror networks intent on acquiring fissionable material.

The Obama administration has supported the creative proposals put forward by the Gang of Four and the Global Zero movementand promised disarmament initiatives of its own in a comprehensive Nuclear Posture Review and a Washington summit on proliferation.

But the nuclear world has changed dramatically in the past six months. The administration needs to recognize and act on the reality that Fukushima — like Chernobyl in its day — issued a summons to new thinking.

Jim Hoagland, a contributing editor to The Post, is currently an Annenberg visiting fellow at the Hoover Institution.

Ho Nieh
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ho.nieh@nrc.gov

Sexton, Kimberly

From: Nieh, Ho
Sent: Thursday, October 20, 2011 5:07 AM
To: Mizuno, Geary
Cc: Sexton, Kimberly; Franovich, Mike
Subject: Backfit follow up

Good morning Geary - hope all is well.

Would you be able to meet with me at 9:30 this morning on backfit?

I could use some more knowledge transfer from you!

Should be 30-minutes or less.

Please let me know.

Thanks.

Ho

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ho.nieh@nrc.gov

Sexton, Kimberly

From: Ostendorff, William
Sent: Wednesday, November 09, 2011 6:04 PM
To: Nieh, Ho
Subject: Re: Speaker Information: The New Nuclear Challenge, Prague - Ostendorff

Looks organized! Concur in doing the phone call.

From: Nieh, Ho
To: Ostendorff, William
Sent: Wed Nov 09 17:04:30 2011
Subject: Fw: Speaker Information: The New Nuclear Challenge, Prague - Ostendorff

Fyi - there is a pre-conference phone call they are suggesting. I think that would be a good idea.

Ho

Sent via BlackBerry

Ho Nieh
Chief of Staff
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U.S. Nuclear Regulatory Commission
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(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Alexiev, Nicole <Nicole.Alexiev@aspeninst.org>
To: Nieh, Ho; Stahl, Eric
Cc: Carter, Mary; Browne-Phillips, Andrea <andrea.browne-phillips@aspeninst.org>
Sent: Wed Nov 09 15:18:44 2011
Subject: Speaker Information: The New Nuclear Challenge, Prague - Ostendorff

Dear Commissioner Ostendorff,

We are honored to have you as a speaking participant at ***The New Nuclear Challenge,*** **Nov 30 – Dec 2, 2011, Prague, Czech Republic.** This letter provides information on your session and speaking role.

In addition, we've attached the Aspen Institute's copyright license agreement form. **Please sign this form asap and return it via e-mail to nicole.alexiev@aspeninst.org.**

****

VENUE
Radisson Blu Alcron: www.radissonblu.com/hotel-prague
Gala Dinner (evening, Dec 1): Troja Castle

SESSION INFORMATION
You are scheduled to participate in the following session:

Session Date and Time:
December 1, 2011

11:15am – 12:45pm

Session Two: International Regulatory Reactions to Fukushima
The 2011 Japanese nuclear accident has had global implications for nuclear operators, countries, and international regulators. Some scientists and policy makers say that the Fukushima disaster revealed that the nuclear industry lacks sufficient oversight, leading to renewed calls to redefine national nuclear regulatory mechanisms and the mandate of the IAEA to better police nuclear power plants worldwide. This panel of national and international representatives will discuss what effect Fukushima has had on the nuclear regulatory environment specifically and implications for the industry in general.

Dana Drábová, President of the State Office for Nuclear Safety, Czech Republic
Denis Flory, Deputy Director General for Nuclear Safety and Security, International Atomic Energy Agency
Lord Peter Mandelson, Politician and Former Member of Government, U.K.
William Ostendorff, Commissioner, US Nuclear Regulatory Commission

Moderator: TBD
**Please note that this information is subject to change. We will notify you in advance of any major changes.*

SESSION FORMAT

The format for sessions at Aspen Institute Forums is conversational with the dialogue guided by the moderator.

- Each session lasts ~90 minutes and includes a moderator and 4-5 "panelists."
- The moderator will introduce the session topic and each panelist individually. The moderator will then guide the conversation among all the speakers.
- The session will conclude with a 15-30 minute question-and-answer period with the audience.

The following suggestions are offered to assist in arranging the best possible Forum:

- Panelists should give no more than a 5-7 minute opening presentation when they are introduced by the moderator.
- Panelists are encouraged not to use power point presentations. However, if you absolutely require slides, we ask that you limit your slides to no more than 5. If you have slides, please send them to Nicole.alexiev@aspeninst.org no later than November 22.
- *Note:* The most frequent negative comment in evaluations of Aspen Institute Forums is when speakers exceed their time limit, reducing the time available for dialogue.

- You are welcome to bring materials such as reports, brochures, etc. to the Forum. We anticipate around 120 attendees so please plan accordingly.
- Please arrive for you session at least 15 minute before the start time!

SESSION PREPARATION

Pre-Prague Phone Conversation:
We would like to schedule a time to discuss your session and your speaking role, before arriving in Prague. **Please let me know if you are able to have a 30-minute conversation anytime in the following timeframe: November 14 – November 23.** Please contact me directly at Nicole.alexiev@aspeninst.org to coordinate the best time for you.

Pre-Forum Speakers Dinner:
November 30th, 18:30pm
Location: V Zátiší Restaurant *
***Please meet in the lobby of the Radisson at 18:30pm to be transported to the Restaurant*

We have arranged a special dinner for all speakers on November 30th. Speakers will sit together with their fellow panelists and moderators to prepare for their sessions.

On behalf of all of us at the Aspen Institute, we thank you again for participating in *The New Nuclear Challenge* and we look forward to seeing you in Prague!

Sincerely,

Nicole Alexiev
Deputy Director
Energy and Environment Program
The Aspen Institute
202-736-5815

Sexton, Kimberly

From: Christina Logan [clogan@pacific.net.sg]
Sent: Sunday, November 13, 2011 7:30 PM
To: Nieh, Ho
Subject: RE: World Nuclear Power Briefing 2012

Dear Ho,

Many thanks for the clarification – I didn't realise there were 5 NRC Commissioners. I look forward to seeing Commissioner Ostendorff at the World Nuclear Briefing 2012 in Hanoi.

Warm regards,
christina

Christina Logan
Programme Director
Strategic Communications
Mob : (b)(6)
www.stratcoms.com

From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Sunday, 13 November, 2011 2:25 AM
To: 'clogan@pacific.net.sg'
Subject: Re: World Nuclear Power Briefing 2012

Dear Christina,

I hope all is well with you.

I'm not familiar about the UK panel.

There are 5 NRC Commissioners.

Commissioner Ostendorff looks forward to the Hanoi conference in January.

Best wishes,

Ho

Sent via BlackBerry.

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
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(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Christina Logan <clogan@pacific.net.sg>
To: Nieh, Ho
Sent: Fri Nov 11 17:10:28 2011
Subject: RE: World Nuclear Power Briefing 2012

Dear Ho,

How are you? I trust that all is well. I recently saw a forum in the UK for Feb 21-22 advertising that Commissioner Kristine Svinicki will be participanting. Has there been a change?

I look forward to hearing from you.

Warm regards,
christina

Christina Logan
Programme Director
Strategic Communications
(b)(6)
www.stratcoms.com

From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Wednesday, 7 September, 2011 10:46 PM
To: 'clogan@pacific.net.sg'
Subject: Re: World Nuclear Power Briefing 2012

Thanks Christina. Any thoughts on the panel?

Ho

Sent via BlackBerry

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff
U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Christina Logan <clogan@pacific.net.sg>
To: Nieh, Ho
Sent: Wed Sep 07 06:15:11 2011
Subject: RE: World Nuclear Power Briefing 2012

Many thanks for this Ho. It was good to have a chat with you yesterday.

Warm regards,
christina

Christina Logan
Programme Director

Strategic Communications
Mob (b)(6)

From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Wednesday, 7 September, 2011 1:41 AM
To: 'clogan@pacific.net.sg'
Subject: RE: World Nuclear Power Briefing 2012

Dear Christina,

Thank you for providing the current programme.

Given that the Commissioner will be spending most of the day at the programme, he would be happy to participate in the afternoon panel session if that opportunity was available. We found that participating in the panel at the Hong Kong conference last year was worthwhile.

Please let me know if that is a possibility.

As requested, the title and bullet points for Commissioner Ostendorff's presentation are as follows.

Title: U.S. Nuclear Regulatory Commission's Response to the Nuclear Events in Japan

- Discuss the USNRC's response to the nuclear accident at the Fukushima Dai-ichi nuclear power plant, including the recommendations of the NRC's Near Term Task Force
- Discuss the USNRC's next steps for enhancing nuclear safety and opportunities for international cooperation

Best regards,

Ho

Ho Nieh
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ho.nieh@nrc.gov

-----Original Message-----
From: Christina Logan [mailto:clogan@pacific.net.sg]
Sent: Monday, September 05, 2011 1:13 AM
To: Nieh, Ho
Subject: RE: World Nuclear Power Briefing 2012

Dear Ho,

I called and missed you again. Perhaps it is easier for us to do this via email. I am attaching the current programme for your easy reference. My thoughts was to include Commissioner Ostendorff at 12pm and this will be directly followed by Jay Gutierrez at 12:30 who will discuss the benefits of an independent regulator with reference to the U.S's response to the incidents at Fukushima.

Let me know what you think. If this is ok - please send me topic title, bullet points as well as a brief bio and a photo to update both website and programme.

I look forward to receiving the above soon as I would like to start working on the getting the brochure printed soon.

Many thanks,
christina

Christina Logan
Programme Director
Strategic Communications
Mob (b)(6)

-----Original Message-----
From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Friday, 2 September, 2011 11:06 AM
To: clogan@pacific.net.sg
Subject: RE: World Nuclear Power Briefing 2012

Dear Christina - we keep missing each other.

It would be easier to talk over the phone than via email.

I am in the office all day tomorrow, and my calendar is wide open.

Is there a particularly good time for me to call you?

Best wishes,

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Christina Logan [clogan@pacific.net.sg]
Sent: Thursday, September 01, 2011 4:29 PM
To: Nieh, Ho
Subject: RE: World Nuclear Power Briefing 2012

Dear Ho,

I just saw your message and tried calling you, will try again in a few minutes time. It is 8:30am now.

Warm regards,
christina

Christina Logan

Programme Director
Strategic Communications
Mob : (b)(6)

-----Original Message-----
From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Thursday, 1 September, 2011 10:40 PM
To: 'clogan@pacific.net.sg'
Subject: RE: World Nuclear Power Briefing 2012

Dear Christina,

Hello! Is there a good time for us to talk today?

I am 16-hours behind you.

Perhaps 16:30 my time, which would be about 08:30 your time.

Best regards,

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

-----Original Message-----
From: Christina Logan [mailto:clogan@pacific.net.sg]
Sent: Thursday, September 01, 2011 12:52 AM
To: Nieh, Ho
Subject: RE: World Nuclear Power Briefing 2012

Hi Ho,

I am sorry I missed you today. Perhaps we could do this via email. I will need Commissioner's Ostendorff's topic title and bullet points as his photo and brief bio so that I can update the website and programme.

I look forward to hearing from you.

Warm regards,
christina

Christina Logan
Programme Director
Strategic Communications
Mob : (b)(6)

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

From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Wednesday, 31 August, 2011 12:42 PM
To: clogan@pacific.net.sg
Subject: RE: World Nuclear Power Briefing 2012

It is 8:42 PM.

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Christina Logan [clogan@pacific.net.sg]
Sent: Tuesday, August 30, 2011 8:34 PM
To: Nieh, Ho
Cc: Herr, Linda
Subject: RE: World Nuclear Power Briefing 2012

That sounds good - what time is it for you now?

christina

Christina Logan
Programme Director
Strategic Communications
Mob : (b)(6)

-----Original Message-----
From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Wednesday, 31 August, 2011 12:21 PM
To: clogan@pacific.net.sg
Cc: Herr, Linda
Subject: RE: World Nuclear Power Briefing 2012

Ok, sounds like a plan!

I am free from 1:30 to 2:00 PM US EDT, and after 2:45 PM US EDT.

Best regards,

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff U.S. Nuclear Regulatory Commission
(301) 415-1811 (office)
(b)(6) (mobile)
(301) 415-1757 (fax)

ho.nieh@nrc.gov

From: Christina Logan [clogan@pacific.net.sg]
Sent: Tuesday, August 30, 2011 7:16 PM
To: Nieh, Ho
Subject: RE: World Nuclear Power Briefing 2012

Dear Ho,

I will call you tomorrow morning my time which should be late in the afternoon for you - I think.

Speak soon,

Warm regards,
christina

Christina Logan
Programme Director
Strategic Communications
Mob (b)(6)

-----Original Message-----
From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Tuesday, 30 August, 2011 10:12 AM
To: 'clogan@pacific.net.sg'
Subject: RE: World Nuclear Power Briefing 2012

Hi Christina. Yes, I did call you...and remembered that you are in NZ so I hung up.

Can we arrange for a convenient time for you and I to talk about the Commissioner's participation? It would help me frame out his speech.

Let me know what a good time for you would be.

Best regards,

Ho

Ho Nieh
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(b)(6) mobile)
(301) 415-1757 (fax)
ho.nieh@nrc.gov

-----Original Message-----
From: Christina Logan [mailto:clogan@pacific.net.sg]
Sent: Monday, August 29, 2011 4:32 PM
To: Nieh, Ho
Subject: RE: World Nuclear Power Briefing 2012

Dear Ho,

Did you call me last night? I have a missed call on my phone at 2:14am - best way for us to communicate is via email. Could you send me Commissioner Ostendorff's topic title, bullet points as well as his brief bio and photo?

Warm regards,
christina

Christina Logan
Programme Director
Strategic Communications
Mob : (b)(6) ;

-----Original Message-----
From: Nieh, Ho [mailto:Ho.Nieh@nrc.gov]
Sent: Sunday, 21 August, 2011 7:36 AM
To: Nieh, Ho; 'clogan@pacific.net.sg'
Cc: Herr, Linda
Subject: RE: World Nuclear Power Briefing 2012

Dear Christina - trying this message one more time. Previous attempts were returned with an error message.

Please see below.

Best regards,

Ho

Ho Nieh
Chief of Staff
Office of Commissioner William C. Ostendorff U.S. Nuclear Regulatory Commission
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(301) 415-1757 (fax)
ho.nieh@nrc.gov

From: Nieh, Ho
Sent: Thursday, August 18, 2011 2:10 PM
To: 'clogan@pacific.net.sg'
Cc: Herr, Linda
Subject: RE: World Nuclear Power Briefing 2012

Dear Christina,

I hope this message finds you doing well.

Commissioner Ostendorff is pleased to accept your invitation to speak at the World Nuclear Power Briefing 2012 in Hanoi, Vietnam.

Please contact me at your convenience to coordinate his participation on the agenda.

Best wishes,

Ho

Ho Nieh
Chief of Staff
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From: Christina Logan [mailto:clogan@pacific.net.sg]
Sent: Monday, July 18, 2011 7:11 AM
To: Ostendorff, William
Cc: Nieh, Ho
Subject: World Nuclear Power Briefing 2012

Dear William,

I am following up on my recent invitation to you to participate at our forthcoming World Nuclear Power Briefing 2012, taking place in Hanoi on 17th January 2012. I am attaching the latest programme update for your easy reference.

I hope that you will be able to join Lady Barbara, the Vietnamese Vice Minister of Science & Technology and the rest of the nuclear industry speakers in Hanoi in January.

I look forward to hearing favourably from you soon.

Warm regards,
christina

Christina Logan
Programme Director
Strategic Communications
Mob : (b)(6)

From: Christina Logan [mailto:clogan@pacific.net.sg]
Sent: Friday, 1 July, 2011 12:38 AM
To: William C Ostendorff
Cc: 'Nieh, Ho'
Subject: World Nuclear Power Briefing 2012

28th June 2011

Mr William Ostendorff
Commissioner
U.S. Nuclear Regulatory Commission

Dear William,

I trust that you are doing well. I am very pleased to invite you to participate at our forthcoming 1 day Exclusive World Nuclear Power Briefing
2012 that will be held in Hanoi on 17th January 2012 .

Lady Judge, Chairman Emeritus, UK Atomic Energy Authority and Chairman, The Energy Institute of UCL will be leading the briefing for the day and is looking forward to an insightful exchange of ideas and thoughts on the policies and issues that governments will have to face when determining whether to go nuclear particularly after Fukushima. We are looking at putting together a panel of key industry speakers who will be able to add valuable insight to the challenges facing the post-Fukushima world nuclear industry - discussing safety standards, policies, climate change, financing options and technological advances at an issues driven 1 day exclusive briefing.

We have received confirmation from Vietnam that the Ministry of Science and Technology will be endorsing the briefing and Vice Minister LE Dinh Tien will be delivering the Keynote Address. The Ministry of Science & Technology is responsible for nuclear power development and has 3 nuclear power agencies under its auspices - Vietnam Atomic Energy Authority, Vietnam Atomic Energy Institute and Vietnam Agency for Radiation and Nuclear Safety
- all 3 agencies will be represented at the briefing.

We are also pleased to have the support and participation from the World Nuclear Association.

Please do not hesitate to contact me should you have any enquiries, otherwise I look forward to hearing favourably from you soon.

Warm regards,
Christina

Christina Logan
Programme Director
Strategic Communications
Mob (b)(6)

PREDECISIONAL 30-Mar-11

DOE Perspective on corrosion issues at Fukushima

Executive summary

(b)(5)

DOE Frame of reference on activity to date:

(b)(5)

Comparison with Millstone experience: On Sept. 1, 1972, the Millstone Unit 1 BWR was undergoing routine startup. Due to a leak in the main condenser tube, high conductivity sea-water was introduced into full flow demineralizers. The demineralizers failed very rapidly and led to high conductivity water in the reactor vessel via the condensate/feedwater system.

As noted in their report, the effects of this event introduced "maximum chloride content" were reduced somewhat because of the very low oxygen content in the water. However, some key corrosion effects were observed in a matter of hours.

- 116/120 of the local power range monitors (stainless steel) were damaged by cracking in a short time period. In part, this extensive damage was due to the very thin walls of the LPRM's.
- Stress corrosion cracking was observed in other reactor components such as stainless steel piping [composition assumed from other similar BWRs]. These cracks were predominantly in crevice areas of threaded components or tight joints and measured to be 0.75 to 1.25 mm in depth. Notably, these cracks were considered to be "superficial" and not expected to propagate during subsequent operation. Later analysis confirmed these results.

- Subsequent tests at GE found results more severe than in the actual incident. Cracks were found in highly stressed stainless steel and age-hardened alloys, but not in Inconel or carbon-steel.

Several implications are important when considering events in Fukushima.

(b)(5)

Corrosion impacts on key components: As noted above for Millstone, salt water will clearly facilitate corrosion processes of reactor components.

(b)(5)

(b)(5)

(b)(5)

(b)(5)

(b)(5)

Evidence of corrosion in the system: (b)(5)

(b)(5)

(b)(5)

Long-term needs: (b)(5)

(b)(5)

Schaperow, Jason

From: Schaperow, Jason
Sent: Sunday, March 20, 2011 8:13 PM
To: Tinkler, Charles
Subject: FW: AERIAL Dose Rate Estimate from Uncovered Pool
Attachments: ev.owa.jpg

Below is a recent email from Randy. I am forwarding it to you, because I did not see you on cc.

From: Gauntt, Randall O [rogaunt@sandia.gov]
Sent: Saturday, March 19, 2011 12:39 PM
To: Schaperow, Jason
Cc: McClellan, Yvonne
Subject: FW: AERIAL Dose Rate Estimate from Uncovered Pool

From: Gauntt, Randall O
Sent: Saturday, March 19, 2011 10:39 AM
To: Kelly, John E (NE)
Cc: charles.tinkler@nrc.gov; Orrell, Stanley A; Pickering, Susan Y; Burns, Shawn
Subject: AERIAL Dose Rate Estimate from Uncovered Pool

Attached is my analysis of dose above uncodered pool.
THe analysis accounts for elevation, and attenuation of the shine in air. Also included are possibilities of intervening thickness of steel and concrete. Did not include selfshielding of UO2 in assemblies (i.e. point source).

No intervening materials and one might see 30 R/hr (again neglecting self shielding).

With 1 ft of concrete and perhaps a little steel the aerial dose rate at 1000 feet drops to a few hundred mR/hr.

UO2 self shielding could drop this as well, perhaps into the 50mR/hr range at 1000 feet.

Note it's also sensitive to elevation, another 100 feet makes a difference.

Randy

From: Kelly, John E (NE) [JohnE.Kelly@Nuclear.Energy.Gov]
Sent: Friday, March 18, 2011 11:15 PM
To: Gauntt, Randall O
Subject: RE: UPDATE 2: Please clear for the 1300 sitrep

We need your analysis again on dose vs pool height

From: Gauntt, Randall O [mailto:rogaunt@sandia.gov]
Sent: Saturday, March 19, 2011 1:10 AM
To: Kelly, John E (NE)
Subject: RE: UPDATE 2: Please clear for the 1300 sitrep

No steam could also mean that the temperature is less than boiling.

Can imagine a reality that concluded "we didn't re-establish electrical power becaues we were afraid someting bad would happen?"

Try to keep us informed on flyover doses over the SFP - seems a dead giveaway if ground shine gets really. I calculate .25 R/hr at 1000 feet for exposed SFP, including attenuation of air in atmosphere (not just r-squared effect).

From: Kelly, John E (NE) [JohnE.Kelly@Nuclear.Energy.Gov]
Sent: Friday, March 18, 2011 10:59 PM
To: Gauntt, Randall O
Subject: FW: UPDATE 2: Please clear for the 1300 sitrep This is what confuses us all

From: Duncan, Aleshia
Sent: Saturday, March 19, 2011 12:58 AM
To: Kelly, John E (NE)
Subject: Fw: UPDATE 2: Please clear for the 1300 sitrep

Ed asked that I forward to you.

Sent from my BlackBerry Wireless Handheld

From: Cherry, Ron
To: JapanEmbassy, TaskForce <JapanEmbassyTaskForce@state.gov>; Whitney, Thomas C <WhitneyTC@state.gov>
Cc: Kirk Foggie <Kirk.Foggie@nrc.gov>; Duncan, Aleshia; Duncan, Aleshia (State Dept); Peko, Damian
Sent: Sat Mar 19 00:29:37 2011
Subject: FW: UPDATE 2: Please clear for the 1300 sitrep Please use the text pasted immediately below. Thanks!

Fukushima Dai-ichi Nuclear Power Plants

The NRC team in Tokyo assessed early March 19 that the spent fuel cooling pools in Units 3 and 4 are totally dry, as no steam is coming off either pool, while the pools in Units 1 and 2 are stable. The operations to fill the dry pools using fire hoses and helicopter-borne water drops are not having an impact. A hard pipe solution will be needed to add water to these pools.

The NRC, working with USFJ, USAID/DART and Embassy Tokyo, is pursuing three parallel paths to obtain the needed equipment to implement the hard pipe solution to ensure that the equipment is in place as soon as possible and also given the possibility that multiple set-ups will be needed. One path is to have Australian components delivered (Embassy Canberra has confirmed that this is being worked at the highest levels of the Australian Government). Another possibility, proposed by TEPCO, is to bring components from China. The third possibility is to use equipment that was acquired recently by the Tokyo Metropolitan Fire Department. The Fire Department has made this equipment available.

The NRC team met March 19 with the TEPCO chairman and a senior nuclear officer. TEPCO laid out its top three priorities for bringing the Fukushima Dai-ichi situation under control. The immediate priority is to utilize the recently established AC electrical connection in Unit 2 to prevent the hydrogen buildup in the Unit 2 building from causing a hydrogen explosion. The NRC team is concerned that restarting an electrical connection at the damaged facility is unlikely to be successful and could be dangerous.

TEPCO's other priorities are to work toward an overall reduction of radiation doses at the site and to mitigate the impacts of seawater on the reactor containment vessels where seawater is being used (Units 1, 2 and 3).

A possible proposal is to mobilize all available remotely controlled assets that could be utilized at the facility, including a Lockheed Martin unmanned helicopter with heavy lift capability. The team expects that all of this equipment will eventually be needed at the site.

Responding to a request from Ambassador Fujisaki, USAID/DART has arranged for the delivery of 10,000 personal protection suits. According to USAID/DART, the protective clothing from the U.S. will arrive at Narita Airport on Monday morning.

Radiation Monitoring Update

Fukushima Area Measurements: Two DOE aerial measurement teams conducted operations March 17-18, with a C-12 aircraft flying serpentine and parallel patterns in the vicinity of the Fukushima Daiichi NPP and the evacuation radius at 1000 feet and a UH-1 helicopter overflying USG facilities at 500 ft. The measurements around the NPP showed readings. The teams concluded that measurements have not yet covered a wide enough geographic area to completely map out area of contamination but found that the greatest concentration of contaminated material is located to the northwest of the facility with a narrow band to the northwest beyond the 20-km. evacuation radius where the integrated 4-day doses approach or exceed 1 Rem.

On March 19, the team plans to attempt ground measurements in the regions where the highest radiation measurements were detected on March 18. This mission will also to validate the previous day's data. The team will also begin aerial monitoring above Sendai City to establish baseline readings in that area. Wind forecasts for March 20 and 21 predict any leaked material from the plant will be blown toward Sendai. Embassy Tokyo is monitoring the situation as there are USG personnel in that area.

Local Embassy Measurements: New readings from March 19 will be provided in the next sitrep.

This email is UNCLASSIFIED.

From: Foggie, Kirk [mailto:Kirk.Foggie@nrc.gov]
Sent: Saturday, March 19, 2011 1:25 PM
To: Cherry, Ronald C
Subject: UPDATE 2: Please clear for the 1300 sitrep

Update to last paragraph

A possible proposal is to mobilize all available remotely controlled assets that could be utilized at the facility, including a Lockheed Martin unmanned helicopter with heavy lift capability. The team expects that all of this equipment will eventually be needed at the site.

From: Cherry, Ronald C [mailto:CherryRC@state.gov]
Sent: Friday, March 18, 2011 11:40 PM
To: Foggie, Kirk
Subject: FW: Please clear for the 1300 sitrep
Importance: High

Kirk,

Appreciate your chop on the text highlighted below in red.

Thanks.

Ron

This email is UNCLASSIFIED.

From: Whitney, Thomas C
Sent: Saturday, March 19, 2011 12:07 PM
To: Cherry, Ronald C
Subject: Please clear for the 1300 sitrep

Ron,

Please let me know if I am missing or mischaracterizing anything or if you'd like this to take a different angle. The NRC assessment is based on comments on the conference call.

-Thomas

Fukushima Dai-ichi Nuclear Power Plants

The NRC team in Tokyo assessed early March 19 that the spent fuel cooling pools in Units 3 and 4 are totally dry, as no steam is coming off either pool, while the pools in Units 1 and 2 are stable. The operations to fill the dry pools using fire hoses and helicopter-borne water drops are not having an impact. A hard pipe solution will be needed to add water to these pools.

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TEPCO's other priorities are to work toward an overall reduction of radiation doses at the site and to mitigate the impacts of seawater on the reactor containment vessels where seawater is being used (Units 1, 2 and 3).

The NRC team seeks assistance in mobilizing all available remotely controlled assets that could be utilized at the facility, including a Lockheed Martin unmanned helicopter with heavy lift capability. The team expects that all of this equipment will eventually be needed at the site.

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Local Embassy Measurements: New readings from March 19 will be provided in the next sitrep.

Thomas Whitney
Political Officer
Embassy of the United States in Tokyo
1-10-5, Akasaka 1-Chome, Minato-Ku, Tokyo 107
Telephone: (81)(03)3224-
5559<https://remote.sandia.gov/owa/,DanaInfo=cas1.sandia.gov,SSL+tel:(81)(03)3224-5467>
fax:(81)(03)3224-5322
http://japan.usembassy.gov/

SBU
This email is UNCLASSIFIED.

$Rad := 100 \frac{erg}{gm}$ Cubic Meter

$\mu_a := 0.06 \frac{cm^2}{gm}$

$\rho_{air} := 1.2 \frac{gm}{1000 cm^3}$ $\rho_{concrete} := 2.3 \frac{gm}{cm^3}$ $\rho_{sand} := 1 \frac{gm}{cm^3}$ $\rho_{steel} := 8 \frac{gm}{cm^3}$

$A_{total} := 90$ Curies Activity of Fukushima Pool 4

Estimate of gamma dose

$\mu := 0.03 \frac{cm^2}{gm}$

[redacted]

[redacted]

$i := 1 .. 1000$

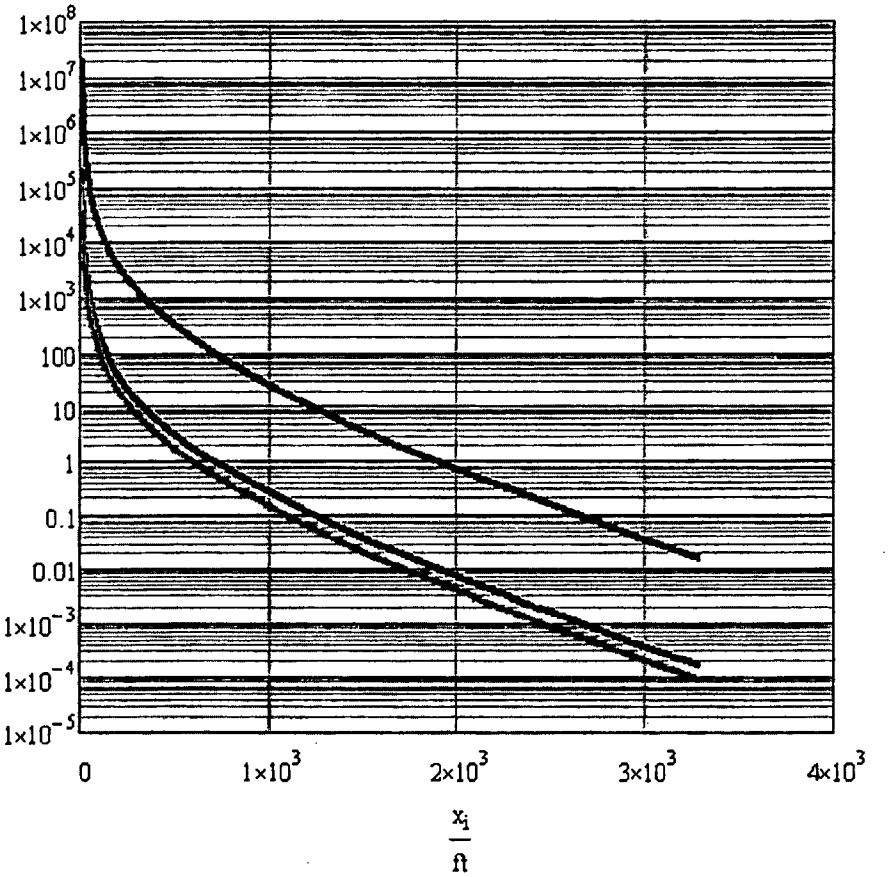
Dose rate attenuation by thicknesses of steel and concrete
and distance x from point source

$x_1 := 1 m$

$\frac{Dose\_Rate(x_i, 0m, 0m)}{\frac{Rad}{hr}}$

$\frac{Dose\_Rate(x_i, 0m, 1ft)}{\frac{Rad}{hr}}$

$\frac{Dose\_Rate(x_i, 0.5in, 1ft)}{\frac{Rad}{hr}}$



Bowers, Anthony

From: PMT02 Hoc
Sent: Friday, March 25, 2011 5:11 PM
To: Hoc, PMT12; m.shaffer@state.gov; shaffermr@state.gov; LIA02 Hoc; LIA03 Hoc
Subject: FW: Updated NARAC-NRC Plausible Realistic Scenario Calculation
Attachments: JapanImpact-PRC-V3-NARAC-Consequence Rept.pdf; Japan Plausible Realistic Case V3-NARAC-1600Z25Mar2011.pptx; JapanRctr_PRC-V3-(U1Exp)-NARAC-NRC_2011Mar25_1600Z.docx; 3-26-11 onsite exposure rate data.pdf

Importance: High

Mark-

Attached is the complete set of products (PDF consequence report, Powerpoint summary, Word document with assumptions) for the updated NARAC-NRC Plausible Realistic Scenario prediction "PRC-V3". NRC PMT reviewed the activity release amounts and is in agreement with the values.

Also attached is data we have compiled for the site from TEPCO data. We have not been sending to NARAC or others, as they also have this information.

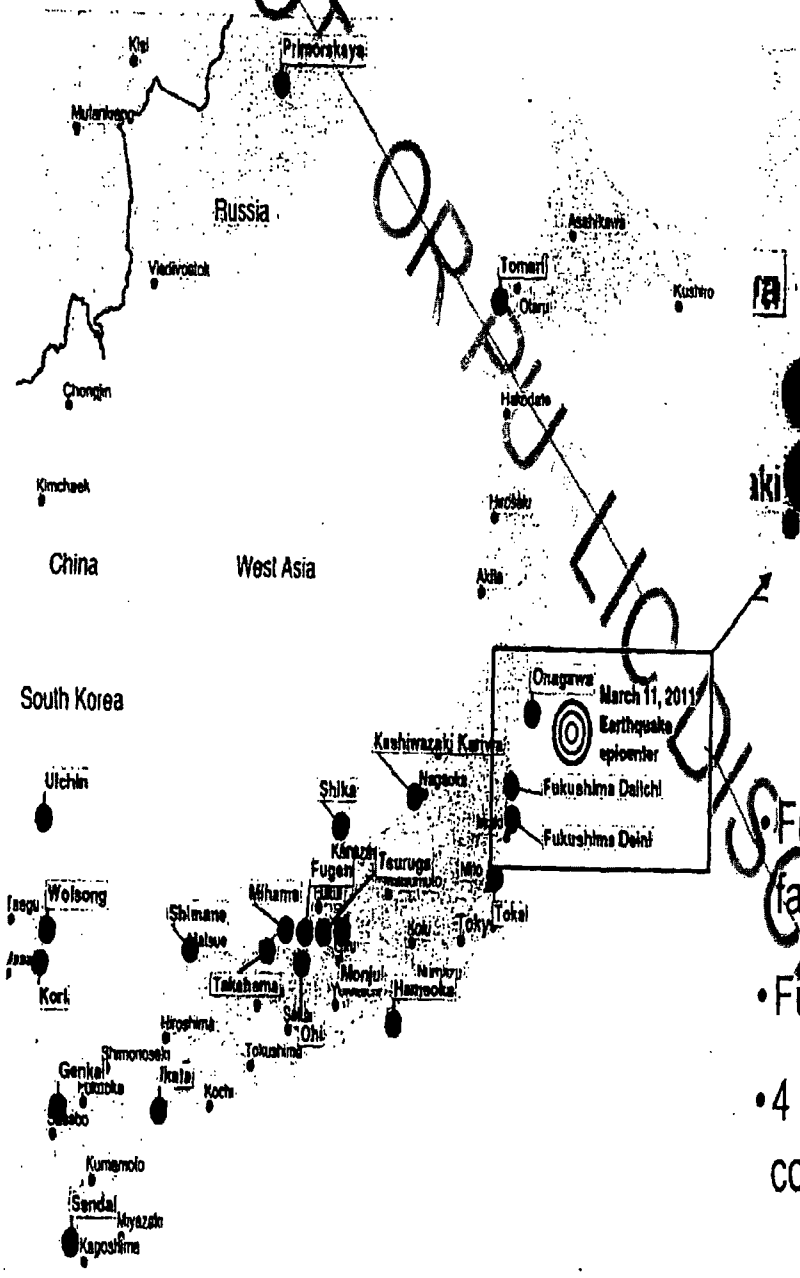
Please call the Ops Center and ask for the PMT Director if you need additional information.

Pls confirm receipt \

Thanks
Cyndi Jones
PMT Director

FURTHER DISTRIBUTION OF THESE PRODUCTS IS CONTROLLED THROUGH THE DOE NIT and NRC

Japan Nuclear Facilities



- Fukushima Daiichi is the main facility of concern
- Fukushima Daiichi has 6 reactors
- 4 reactors are currently areas of concern

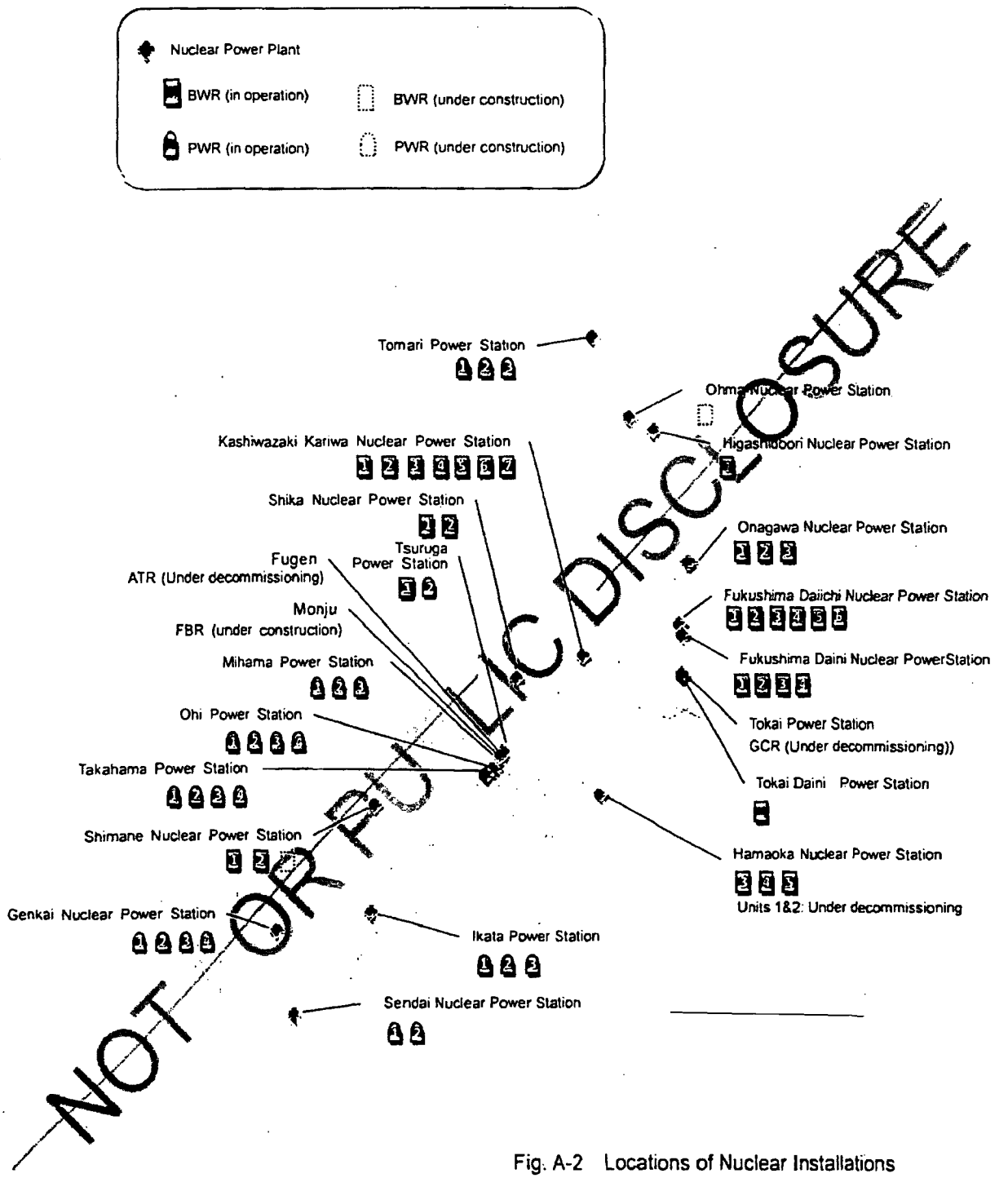
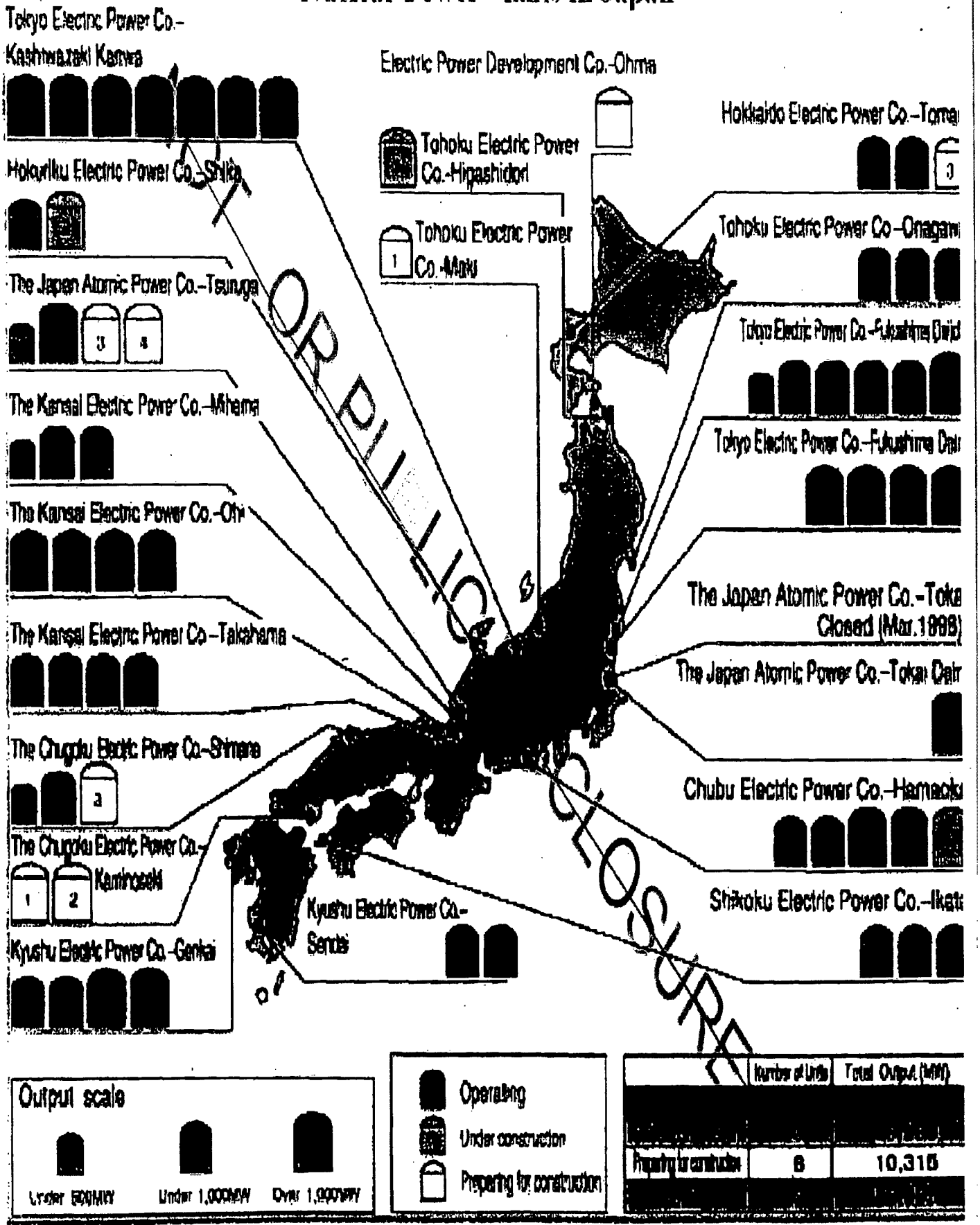
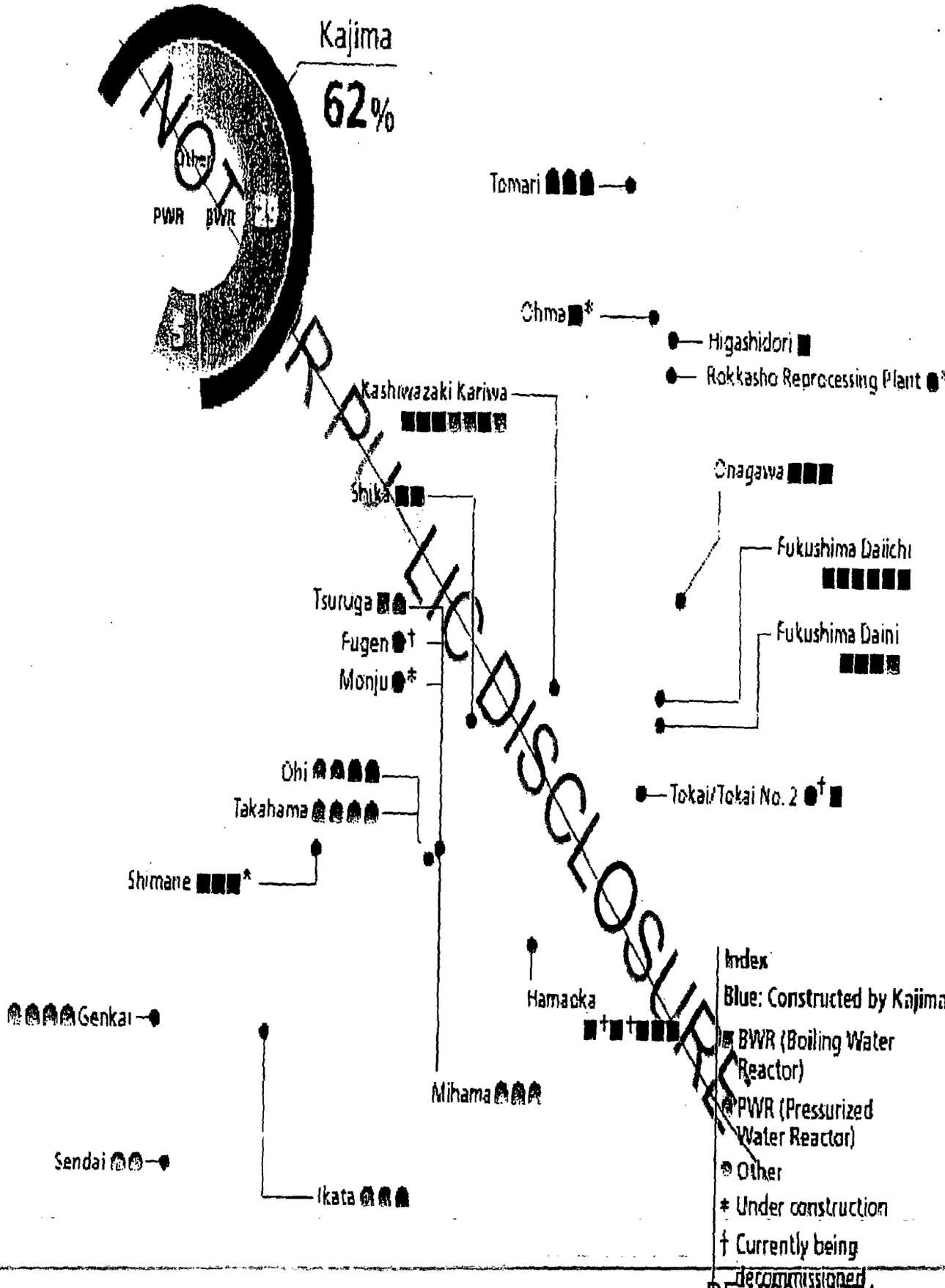


Fig. A-2 Locations of Nuclear Installations

Nuclear Pow... lants in Japan



Nuclear Power Facility Constructi ·ck Record



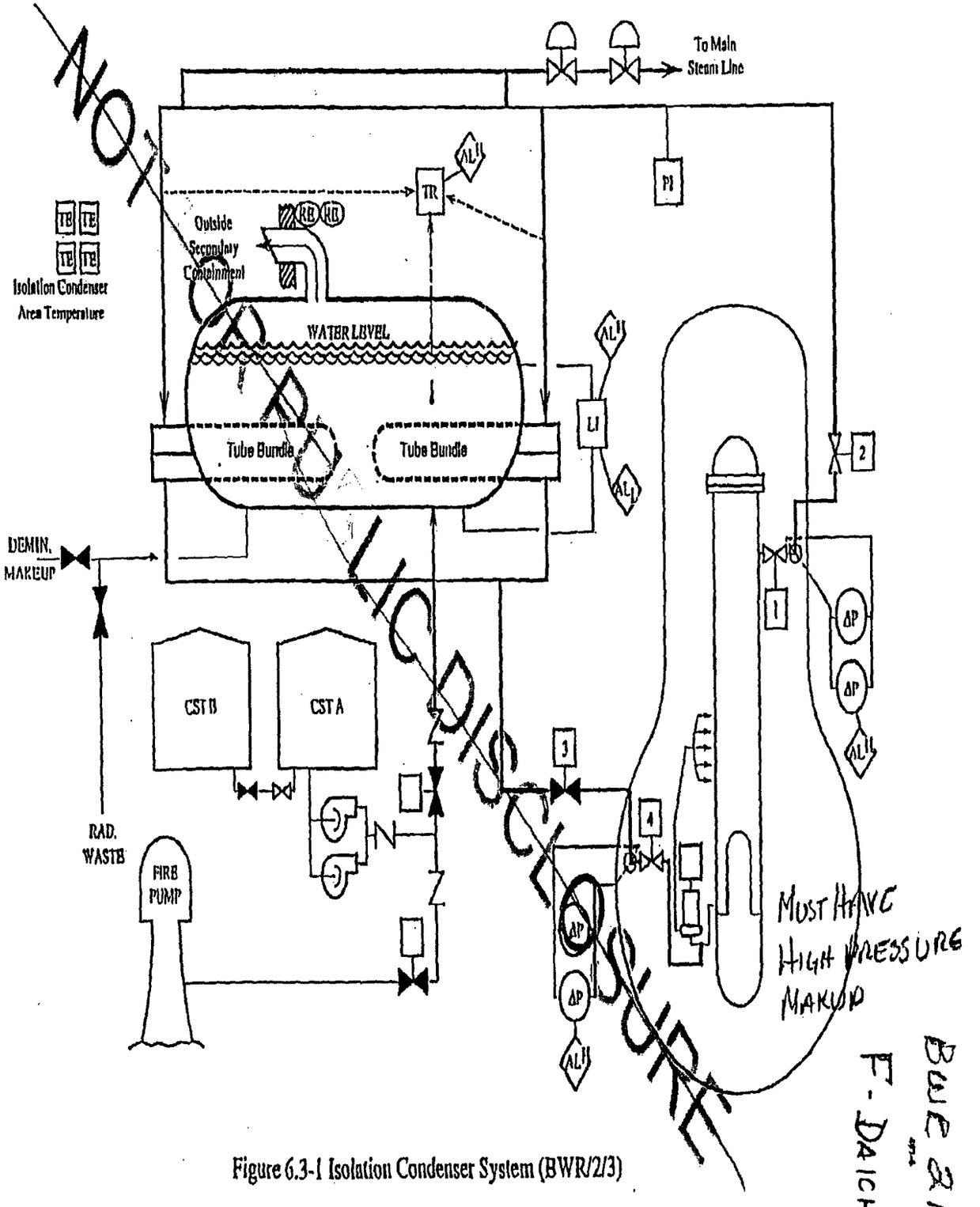


Figure 6.3-1 Isolation Condenser System (BWR/2/3)

BWR 4/5/6

F - DAICHI 2

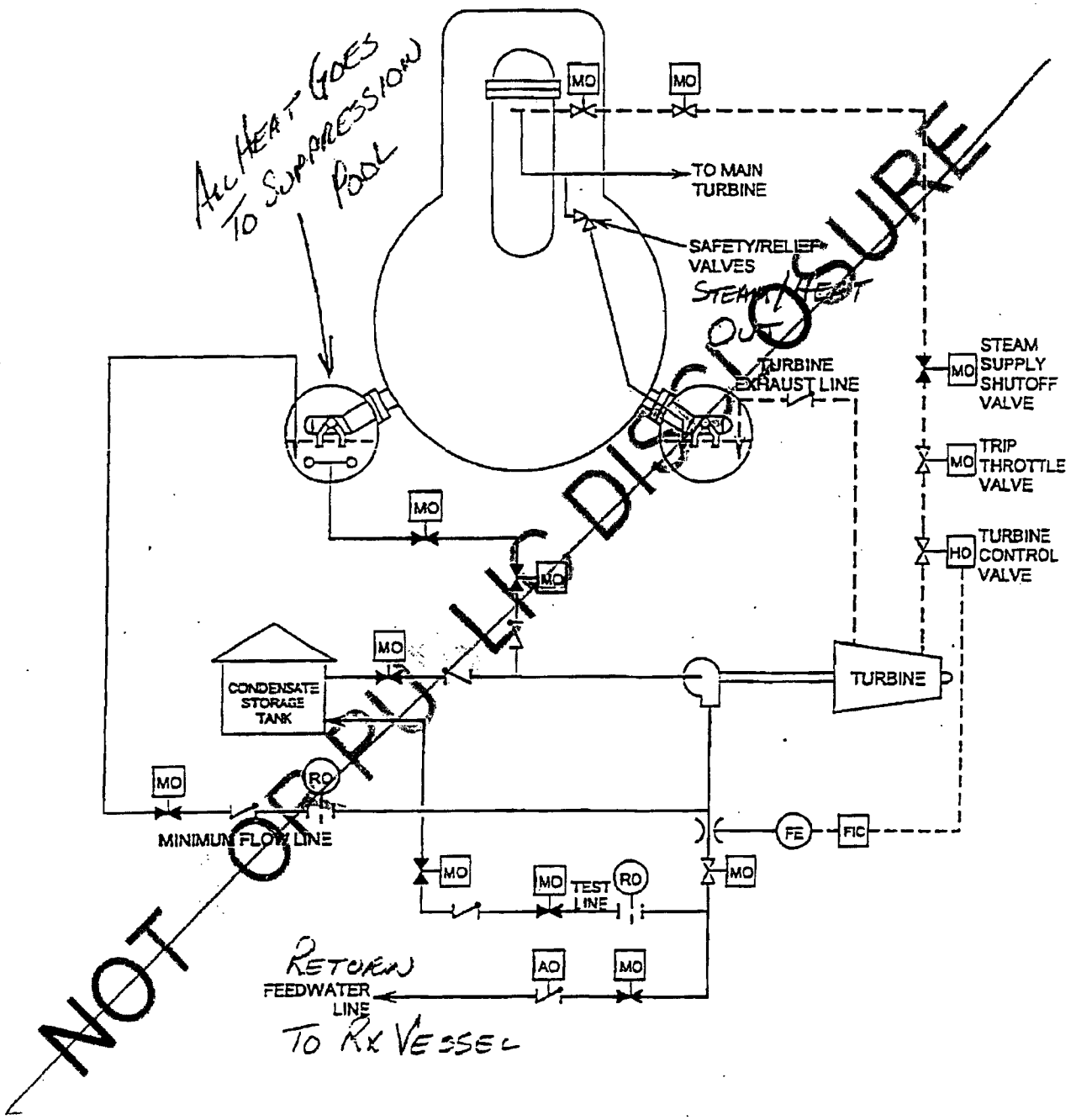


Figure 2.7-1 Reactor Core Isolation Cooling System

A Severe Accident involves Core Degradation

Core melting / degradation have occurred in Fukushima Daiichi Unit 1.

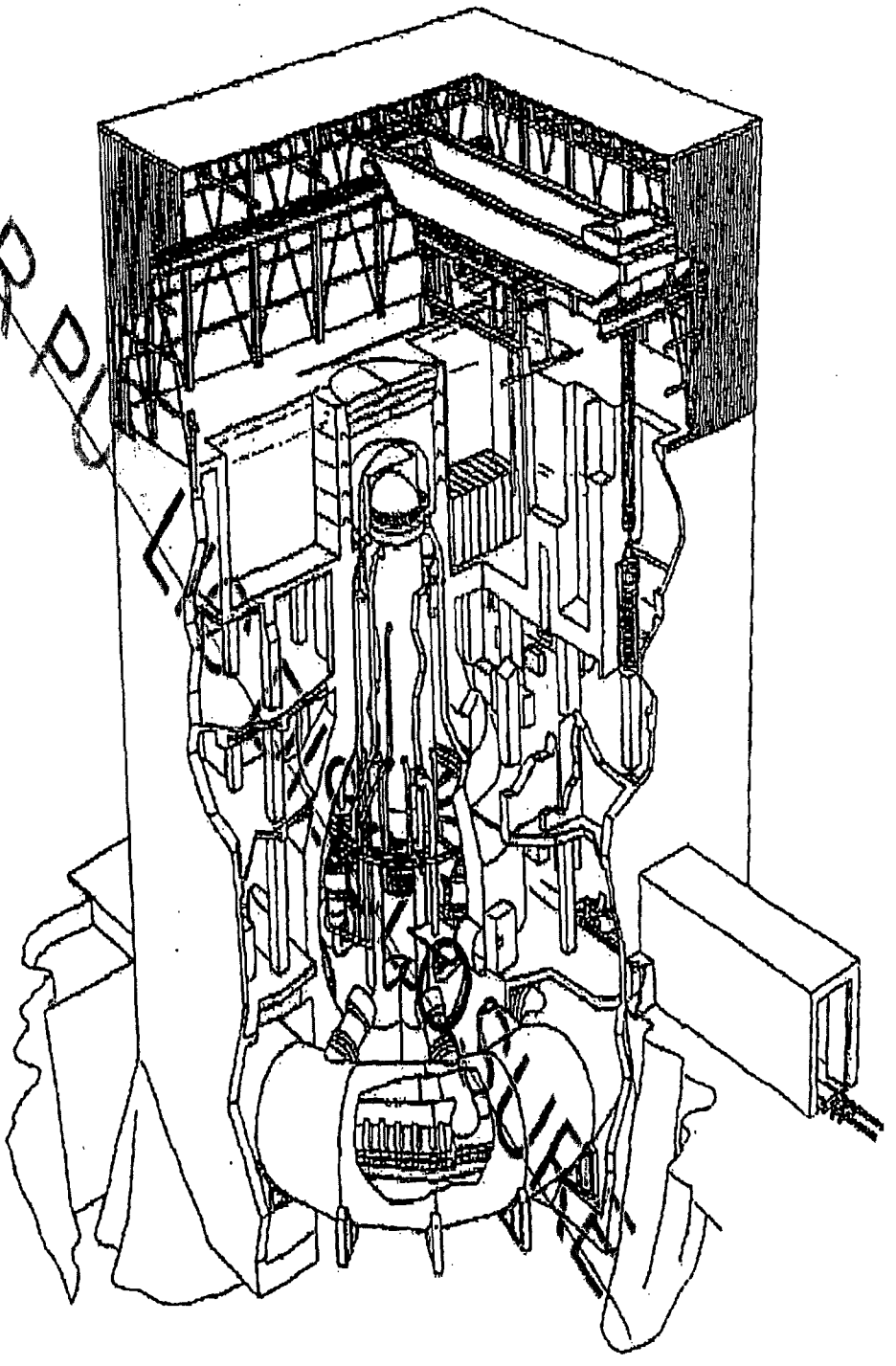
At this stage,

Safety Objectives:

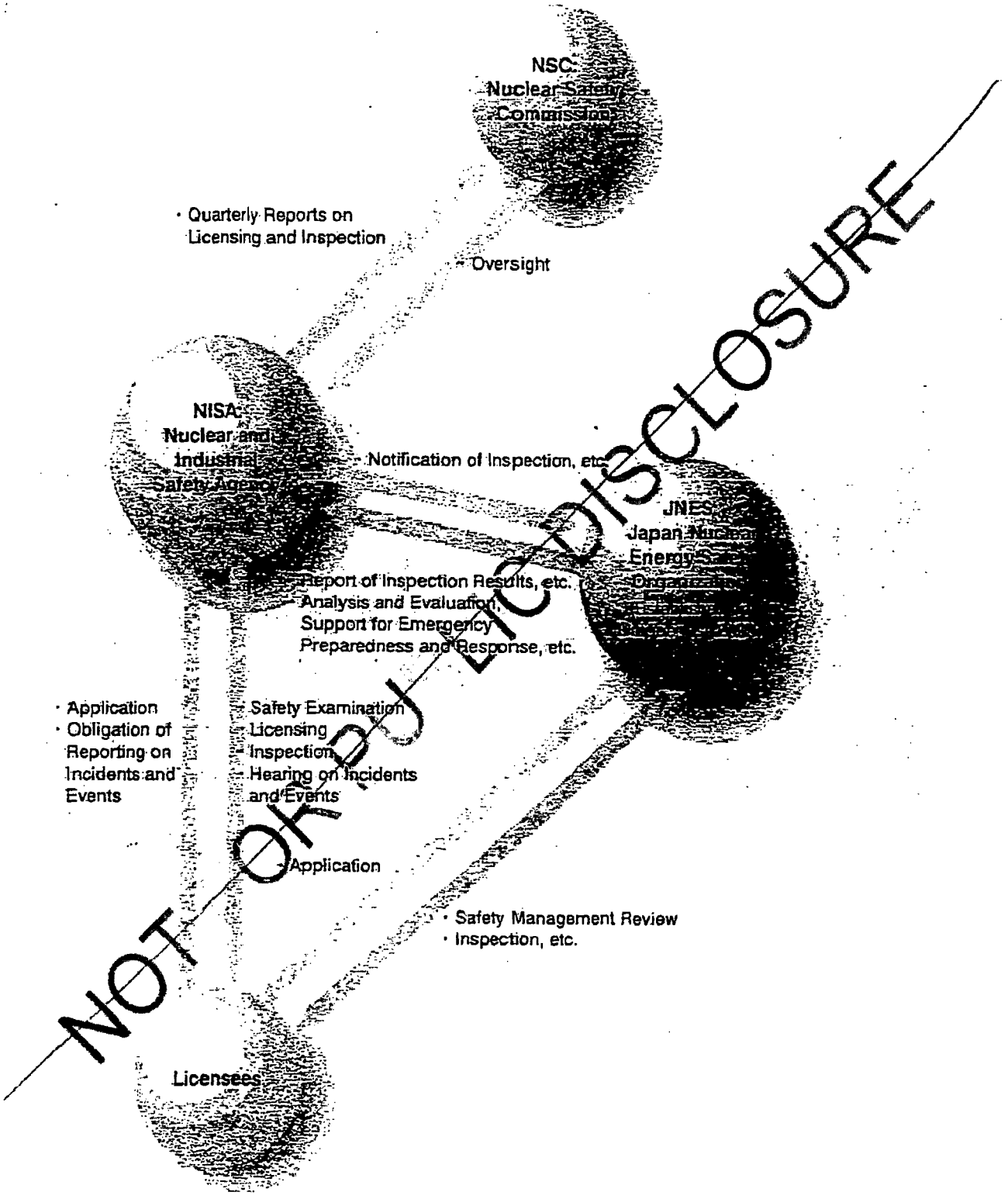
Minimize and control radioactivity release to the environment, by

- maintaining integrity of containment boundary

- retaining coolable configuration of corium inside the reactor pressure vessel (lower head)

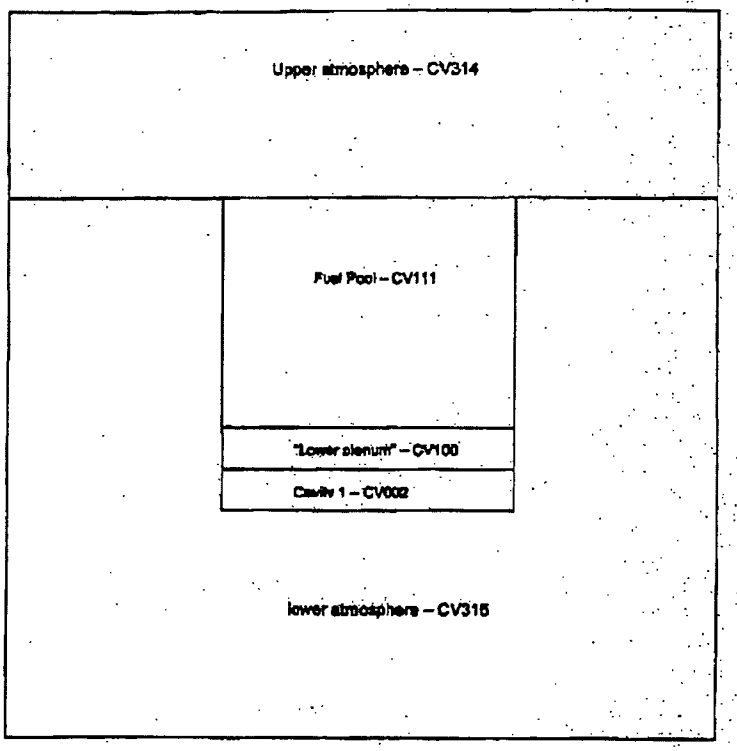


Safety Regulation System



3/20/11
22:49:47 ET

CVH looks like this:



Fukushima MELCOR Runs and Results
(as of 11:30pm 3/19/11)

Some model notes:

1. The model is intended to be best estimate as far as we are able to do so in a short time.
2. There are some (non)conservatisms:
   a. Those inherent in MELCOR itself - conservative
   b. Pool geometry – we used core geometry which has a tighter spacing of the fuel assemblies than does the spent fuel pool - conservative
   c. We cannot account for the formation of zirconium nitride from exposure to air. This has been shown to cause spalling of the ZrO_2 layer due to a volume/lattice mismatch thereby exposing more Zr for oxidation without the inhibiting ZrO_2 layer. This results in accelerated oxidation of the clad – non-conservative.
   d. There is some debate as to whether the oxidation model in MELCOR can represent a zirconium fire. This is a faster oxidation than that represented in MELCOR with vigorous removal of the oxide ash – hence the rate of clad degradation may be faster in reality compared to the MELCOR rate that is based on parabolic kinetics – non-conservatism. Also, there will be more aerosolization of volatile and possibly non-volatile radioactive material than is modeled in MELCOR.
3. Velocity in pool volume due to natural convection
   a. A high air velocity (~1 ft/s) across the fuel will keep the fuel cool, preventing the Zr-O_2 reaction from taking off.
   b. With no air velocity, the fuel will heat up allowing the Zr-O_2 reaction to take off. However, the O_2 is quickly consumed which halts the Zr-O_2 reaction.
   c. An air flow rate somewhere in between provides enough O_2 replenishment to sustain (or at least partially sustain) the Zr-O_2 reaction and fail the fuel rods.
   d. Prior to fuel failure, MELCOR predicts the velocity in the pool cavity (due to natural convection) to be ~ 0.04 ft/s. This is high enough to provide an O_2 source for the Zr-O_2 reaction but low enough to keep the fuel rods cool.

Results up to this time:

1. Base case (dryout 105 days after shutdown) –
   a. First release of noble gases ~ 9-10 hrs
   b. Fuel relocation at 24 hours (see Figure 1)
   c. Failure of fuel pool at 100 hours
2. Dryout 7 mos after shutdown –
   a. First release of noble gases ~ 128 hrs (5.3 days)
   b. Fuel relocation at 139 hours (5.6 days)
   c. Failure of fuel pool at 228 hours (9.5 days)
3. Dryout 1 yr after shutdown –
   a. First release of noble gas ~ 319 hrs (13.3 days)
   b. Fuel relocation at 350 hrs (14.6 days)
   c. As of 33 days, hot debris (~2200F) remains on pool floor but has not failed the concrete.
   d. Calculation is continuing out to 42 days.
4. Dryout 3 yrs after shutdown
   a. at 14 days clad temperatures have not exceeded 1070F and are leveling off. We have not restarted this case.
5. Base case with 200 gpm water injection when fuel reaches 2500F –
   a. fuel relocates at ~ 19 hrs (only ring 1, rings 2-5 are quenched and do not fail)
   b. ~ 120 lbs of hydrogen is produced during the quench
   c. At ~21 hrs all debris and intact fuel have cooled to stable temperatures. No further damage is apparent as long as water is injected.

d. Water level rising and currently about 24% filled. Based on slope of rise, expected to reach top @ 48 hrs.

8. Base case with 500 gpm water injection when fuel reaches 2500F –
   a. fuel relocates at ~ 19 hrs (only rings 1 and 2, rings 3-5 are quenched and do not fail)
   b. ~ 140 lbs of hydrogen is produced during the quench
   c. At ~22 hrs all debris and intact fuel have cooled to stable temperatures. No further damage is apparent as long as water is injected.
   d. Water level reaches top of pool at 28 hours.

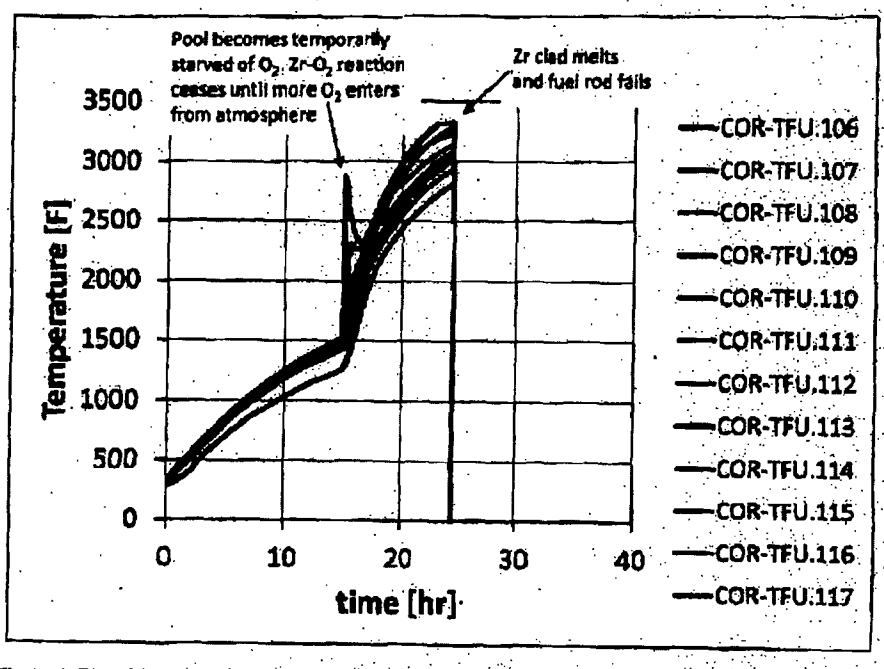


Figure 1: Ring 1 (center ring of 5 rings) Fuel Temperature for 105 days After Shutdown. Fuel exists in axial layers 7-16.

MELCOR Fuel Pool Model Description

We began with a MELCOR model for a commercial BWR (Grand Gulf, a BWR/6 with Mark III containment) that we had around (it came as part of a package of files from Sandia when we got MELCOR version 1.8.6). Our idea was to extract the core part of the model and surround it with a spent fuel pool instead of a reactor plant. This was the only possible way to have a model that could conceivably produce results in a timely manner. Grand Gulf has a higher power rating (1279 MWe) than Fukushima 4 (760 MWe), so total power was revised to the Fukushima value.

We had to come up with a new CVH/FL part of the model. For control volumes we divided the spent fuel pool into three pieces – a fuel pool CV representing most of the volume and 2 volumes stacked vertically below the fuel pool CV roughly representing the volume between the bottom of the fuel and the floor of the pool. These are necessary because we needed separate CVs to map the "lower plenum" and cavity to. Two additional control volumes represent atmosphere above and below the top of the pool. We made what we think are reasonable guesses for parameter such as pool volume, areas, etc.

Because Cavity Package is the only way to get concrete interactions into the problem, we are including that also, our first experience with it. When the "reactor vessel lower head" fails, debris materials are transferred to the Cavity Package. It is necessary to have things like a lower head and bottom support plate in the model. The changes we did make to the Grand Gulf core model were mostly in the lower plenum area to try to minimize the impact of these non-existent components. Our core model has 5 rings and 17 axial levels, same as the model we started with.

There are obviously many inaccuracies in using this model to represent the desired situation. We made many compromises in our modeling choices in the interest of minimizing the time required to build the model. We got a runnable model assembled in the course of one day (Thursday). We are now running it and looking at results and, as might be expected, we see things that call for adjustments. Run times so far look pretty good, an hour or so to get through 24 hours of transient time. It may take a few days of transient time to get things up to melting temperature. That is where we are as I write this.

Data and Observations Indicative of Degraded State of Spent Fuel Pool in Unit #4

KAPL is concerned that information from various available sources indicate that Spent Fuel Pool #4 has experienced degradation with respect to its ability to maintain adequate cooling for it's fuel inventory, and that relocation of at least some of the spent fuel inventory to locations below the pool may have already occurred. This concern is supported by the following information and observations (Dates/times are JST):

1. High decay heat load. Pool #4 contained 1201 spent fuel bundles at the time of the event, including an offload of a full core that was shutdown on 11/30/10 from high power operation approximately 110 days prior to the event. In comparison, Pool #3 contained 514 bundles, with the freshest fuel believed to consist of a 1/3 core offload from a shutdown in August 2010.
2. Water boiloff calculations. KAPL calculations indicate Pool #4 would reach boiling conditions quickly (<<1 day) after suspension of normal cooling, and that complete boiloff of the initial water inventory in Pool #4 would occur in less than 9 days. This calculation excludes any additional losses from leakage or blowout from the explosion that occurred in the unit #4 reactor building, which would accelerate depletion of the pool water inventory. No attempt was made to replenish inventory in Pool #4 until midday on March 20.
3. Calculated Melt Progression. KAPL calculation of uncooled fuel performance using the MELCOR analysis code indicate that for the fuel bundles with the highest heat load in Pool #4, slumping could occur in a time frame on the order of 24 hours after dryout, and progression of the fuel melt through the concrete floor of the pool could occur in a time frame of 100 hours after dryout.
4. Absence of Steam Plume from Reactor Building #4. Visible steam emanations would be expected from both Pools #3 and #4 given the calculated boiloff rates, as long as water existed in the pool. There has been a notable absence of steam discharge from the upper portion of Reactor Building #4 since 3/16/11 or earlier. In contrast, a clear steam plume has been evident from Reactor Building #3 for the last several days. This data suggests that water inventory in Pool #4 has been depleted long enough for slumping and relocation of the hottest fuel to occur.
5. Diminished Heat Source(s) in Upper Region of Reactor Building #4. Available data indicates significantly less heat source in the upper region of Reactor Building #4 in comparison to the same location in Reactor Building #3, when just the opposite would be expected based on the corresponding decay heat levels for stored fuels. This data suggests that the complete inventory of fuel present on 3/11/10 may no longer be fully contained in the pool.

From: Harrington, Holly
To: Burnell, Scott
Subject: FW: Proposed statement
Date: Saturday, March 12, 2011 11:09:18 PM

-----Original Message-----
From: Leistikow, Dan [mailto:Dan.Leistikow@hq.doe.gov]
Sent: Saturday, March 12, 2011 11:05 PM
To: (b)(6); (b)(6); Harrington, Holly; (b)(6); 'Andy.Adora@epamail.epa.gov'; Smith, Sean; Brenner, Eliot; 'hammerma@state.gov'; 'matthew.chandler@dhs.gov'; 'Brent.Colburn@dhs.gov'; 'JEFF.KARONIS@DHS.GOV'; (b)(6); Mueller, Stephanie; LaVera, Damien; Reynolds, Tom; 'Oster.Seth@epamail.epa.gov'; Zichal, Heather
Subject: Proposed statement

Few reporters are actually using our DOE statement, which isn't entirely bad since Japan has the lead. The background comments in particular seem to have little impact. Of course, reporters would much rather question our experts/senior officials about what is going on, which I'm not in favor of right now anyway.

At the same time, the stories don't say much about USG involvement, nor have we broadly knocked down fears that a giant cloud of deadly radiation could come to the west coast, which is unfounded but nonetheless is going through people's minds.

We are also likely to see more of the "could it happen here" meme (especially on the Sunday shows tomorrow), which is unhelpful given our advocacy of new nuclear generation in the US.

My point is that I think it would be good to have a WH statement (maybe first thing in the AM?) that would get more attention and would frame our collective efforts. It could cover both the humanitarian assistance/search and rescue as well as addressing the nuclear stuff. I defer to others on what to say on the first part, but the latter part might go like this:

"Officials from the Department of Energy, the NRC, and other agencies have maintained close contact with Japanese officials and will provide whatever assistance the Japanese government requests as they work to cool their nuclear reactors.

As tempting as it may be to compare this to the 1986 Chernobyl disaster, Japan's reactors have a fundamentally different design, which means that even in the worst case scenario, the possible radioactive release -- while still very serious -- is likely to be much less.

The United States has highly advanced capabilities for monitoring and predicting the path of radioactive releases anywhere in the world. Fortunately, the most likely path for radioactive releases from the Fukushima reactors is out to sea where it will ultimately dissipate. There is absolutely no reason to think that materials from these reactors -- even in a worst case scenario -- would pose health or safety risks to the United States. Bear in mind that the government of Japan has evacuated those within about 12 miles of the affected reactors. Hawaii is more than X,000 miles away.

The American people can also have confidence that here in the United States, we have rigorous safety regulations in place to ensure that our nuclear power plants -- which provide 20 percent of our electricity -- can withstand tsunamis, earthquakes or any other hazard.

As we saw with recent mining disasters, the California gas pipeline blast, and the Deepwater Horizon

explosion, there are risks inherent to all of our major energy sources that require rigorous oversight. Yet in the more than 50 year history of America's civilian nuclear industry, we have not had a single fatality or serious injury from radioactivity. We must remain vigilant so that safety record continues, and we should recognize the crucial contribution nuclear energy makes to powering America's economy.

U.S. DEPARTMENT OF ENERGY

NNSA

Radiological Assessment

- of effects from -

Fukushima Daiichi Nuclear Power Plant

April 7, 2011

U.S. DEPARTMENT OF ENERGY

NNSA

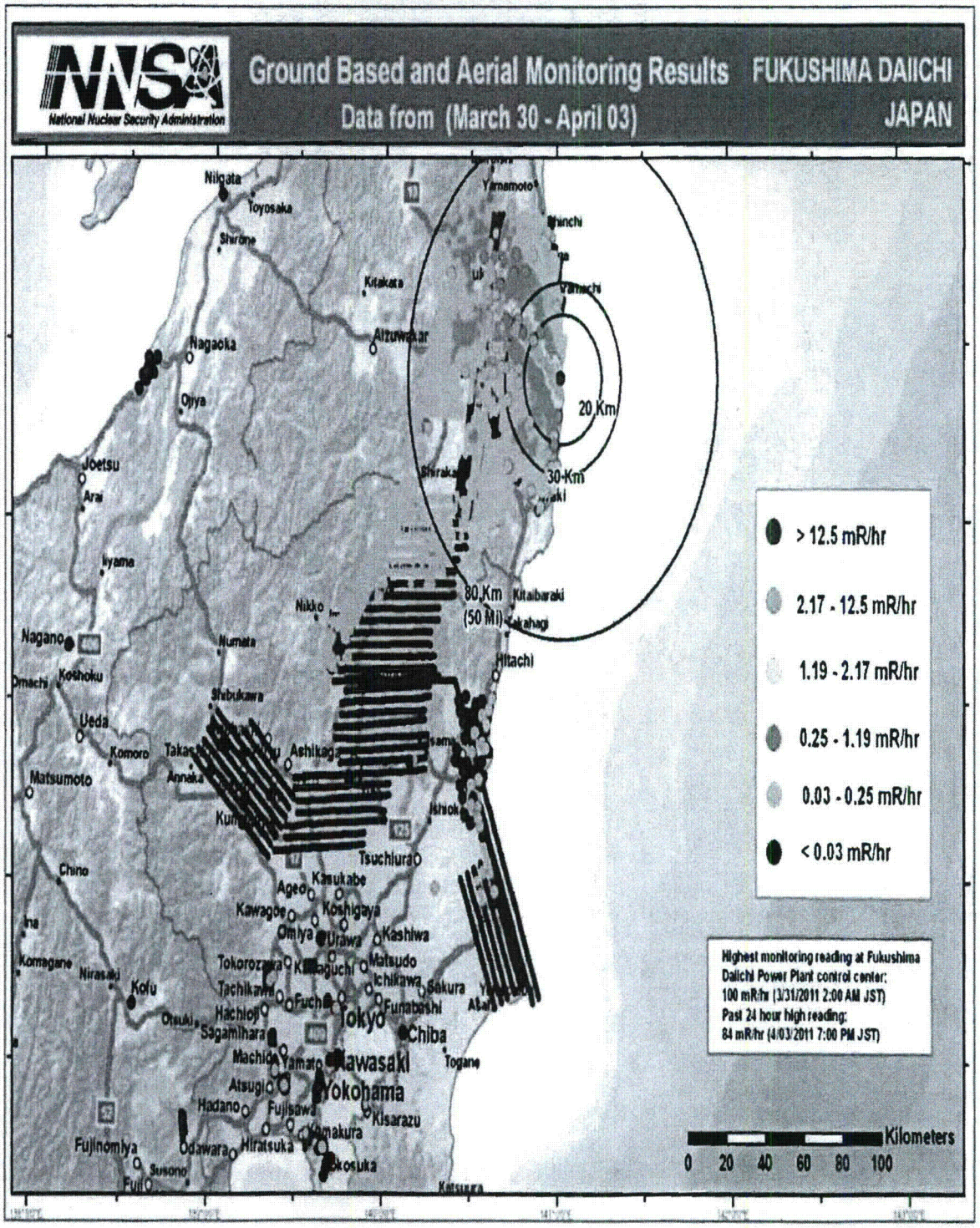
Operations Summary

- Aerial Measuring Systems have totaled more than 262 flight hours in support of aerial monitoring operations
- NNSA's Consequence Management Response Teams have collected approximately 100,000 total field measurements taken by DOE, DoD, and Japanese monitoring assets
- 240 total air samples taken at US facilities throughout Japan undergoing lab analysis in the US

U.S. DEPARTMENT OF ENERGY

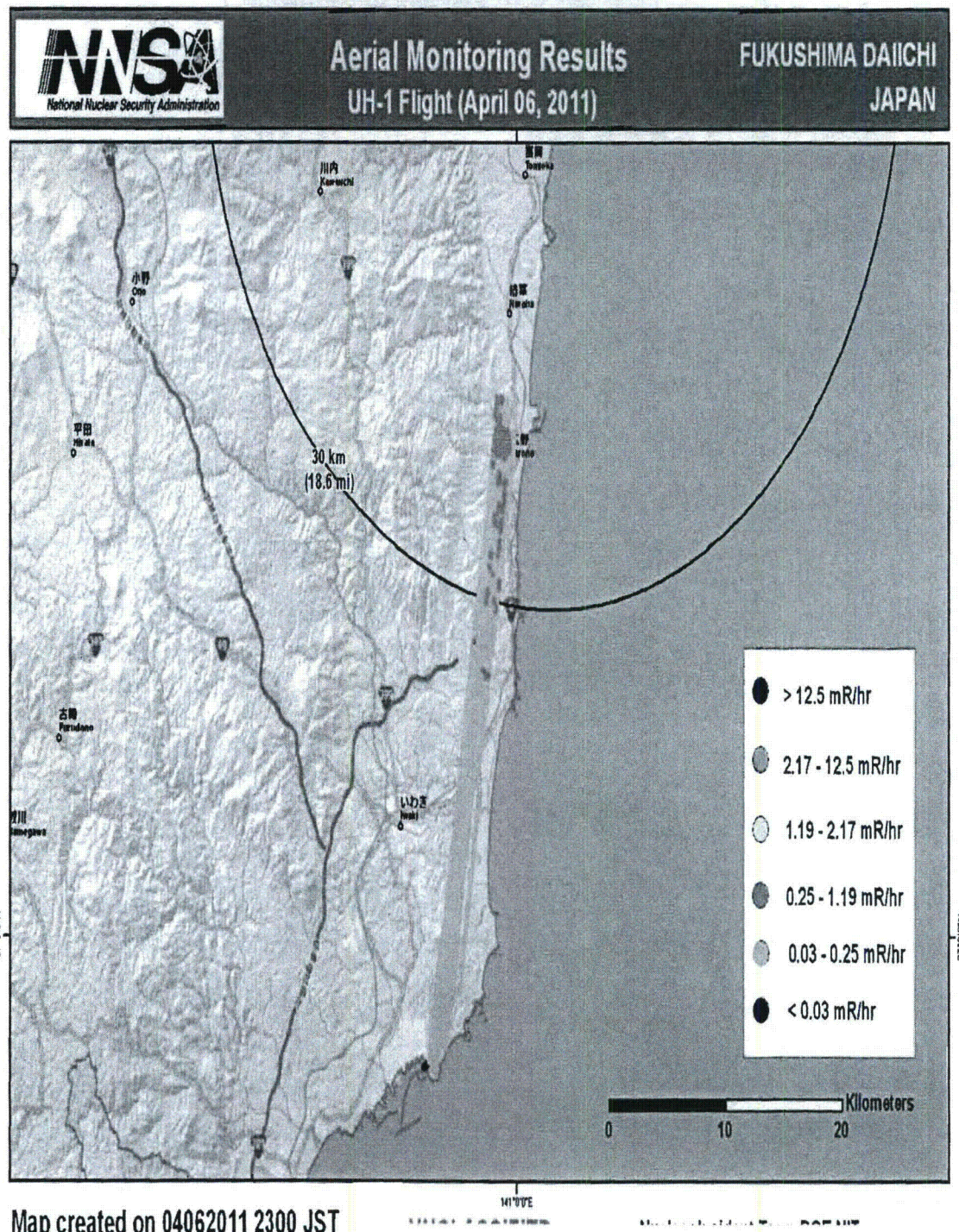
NNSA

DOE/NNSA Monitoring



U.S. DEPARTMENT OF ENERGY

NNSA



Map created on 04062011 2300 JST

Name: NIT UH-1 Flight 2 Results 06Apr2011

U.S. DEPARTMENT OF ENERGY

NNSA

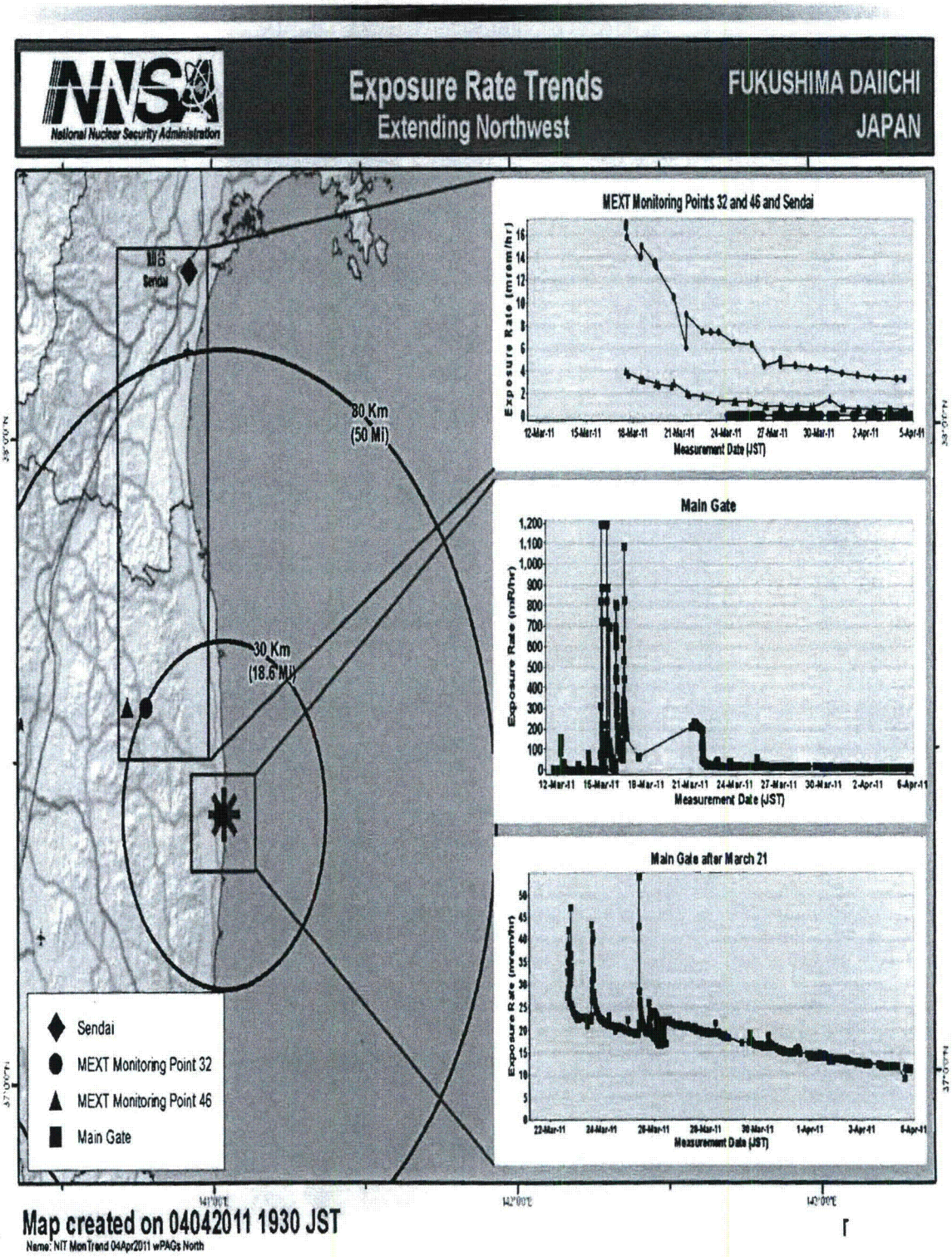
Assessment

An assessment of measurements gathered through April 6 continues to show:

- Rapid decay of deposited radiological material indicating Radioiodine is the most significant component of dose
- Radiation levels consistently below actionable levels for evacuation or relocation outside of 25 miles; and levels continue to decrease
- No measurable deposit of radiological material since March 19
- US bases and facilities all measure dose rates below 32 microrem/hr (32 millionths of a REM) – a level with no known health risks
- Agricultural monitoring and possible intervention will be required for several hundred square kilometers surrounding the site:
    - Soil and water samples are the only definitive method to determine agricultural countermeasures
    - Ground monitoring can give better fidelity to identify areas that require agricultural sampling

U.S. DEPARTMENT OF ENERGY

NNSA



Map created on 04042011 1930 JST

Name: NIT MonTrend 04Apr2011 wPAGs North

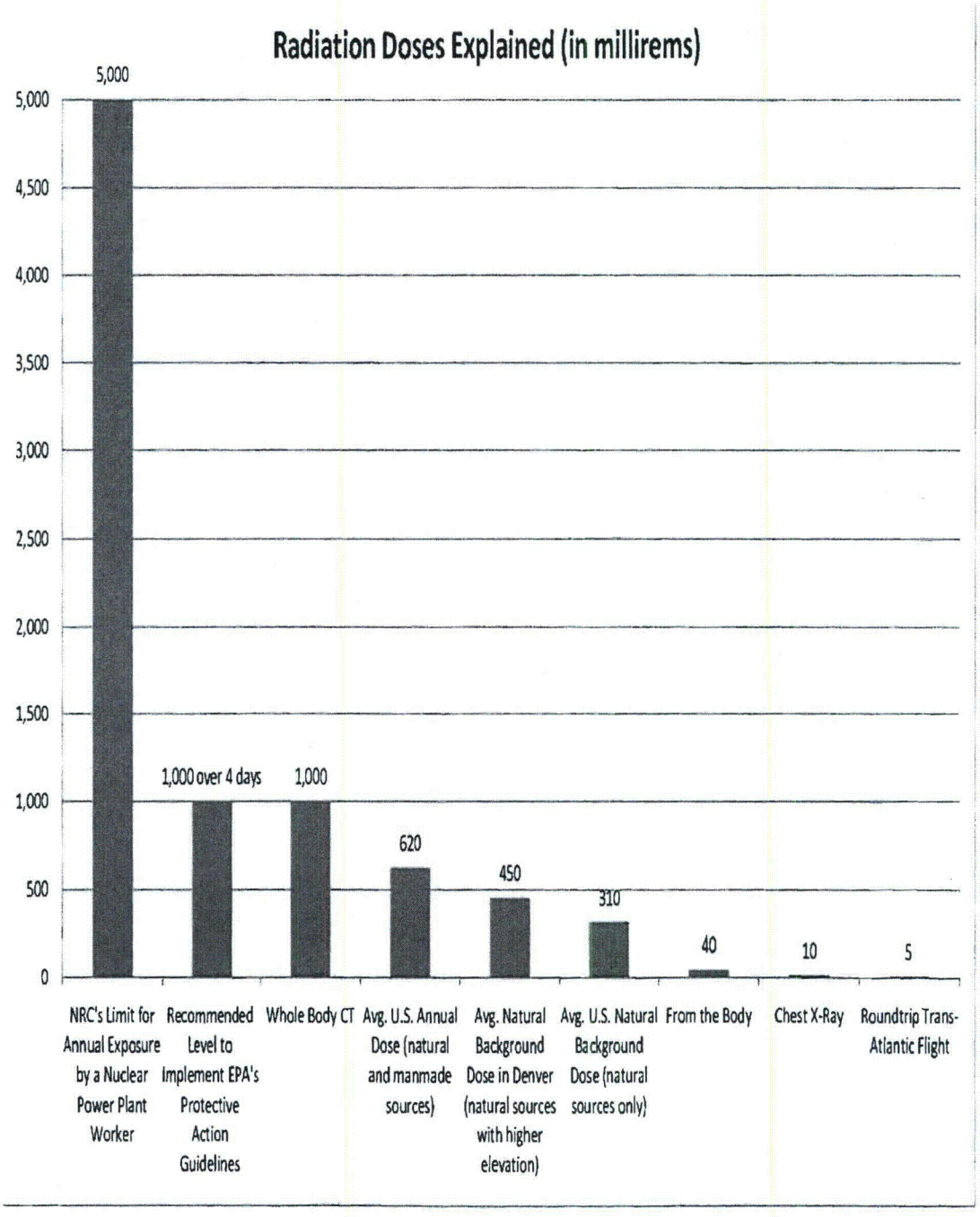
U.S. DEPARTMENT OF ENERGY

NNSA

Context

- The Nuclear Regulatory Commission estimates that the average American absorbs 620 mRem a year* (or 0.071 mRem/hour)
- An average transatlantic flight produces an exposure of 2.5 mRem*
- A typical chest x-ray produces 10 mRem per image
- EPA guidelines call for public health actions if exposure exceeds 1000 mRem over 4 days

* Source: NRC: http://nrc.gov/images/about-nrc/radiation/factoid2-lrg.gif


Radiation Doses Explained (in millirems)
5,000
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
1,000 over 4 days
1,000
620
450
310
40
10
5
NRC's Limit for Annual Exposure by a Nuclear Power Plant Worker
Recommended Level to Implement EPA's Protective Action Guidelines
Whole Body CT
Avg. U.S. Annual Dose (natural and manmade sources)
Avg. Natural Background Dose in Denver (natural sources with higher elevation)
Avg. U.S. Natural Background Dose (natural sources only)
From the Body
Chest X-Ray
Roundtrip Trans-Atlantic Flight

From: ET02 Hoc
Sent: Wednesday, March 30, 2011 12:13 PM
To: ET07 Hoc
Subject: FW: Quick science group call today - 7:00pm EDT

-----Original Message-----
From: ET01 Hoc
Sent: Wednesday, March 30, 2011 12:13 PM
To: ET02 Hoc
Subject: FW: Quick science group call today - 7:00pm EDT

From: Boger, Bruce
Sent: Wednesday, March 30, 2011 12:12:56 PM
To: Weber, Michael; Sheron, Brian; RST01 Hoc; ET01 Hoc
Cc: Virgilio, Martin; Blount, Tom; FOIA Response.hoc Resource; ET05 Hoc;
OST02 HOC; LIA06 Hoc; LIA08 Hoc
Subject: RE: Quick science group call today - 7:00pm EDT
Auto forwarded by a Rule

Yes, the RST is working on a revision to the strategies/recommendations document to reflect the insights of several entities--RST, Japan Team, NR, DOE, GEH (and perhaps others). They will expressly indicate the consideration of drywell flooding in the document.

-----Original Message-----
From: Weber, Michael
Sent: Wednesday, March 30, 2011 11:48 AM
To: Sheron, Brian; RST01 Hoc; ET01 Hoc
Cc: Virgilio, Martin; Boger, Bruce; Blount, Tom; FOIA Response.hoc Resource; ET05 Hoc; OST02 HOC; LIA06 Hoc; LIA08 Hoc
Subject: Response - Quick science group call today - 7:00pm EDT

I understood that the RST is working to update the consensus recommendations document. Bruce?

----- Original Message -----
From: Sheron, Brian
To: RST01 Hoc; ET01 Hoc
Cc: Weber, Michael; Virgilio, Martin
Sent: Wed Mar 30 10:22:03 2011
Subject: FW: Quick science group call today - 7:00pm EDT

See below. What is our latest recommendation?

-----Original Message-----
From: Kelly, John E (NE) [mailto:JohnE.Kelly@Nuclear.Energy.Gov]

Sent: Wednesday, March 30, 2011 10:20 AM
To: Sheron, Brian
Subject: Re: Quick science group call today - 7:00pm EDT

(b)(5)

John E Kelly

----- Original Message -----
From: Sheron, Brian
To: Kelly, John E (NE)
Sent: Wed Mar 30 08:15:38 2011
Subject: RE: Quick science group call today - 7:00pm EDT

(b)(5)

-----Original Message-----
From: Kelly, John E (NE) [mailto:JohnE.Kelly@Nuclear.Energy.Gov]
Sent: Tuesday, March 29, 2011 9:31 PM
To: Sheron, Brian
Subject: RE: Quick science group call today - 7:00pm EDT

Brian

(b)(5)

John

-----Original Message-----
From: Sheron, Brian
Sent: Tuesday, March 29, 2011 12:23 PM
To: Kelly, John E (NE)
Subject: RE: Quick science group call today - 7:00pm EDT

(b)(5)

(b)(5)

-----Original Message-----
From: Kelly, John E (NE) [mailto:JohnE.Kelly@Nuclear.Energy.Gov]
Sent: Tuesday, March 29, 2011 12:06 PM
To: Sheron, Brian
Subject: RE: Quick science group call today - 7:00pm EDT

I'm at Commission briefing and way behind in email. I don't understand the issue.

-----Original Message-----
From: Sheron, Brian
Sent: Tuesday, March 29, 2011 7:21 AM
To: Kelly, John E (NE)
Cc: Weber, Michael; Virgilio, Martin; RST01 Hoc; ET01 Hoc
Subject: FW: Quick science group call today - 7:00pm EDT

John, see below.

It was our understanding that all recommendations to the Japanese government were going to be first vetted internally within the U.S.

Last weekend our RST vetted the severe accident management recommendations with NRC, DOE, INPO, EPRI, NR, Bettis, KAPL, GEH and got alignment before the recommendations were sent to the site team..

It was also my understanding that Secretary Chu agreed to this process with Chairman Jaczko. Is DOE going to coordinate the vetting process, or do you want to send it over to the NRC's RST and let them vet it?

-----Original Message-----
From: Lee, Richard
Sent: Monday, March 28, 2011 7:44 PM
To: Sheron, Brian
Subject: RE: Quick science group call today - 7:00pm EDT

Brian:

Done already. Dana and I were on the phone. Dr. Holdrens is checking on the consensus view reached yesterday on the recommendation of not flooding the drywell. Without having any water level measurement in the drywell, concerns are: (i) condensing the steam which may cause a hydrogen burn; (ii) too much water in the drywell resulting in blocking the vent path. The blocking of the vent path will be very serious, because at this time, it is now the only path for relieving pressure in the RCS.

Apparently, Dr. Holdrens spoke to our Chairman and was told by our Chairman that he understood the NRC still favors flooding the drywell. Dana and I both said the concern of blocking the vent path is a major concern especially we do not know or able to measure the water level in the drywell. I also mention that in case of molter core material breached the RPV, ANL (under DOE) is calculating the MCCI; and NRC had also provided a few days ago our estimate of FCI loads do not pose a treat to the containment. He was happy that we look into FCI already and gave him assurance the recommendation is the correct one to put forth.

The rest of the people call in (Bob Budniz?, Dick Garwin, ...) agreed. Hence, the recommendation not to flood the drywell will be advanced by U.S. to the Japanese.

Richard

From: Sheron, Brian
Sent: Monday, March 28, 2011 7:07 PM
To: Lee, Richard
Subject: Re: Quick science group call today - 7:00pm EDT

Great, thx.

From: Lee, Richard
To: Sheron, Brian
Sent: Mon Mar 28 17:11:42 2011
Subject: RE: Quick science group call today - 7:00pm EDT

Brian:

I will call in to see what it is all about,

Richard

From: Sheron, Brian
Sent: Monday, March 28, 2011 4:35 PM
To: Lee, Richard
Subject: Fw: Quick science group call today - 7:00pm EDT

From: Adams, Ian <Ian.Adams@Hq.Doe.Gov>
To: DL-NITsolutions <DL-NITsolutions@nnsa.doe.gov>; Owens, Missy <Missy.Owens@hq.doe.gov>
Cc: Smith, Haley <Haley.Smith@Hq.Doe.Gov>; Chambers, Megan (S4) <Megan.Chambers@science.doe.gov>; Narendra, Blake <Blake.Narendra@NNSA.Doe.Gov>; Fitzgerald, Paige <Paige.Fitzgerald@Hq.Doe.Gov>
Sent: Mon Mar 28 16:31:59 2011
Subject: Quick science group call today - 7:00pm EDT Good afternoon,

Dr. Holdren would like to pull everyone who is available together today at 7:00pm EDT for a few minutes. This is to discuss a technical question before a recommendation is made.

Apologies for the short notice - don't worry if you aren't able to make it, but for those of you who are able, we will have a brief call today from 7:00-7:15pm EDT.

Tomorrow's call will still take place as scheduled, at 4:45pm EDT. Wednesday's call will take place at 5:00pm EDT

Thanks
Ian

Nuclear science group conference call schedule:
Monday 3/28: 7:00pm-7:15pm EDT

Tuesday 3/29: 4:45pm-5:45pm EDT
Wednesday 3/30: 5:00pm-6:00pm EDT

Conference call information:
Please dial into (202) 586-2535
No PIN is needed.

Ian Adams
Office of the Secretary
Department of Energy
(202) 586-9585
ian.adams@hq.doe.gov

From: Sheron, Brian
Sent: Tuesday, March 29, 2011 12:37 PM
To: Weber, Michael
Cc: Blount, Tom; RST01 Hoc; LIA06 Hoc; LIA08 Hoc; Zimmerman, Roy
Subject: RE: RESPONSE - Quick science group call today

Thanks.

-----Original Message-----
From: Weber, Michael
Sent: Tuesday, March 29, 2011 12:33 PM
To: Sheron, Brian
Cc: Blount, Tom; RST01 Hoc; LIA06 Hoc; LIA08 Hoc; Zimmerman, Roy
Subject: RESPONSE - Quick science group call today

(b)(5)

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(b)(5)

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From: Sheron, Brian
Sent: Monday, March 28, 2011 4:35 PM
To: Lee, Richard
Subject: Fw: Quick science group call today - 7:00pm EDT

From: Adams, Ian <Ian.Adams@Hq.Doe.Gov>
To: DL-NITsolutions <DL-NITsolutions@nnsa.doe.gov>; Owens, Missy <Missy.Owens@hq.doe.gov>
Cc: Smith, Haley <Haley.Smith@Hq.Doe.Gov>; Chambers, Megan (S4) <Megan.Chambers@science.doe.gov>; Narendra, Blake <Blake.Narendra@NNSA.Doe.Gov>; Fitzgerald, Paige <Paige.Fitzgerald@Hq.Doe.Gov>
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Ian

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Conference call information:
Please dial into (202) 586-2535
No PIN is needed.

Ian Adams
Office of the Secretary
Department of Energy
(202) 586-9585
ian.adams@hq.doe.gov

Lee, Richard

From: Bisconti, Giulia [Giulia.Bisconti@nuclear.energy.gov]
Sent: Wednesday, March 30, 2011 12:54 PM
To: Garwin, Dick (IBM)
Cc: PWG; DL-NITsolutions; Duncan, Aleshia (State Dept); Duncan, Aleshia; Cherry, Ron; Bisconti, Giulia
Subject: RE: Bisconti TDY-Tokyo

Dear Dick-Thank you for your suggestion to append TEPCO materials in a modified format—let me see if I can help. Let me also explore further with you off-line to seek your suggestions, as there are also many good materials out there—I hope the NIT is already receiving them.
My best, Giulia

Possible items of interest:

--The NRC invited me to join their TEPCO-NISA meetings.. It seems like there is a good exchange of technical questions—these meetings last almost two hours daily. I understand that the information flow has really improved through this channel. I have nothing new technically to report that is not captured elsewhere.

--Joining those meetings also provided me a good opportunity today to have an impromptu pull-aside meeting with some TEPCO staffers where I could hear frankly about information sharing issues. One TEPCO staffer noted that salt would continue to be an area where it would very much seek DOE assistance—how salt accumulations could impact cooling efforts.

(b)(5)

--Removing fuel rods from the pools is another area where Japan seeks expertise—the NRC would like to have support from a DOE or DOE lab person in this area—they ask if the PNNL people are the ones who have the technical expertise in this area. We will find out tomorrow as the PNNL experts have arrived (I know the folks coming have water decontamination expertise—also an important area for Japan). NRC intends to engage private sector experts as well.

--Aleshia and I and Alan's team met with MEXT officials. MEXT interests with DOE are pretty much exclusively focused on radiation monitoring for the near-term. MEXT does not have enough equipment or monitors to do all the work that it anticipates in the coming days, weeks, months, and so forth. They appreciate DOE/NNSA cooperation.

(b)(5)

From: Garwin, Dick (IBM)
Sent: Wednesday, March 30, 2011 10:51 AM
To: Bisconti, Giulia
Cc: DL-NITsolutions; Bisconti, Giulia; PWG
Subject: Re: Bisconti TDY-Tokyo

Dear Giulia Bisconti,

Thank you for the very good report.

Could you please append to the twice-daily reports and TEPCO press releases? It could be good to have the actual text of what TEPCO is saying, and it won't add many bytes to the transmission.

(b)(5)

Thanks very much and have a good time in Tokyo.

/ Dick Garwin /

From: "Bisconti, Giulia" <Giulia.Bisconti@nuclear.energy.gov>
To: PWG <PWG@NNSA.Doe.Gov>, DL-NITsolutions <DL-NITsolutions@NNSA.Doe.Gov>
Cc: "Bisconti, Giulia" <Giulia.Bisconti@nuclear.energy.gov>
Date: 03/29/2011 12:30 PM
Subject: Bisconti TDY-Tokyo

Dear all:

As requested, this is an update of how I am helping in Tokyo for the week. My main duty is to be embedded with the NRC team at the Embassy. I am also performing other duties where I can be helpful to Ron and Aleshia. They have both been very welcoming.

Giulia

Here are some items of interest:

--Two PNNL experts to visit Japan (at the request of Japan)to help on water decontamination and storage issues.
--Japanese government is seeking private sector experts on fuel rod/pool issues with hands-on TMI experience (per NRC meetings).
--Japanese government is thrilled with NNSA's airborne monitoring cooperation (I joined MOFA/MEXT meeting with Alan).
--Met with Toshiba and B&W. Toshiba has hundreds of employees at the accident site and the TEPCO emergency control room. Toshiba is deploying equipment and resources. Toshiba and Hitachi are both in the emergency control room, and TEPCO is heavily relying on them. Toshiba offered to be an information resource to our specialists.
--6.3 quake in Northeastern Japan today--no damage reported to facilities.
--Aleshia and I met today with METI Vice Minister Okada (at his invitation). Okada mentioned that Japan is thinking about a "cover" for the Fukushima plants in the coming months. He and his colleagues expressed very deep appreciation for assistance from DOE and its National labs and everyone's hard work and long hours. They appreciated DOE recommendations on the salt/fresh water issue. Okada offered to personally work with DOE on any matter related to the Fukushima response and to help overcome any barrier. Although, he mentioned that information flow is much better now (the government is better organized to receive and respond to inquiries) and the mechanisms seem to be working. He noted that Japan will be looking for assistance-including on the issue of water decontamination (10,000 tons ? of contaminated water). He said that the Japanese government would seek input from DOE and its labs, including PNNL, Idaho, Livermore, others...
--Participated in NRC meeting. Issues: remove heat from the reactor. Structural

concerns for the pools. Controlling releases. Water management is a big issue. Are the Japanese workers wearing adequate protective clothing? Flooding--continued leakages? Need to establish the water level of the pools--want to get water above the rods, maybe 3-4 feet above.

Lee, Richard

From: Kelly, John E (NE) [JohnE.Kelly@Nuclear.Energy.Gov]
Sent: Wednesday, March 30, 2011 1:32 PM
To: 'Holdren, John P.'; DL-NITsolutions
Cc: Caponiti, Alice; Golub, Sal
Subject: RE: DRAFT Proposal for Rev. 1 of RST Assessment Document

(b)(5)

From: Holdren, John P. [mailto: (b)(6)
Sent: Wednesday, March 30, 2011 1:28 PM
To: Kelly, John E (NE); DL-NITsolutions
Cc: Caponiti, Alice; Golub, Sal
Subject: RE: DRAFT Proposal for Rev. 1 of RST Assessment Document

(b)(5)

JOHN P. HOLDREN
Assistant to the President for Science and Technology
and Director, Office of Science and Technology Policy
Executive Office of the President of the United States
email (b)(6)
direct phone (b)(6)
assistant Karrie Pitzer (b)(6)

From: Kelly, John E (NE) [mailto:JohnE.Kelly@Nuclear.Energy.Gov]
Sent: Wednesday, March 30, 2011 1:25 PM
To: DL-NITsolutions
Cc: Caponiti, Alice; Golub, Sal
Subject: FW: DRAFT Proposal for Rev. 1 of RST Assessment Document

This morning a revised recommendation was put forward by the INPO etc team. New statement is

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

This recommendation will be discussed at 5pm today by the INPO team and comments are being solicited. If you have comments please send them in

---

om: Versluis, Rob
ent: Wednesday, March 30, 2011 12:35 PM
o: Kelly, John E (NE); Golub, Sal; Larzelere, Alex; Caponiti, Alice
c: Versluis, Rob
ubject: FW: DRAFT Proposal for Rev. 1 of RST Assessment Document

atest redlined RST Assessment (3/26) and INPO's Rev 1 proposal

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

Bowers, Anthony

From: PMT02 Hoc
Sent: Saturday, March 19, 2011 6:00 AM
To: narac@llnl.gov
Cc: PMT11 Hoc; nitops@nnsa.doe.gov; cmht@nnsa.doe.gov; PMT02 Hoc
Subject: MELCOR Source Term - additional information
Attachments: MARCH 18-19 MELCOR release inventories (FOR NARAC FOLLOWUP EMAIL).doc

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

NARAC,

As requested in our recent telephone conversation, this email provides additional information about the technical basis for the recent MELCOR-based source terms.

Please confirm receipt of this e-mail.

PMT Dose Analyst (PMT02)
NRC Operation Center
301-816-5100, ext 5402

This information should not be released at this time.

NO PARTICIPATION OR RESPONSE BY CMHT IS EXPECTED

From: PMT02 Hoc
Sent: Saturday, March 19, 2011 12:28 AM
To: 'narac@llnl.gov'
Cc: PMT11 Hoc; PMT02 Hoc; 'nitops@nnsa.doe.gov'; 'cmht@nnsa.doe.gov'
Subject: MELCOR Source Term

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

NARAC,
Attached are the following MELCOR source terms:
- Unit 1 core,
- Unit 2 core,
- Unit 3 core
- Spent Fuel Pool Unit 1
- Spent Fuel Pool Unit 2
- Spent Fuel Pool Unit 3, and
- Spent Fuel Pool Unit 4

Each source term has a separate worksheet in the excel file. Note the spent fuel pool data includes plume energy (MW)). All worksheets have assigned release date/time and release duration. All source terms are in units of curies released.

Please confirm receipt of this e-mail.
PMT Dose Analyst (PMT02)
NRC Operation Center
301-816-5100, ext 5402
This information should not be released at this time.

Bowers, Anthony

From:	PMT02 Hoc
Sent:	Sunday, March 20, 2011 8:30 PM
To:	narac@llnl.gov; cmht@nnsa.doe.gov; LIA11 Hoc
Cc:	Hoc, PMT12; NITOPS; PMT02 Hoc; Brandon, Lou
Subject:	BWR core inventory (RASCAL)
Attachments:	BWR TOTAL Ci AVAILABLE CORE, SPF.xlsx
Importance:	High

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

NARAC,

As requested in our recent telephone conversation, this email provides a listing of the BWR core inventory that is used by the RASCAL code. Note additional information at the bottom of this table.

Please confirm receipt of this e-mail.

If you have any questions, please contact Steve LaVie at the NRC Operation Center (301-816-5100, ext 5419)

This information should not be released at this time.

NO PARTICIPATION OR RESPONSE BY CMHT IS EXPECTED

Tracking:

Recipient	Read
narac@llnl.gov	
cmht@nnsa.doe.gov	
LIA11 Hoc	Read: 3/21/2011 9:28 AM
Hoc, PMT12	
NITOPS	
PMT02 Hoc	Read: 3/20/2011 11:21 PM
Brandon, Lou	

BWR Core Inventory per RASCAL (see note 5)

	Ci/MWt	Ci
Ba-139	4.74E+04	1.13E+08
Ba-140	4.76E+04	1.13E+08
Ce-141	4.39E+04	1.05E+08
Ce-143	4.00E+04	9.52E+07
Ce-144*	3.54E+04	8.43E+07
Cm-242	1.12E+03	2.67E+06
Cs-134	4.70E+03	1.12E+07
Cs-136	1.49E+03	3.55E+06
Cs-137*	3.25E+03	7.74E+06
I-131	2.67E+04	6.36E+07
I-132	3.88E+04	9.24E+07
I-133	5.42E+04	1.29E+08
I-134	5.98E+04	1.42E+08
I-135	5.18E+04	1.23E+08
Kr-83m	3.05E+03	7.26E+06
Kr-85	2.78E+02	6.62E+05
Kr-85m	6.17E+03	1.47E+07
Kr-87	1.23E+04	2.93E+07
Kr-88	1.70E+04	4.05E+07
La-140	4.91E+04	1.17E+08
La-141	4.33E+04	1.03E+08
La-142	4.21E+04	1.00E+08
Mo-99	5.30E+04	1.26E+08
Nb-95	4.50E+04	1.07E+08
Nd-147	1.75E+04	4.17E+07
Np-239	5.69E+05	1.35E+09
Pr-143	3.96E+04	9.43E+07
Pu-241	4.26E+03	1.01E+07
Rb-86	5.29E+01	1.26E+05
Rh-105	2.81E+04	6.69E+07
Ru-103	4.34E+04	1.03E+08
Ru-105	3.06E+04	7.29E+07
Ru-106*	1.55E+04	3.69E+07
Sb-127	2.39E+03	5.69E+06
Sb-129	8.68E+03	2.07E+07
Sr-89	2.41E+04	5.74E+07
Sr-90	2.39E+03	5.69E+06
Sr-91	3.01E+04	7.17E+07
Sr-92	3.24E+04	7.71E+07
Tc-99m	4.37E+04	1.04E+08
Te-127	4.36E+03	1.04E+07
Te-127m	3.97E+02	9.45E+05
Te-129	8.26E+03	1.97E+07
Te-129m	1.68E+03	4.00E+06
Te-131m	5.41E+03	1.29E+07
Te-132	3.81E+04	9.07E+07
Xe-131m	3.65E+02	8.69E+05
Xe-133	5.43E+04	1.29E+08
Xe-133m	1.72E+03	4.10E+06
Xe-135	1.42E+04	3.38E+07
Xe-135m	1.15E+04	2.74E+07
Xe-138	4.56E+04	1.09E+08
Y-90	2.45E+03	5.83E+06
Y-91	3.17E+04	7.55E+07
Y-92	3.26E+04	7.76E+07
Y-93	2.52E+04	6.00E+07
Zr-95	4.44E+04	1.06E+08
Zr-97*	4.23E+04	1.01E+08
TOTAL Ci	**1.98E+06**	**4.72E+09**

1. Assumed core inventory at time of shutdown
2. SFP 4 assumes 105 days decay not accounted for in this table
3. Core inventory does not account for burnup
4. MWt = 2381 for each unit (2,3 4)
5. Data from RASCAL manual table 1.1 (pg 14) June 2, 2010
6. *Assumed to be in secular equilibrium with short-lived daughters
7. Radionuclides with half-lives of 10 minutes or less are not included

U.S. DEPARTMENT OF ENERGY

NNSA

Radiological Assessment
March 22, 2011

U.S. DEPARTMENT OF ENERGY

NNSA

AMS Summary

- Ops Summary
  - Aerial Measurement Systems totaled more than 40 hours of flying
- Plot interpretation
  - AMS data is presented as exposure rate 1 meter from the ground at the time the measurements occurred.

U.S. DEPARTMENT OF ENERGY

NNSA

Guide to Interpretation

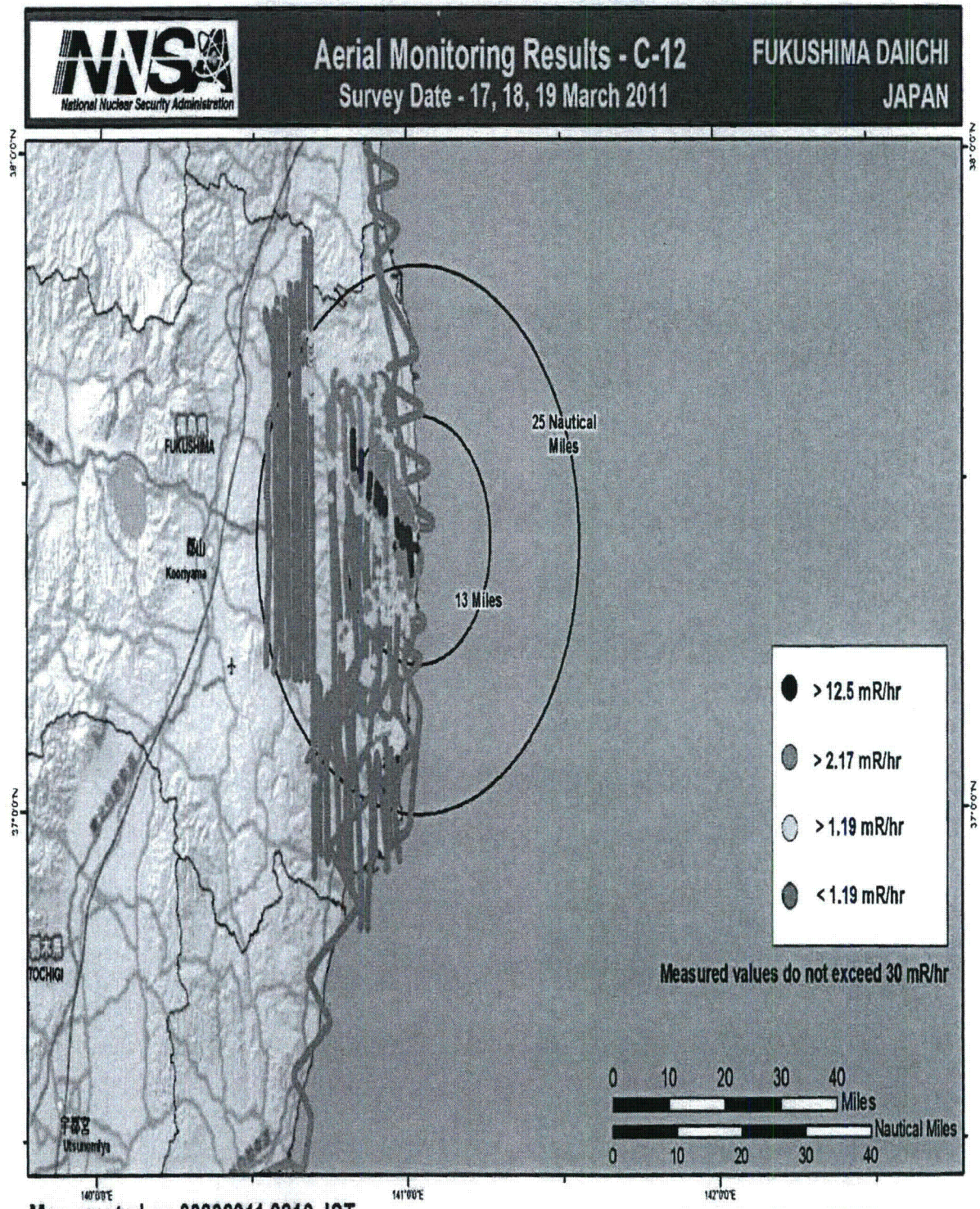
- US radiological assessments are composed of aerial and ground measurements and indicate the amounts of radiological material that has settled on the ground.

- Each measurement corresponds to the radiation a person receives in one hour at that location.

- These calculations account for multiple variables. For instance, radiation is most intense in the first days following its release. Therefore, dose reduction may be achieved by evacuating early in the response.

- All measurements in this plot are below 0.03 Rem per hour – a low level. And nearly all elevated readings are within 25 miles of Fukushima Daiichi.

- Measurements also show an area of greater radiation extending northwest from the accident. This area may be of interest to public safety officials and responders.



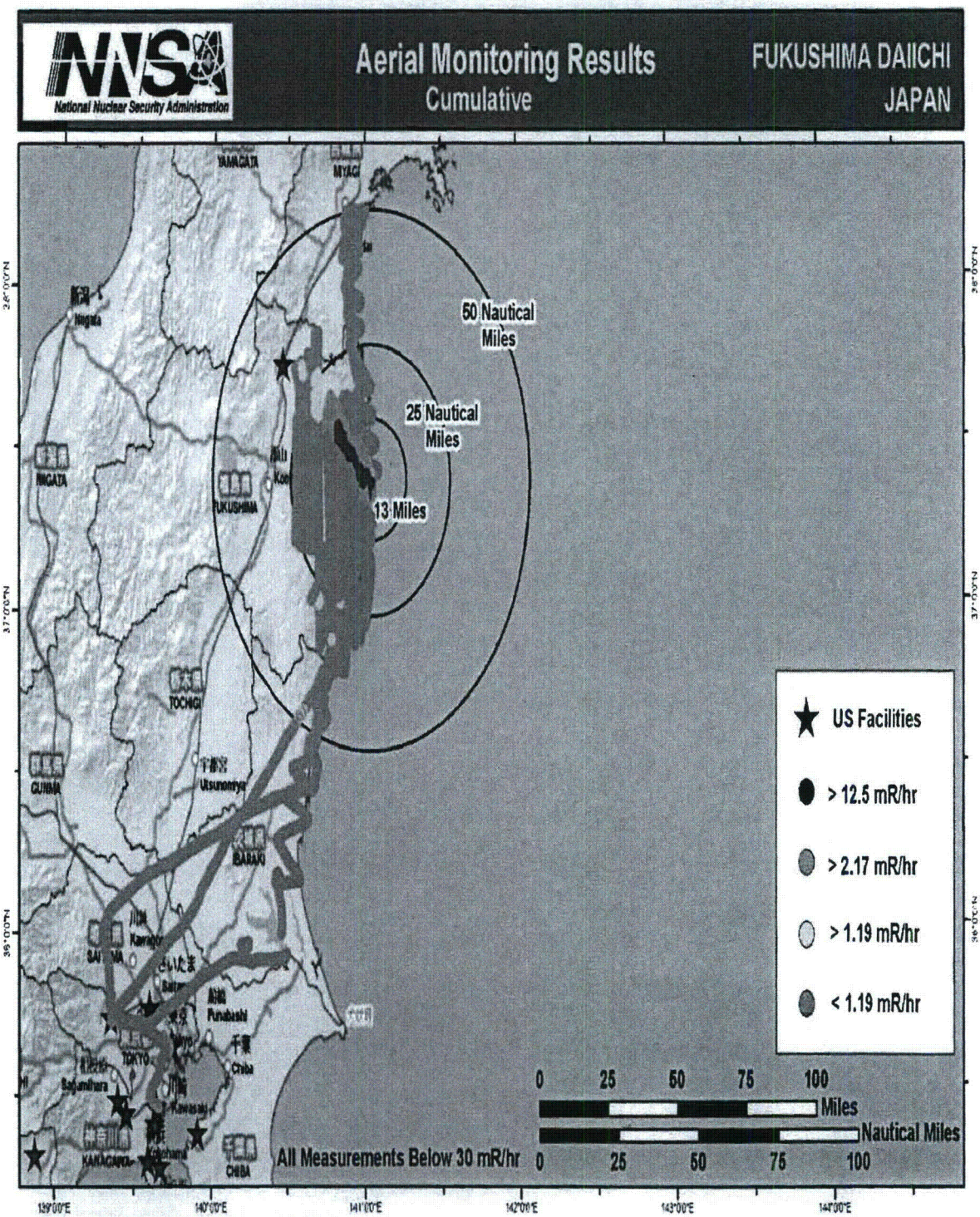
Map created on 03232011 0210 JST

Name: NIT_C-12 23Mar2011 v4

Nuclear Incident Team DOE NIT
Contact (202) 586 - 8100

U.S. DEPARTMENT OF ENERGY

NNSA



Map created on 03222011 0245 JST

mxd: NIT-D CumuAMS 21Mar2011 v1

Nuclear Incident Team DOE NIT
Contact (202) 586 - 8100

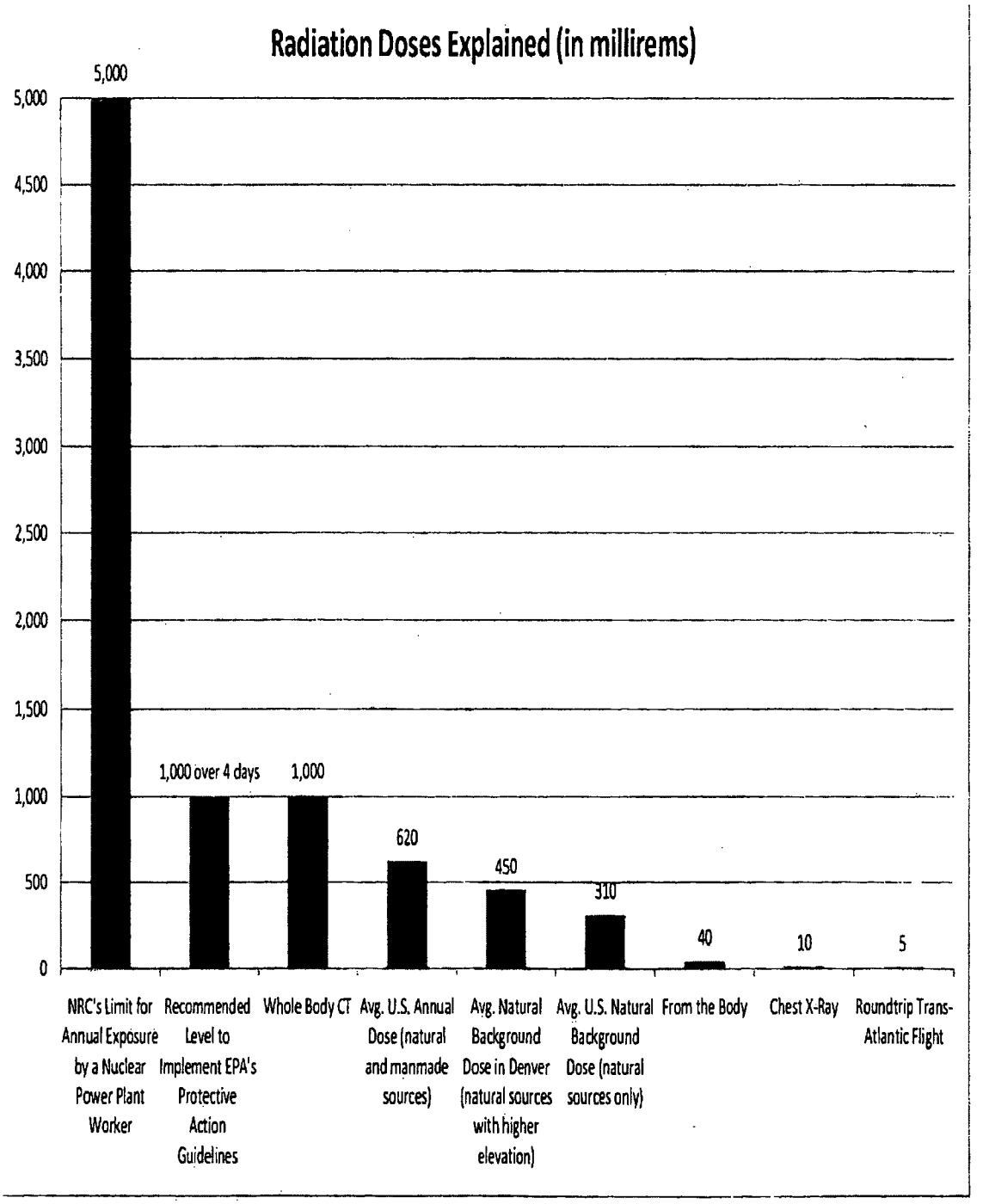
U.S. DEPARTMENT OF ENERGY

NNSA

Context

- The Nuclear Regulatory Commission estimates that the average American absorbs 620 mRem a year* (or 0.071 mRem/hour)
- An average transatlantic flight produces an exposure of 2.5 mRem*
- A typical chest x-ray produces 10 mRem per image
- EPA guidelines call for public health actions if exposure exceed 1000 mRem over 4 days

* Source: NRC: http://nrc.gov/images/about-nrc/radiation/factoid2-lrg.gif


Radiation Doses Explained (in millirems)
5,000
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
1,000 over 4 days
1,000
620
450
310
40
10
5
NRC's Limit for Annual Exposure by a Nuclear Power Plant Worker
Recommended Level to Implement EPA's Protective Action Guidelines
Whole Body CT
Avg. U.S. Annual Dose (natural and manmade sources)
Avg. Natural Background Dose in Denver (natural sources with higher elevation)
Avg. U.S. Natural Background Dose (natural sources only)
From the Body
Chest X-Ray
Roundtrip Trans-Atlantic Flight

From: Hoc, PMT12
Sent: Saturday, April 09, 2011 7:16 PM
To: (b)(6)
Cc: ~~RST01~~ Hoc; RST03 Hoc; Zimmerman, Roy; Milligan, Patricia; EOC_Science_Tiger_Team@epamail.epa.gov; Hoc, PMT12; PMT10 Hoc
Subject: RE: Draft Long Term Habitability Assessment and Associated NR Recommendations for Japan (~~FOUO~~)
Attachments: PMT comments on Naval Reactors recommendations on the acceptability of U.DOC

Mr. Mueller:

Attached please find the NRC's comments on NR assessment and path forward for making recommendations on the acceptability of U.S. citizens returning to Japan and associated limitations. These are in addition to the comments provided by the NRC PMT last night.

(b)(5)

(b)(5). We are developing some specific discussion that will be part of the documents that we hope to circulate within the interagency for review and discussion by early in the week.

If you have any questions, please give us a call.

-----Original Message-----
From: RST01 Hoc
Sent: Friday, April 08, 2011 1:21 PM
To: Hoc, PMT12; RST08 Hoc; RST07 Hoc; RST09 Hoc; RST03 Hoc
Subject: FW: Draft Long Term Habitability Assessment and Associated NR Recommendations for Japan (FOUO)
Importance: High

-----Original Message-----
From: Mueller, Troy J SES CIV NAVSEA 08 NR [mailto (b)(6)
Sent: Friday, April 08, 2011 12:00 PM
To: Mittelman, Michael H RADM PACOM, J07; Edwards.Jonathan@epamail.epa.gov; Anastas.Paul@epamail.epa.gov; EOC_Science_Tiger_Team@epamail.epa.gov; Dietrich.Debbie@epamail.epa.gov; Wilber, Deborah; Bowman, David; Garino, Gerard; NITOPS; Hoc, PMT12; Hoc, PMT12; RST01 Hoc; (b)(6)
Cc: Donald, Kirkland H ADM SEA 08; Trautman, Stephen J SES CIV NAVSEA 08 NR; Burrows, Charles W SES CIV NAVSEA 08 NR; Vavoso, Thomas G CIV NAVSEA, 08; Roberts, Thomas E CIV SEA 08 NR; McKenzie, John M SES CIV NAVSEA 08 NR; tdyknollws@state.gov; Dehaven, Darrel S CIV PSNS/IMF, Code NRRO; (b)(6) Lentz, Frederick L CIV SEA 08 NR; Krol, Joseph; Warner, David S NRR Pearl Harbor; Putzu, Frank A CIV SEA 00; (b)(6) Nickel, Lee A CIV SEA 08 NR; Roros, John CIV NAVSEA, 08; Zerr, Thomas J.; Smith, Jerry L
Subject: Draft Long Term Habitability Assessment and Associated NR Recommendations for Japan (FOUO)
Importance: High

~~DRAFT - NOT RELEASABLE - FOR PEER REVIEW ONLY - FOR OFFICIAL USE ONLY (FOUO)~~

All - below you will find draft Naval Reactors assessment and views on the path forward for making recommendations on the acceptability of U.S. citizens returning to Japan and associated limitations. The attached assessment, performed by the Knolls Atomic Power Laboratory, provides the basis for the Naval Reactors recommendations. We would appreciate your technical review of the attached assessment and the recommendations provided below before we finalize our thoughts on this issue. As this assessment is needed in the near future, I would appreciate comments by the end of the day if possible.

Thanks and Very Respectfully,
Troy

T. J. Mueller
Director, Nuclear Technology Division
Naval Reactors
(202) 781-6144
ECC (202) 781-6387

(b)(5)

(b)(5)

NRC comments on Naval Reactors recommendations on the acceptability of U.S citizens returning to Japan and associated limitations. (See Mueller, Troy J email of April 08, 2011 12:00 PM)

(b)(5)

(b)(5)

From: Hoc, PMT12
Sent: Friday, April 08, 2011 2:29 PM
To: PMT02 Hoc; PMT11 Hoc
Subject: FW: Draft Long Term Habitability Assessment and Associated NR Recommendations for Japan (~~FOUO~~)
Attachments: Long Term Habitability Assessment.docx

Importance: High

ACTION FOR PMT/DOSE ASSESSORS.

-----Original Message-----
From: Wiggins, Jim
Sent: Friday, April 08, 2011 2:00 PM
To: Holahan, Patricia; Hoc, PMT12; ET05 Hoc
Subject: FW: Draft Long Term Habitability Assessment and Associated NR Recommendations for Japan (~~FOUO~~)
Importance: High

Action: Review and comment to NR.

-----Original Message-----
From: ET07 Hoc
Sent: Friday, April 08, 2011 1:36 PM
To: Wiggins, Jim
Subject: FW: Draft Long Term Habitability Assessment and Associated NR Recommendations for Japan (~~FOUO~~)
Importance: High

FYI

-----Original Message-----
From: Vavoso, Thomas G CIV NAVSEA, 08 [mailto: (b)(6)
Sent: Friday, April 08, 2011 1:16 PM
To: Virgilio, Martin; Weber, Michael
Cc: ET07 Hoc; Mueller, Troy J SES CIV NAVSEA 08 NR; Roberts, Thomas E CIV SEA 08 NR
Subject: FW: Draft Long Term Habitability Assessment and Associated NR Recommendations for Japan (FOUO)
Importance: High

This pre-decisional draft assessment (see below and attached) was sent in to the NRC EOC PMT for review and comment. I am sending it to you directly to ensure it receives attention at your level. I told Mr. Mueller I would try to arrange whatever senior level discussions you would like to have on this subject to achieve a mutual understanding of what NR and NRC are thinking on this and related subjects. If you would like to have that discussion, please let me know and feel free to contact Mr. Mueller directly at the numbers below.

I will be in the NRC EOC from ~1400-2100 today. There will be some other items I will be prepared to discuss today to get alignment on, including NR work on "stability assessment" and NR comments on NRC spent fuel assessments. I would also like to understand NRC plans for your "comprehensive assessment".

Tom Vavoso

(b)(6) (c)

-----Original Message-----
From: Mueller, Troy J SES CIV NAVSEA 08 NR
Sent: Friday, April 08, 2011 12:00 PM
To: Mittelman, Michael H RADM PACOM, J07; Edwards.Jonathan@epamail.epa.gov; Anastas.Paul@epamail.epa.gov; EOC_Science_Tiger_Team@epamail.epa.gov; Dietrich.Debbie@epamail.epa.gov; Wilber, Deborah; Bowman, David; Garino, Gerard; NITOPS; pmt12.hoc@nrc.gov; pmt12@nrc.gov; rst01.hoc@nrc.gov; (b)(6)
Cc: Donald, Kirkland H ADM SEA 08; Trautman, Stephen J SES CIV NAVSEA 08 NR; Burrows, Charles W SES CIV NAVSEA 08 NR; Vavoso, Thomas G CIV NAVSEA, 08; Roberts, Thomas E CIV SEA 08 NR; McKenzie, John M SES CIV NAVSEA 08 NR; 'tdyknollws@state.gov'; Dehaven, Darrel S CIV PSNS/IMF, Code NRRO; Will Knoll ((b)(6)
Lentz, Frederick L CIV SEA 08 NR; Krol, Joseph; Warner, David S NRR Pearl Harbor; Putzu, Frank A CIV SEA 00; Chavez, Rodrigo LTC PACOM, J07; Nickel, Lee A CIV SEA 08 NR; Roros, John CIV NAVSEA, 08; Zerr, Thomas J.; Smith, Jerry L
Subject: Draft Long Term Habitability Assessment and Associated NR Recommendations for Japan (FOUO)
Importance: High

~~DRAFT - NOT RELEASABLE - FOR PEER REVIEW ONLY - FOR OFFICIAL USE ONLY (FOUO)~~

All - below you will find draft Naval Reactors assessment and views on the path forward for making recommendations on the acceptability of U.S. citizens returning to Japan and associated limitations. The attached assessment, performed by the Knolls Atomic Power Laboratory, provides the basis for the Naval Reactors recommendations. We would appreciate your technical review of the attached assessment and the recommendations provided below before we finalize our thoughts on this issue. As this assessment is needed in the near future, I would appreciate comments by the end of the day if possible.

Thanks and Very Respectfully,
Troy

T. J. Mueller
Director, Nuclear Technology Division
Naval Reactors
(202) 781-6144
ECC (202) 781-6387

(b)(5)

(b)(5)

(b)(5)

Conclusion of Long Term Habitability Assessment

Prepared for Naval Reactors by the Knolls Atomic Power Laboratory

(b)(5)

Executive Summary

Long Term Habitability Assessment

(b)(5)

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(b)(5)

From: Hoc, PMT12
Sent: Saturday, April 09, 2011 1:16 AM
To: PMT09 Hoc; PMT03 Hoc; PMT02 Hoc; PMT11 Hoc
Subject: FW: Draft Long Term Habitability Assessment and Associated NR Recommendations for Japan (~~FOUO~~)

-----Original Message-----
From: RST01 Hoc
Sent: Saturday, April 09, 2011 1:08 AM
To: Hoc, PMT12
Cc: FOIA Response.hoc Resource
Subject: FW: Draft Long Term Habitability Assessment and Associated NR Recommendations for Japan (~~FOUO~~)

FYI

-----Original Message-----
From: Boyd.Mike@epamail.epa.gov [mailto:Boyd.Mike@epamail.epa.gov] On Behalf Of EOC_Science_Tiger_Team@epamail.epa.gov
Sent: Friday, April 08, 2011 6:13 PM
To: Mueller, Troy J SES CIV NAVSEA 08 NR
Cc: Burrows, Charles W SES CIV NAVSEA 08 NR; Dehaven, Darrel S CIV PSNS/IMF, Code NRRO; Bowman, David; Warner, David S NRR Pearl Harbor; Dietrich.Debbie@epamail.epa.gov; Wilber, Deborah; EOC_Science_Tiger_Team@epamail.epa.gov; Putzu, Frank A CIV SEA 00; Lentz, Frederick L CIV SEA 08 NR; Garino, Gerard; Smith, Jerry L; McKenzie, John M SES CIV NAVSEA 08 NR; Roros, John CIV NAVSEA, 08; Edwards.Jonathan@epamail.epa.gov; Krol, Joseph; Donald, Kirkland H ADM SEA 08; Nickel, Lee A CIV SEA 08 NR; Mittelman, Michael H RADM PACOM, J07; NITOPS; Anastas.Paul@epamail.epa.gov; Hoc, PMT12; Hoc, PMT12; (b)(6); RST01 Hoc; Trautman, Stephen J SES CIV NAVSEA 08 NR; (b)(6); tdyknollws@state.gov; Roberts, Thomas E CIV SEA 08 NR; Vavoso, Thomas G CIV NAVSEA, 08; Zerr, Thomas J.; (b)(6)
Subject: Re: Draft Long Term Habitability Assessment and Associated NR Recommendations for Japan (~~FOUO~~)

Dear Mr. Mueller:

Your email and attached report have been reviewed by technical specialists within EPA's Emergency Operations Center. Although we have not had time to confirm the calculations in the report in much detail, our initial impression is that the approach you are taking is reasonable. We are in contact with our colleagues at the US NRC's Protective Measures Team and would like to consult with them further over the next few days before giving you detailed comments. I would note that we have already been discussing with NRC appropriate guidance for permanent return as part of the overall response effort here . We will follow up with you more in the next few days.

Mike Boyd
Health Physicist
EPA EOC

From: "Mueller, Troy J SES CIV NAVSEA 08 NR" <(b)(6)>

To: "Mittelman, Michael H RADM PACOM, J07" <(b)(6)>; Jonathan Edwards/DC/USEPA/US@EPA, Paul Anastas/DC/USEPA/US@EPA, EOC Science Tiger Team@EPA, Debbie Dietrich/DC/USEPA/US@EPA, "Wilber, Deborah" <Deborah.Wilber@nnsa.doe.gov>, "Bowman, David" <David.Bowman@nnsa.doe.gov>, "Garino, Gerard" <Gerard.Garino@nnsa.doe.gov>, "NITOPS" <NITOPS@nnsa.doe.gov>, <pmt12.hoc@nrc.gov>, <pmt12@nrc.gov>, <rst01.hoc@nrc.gov>, (b)(6)

Cc: (b)(6)

Date: 04/08/2011 12:00 PM

Subject: Draft Long Term Habitability Assessment and Associated NR Recommendations for Japan ~~(FOUO)~~

~~DRAFT - NOT RELEASABLE - FOR PEER REVIEW ONLY - FOR OFFICIAL USE ONLY (FOUO)~~

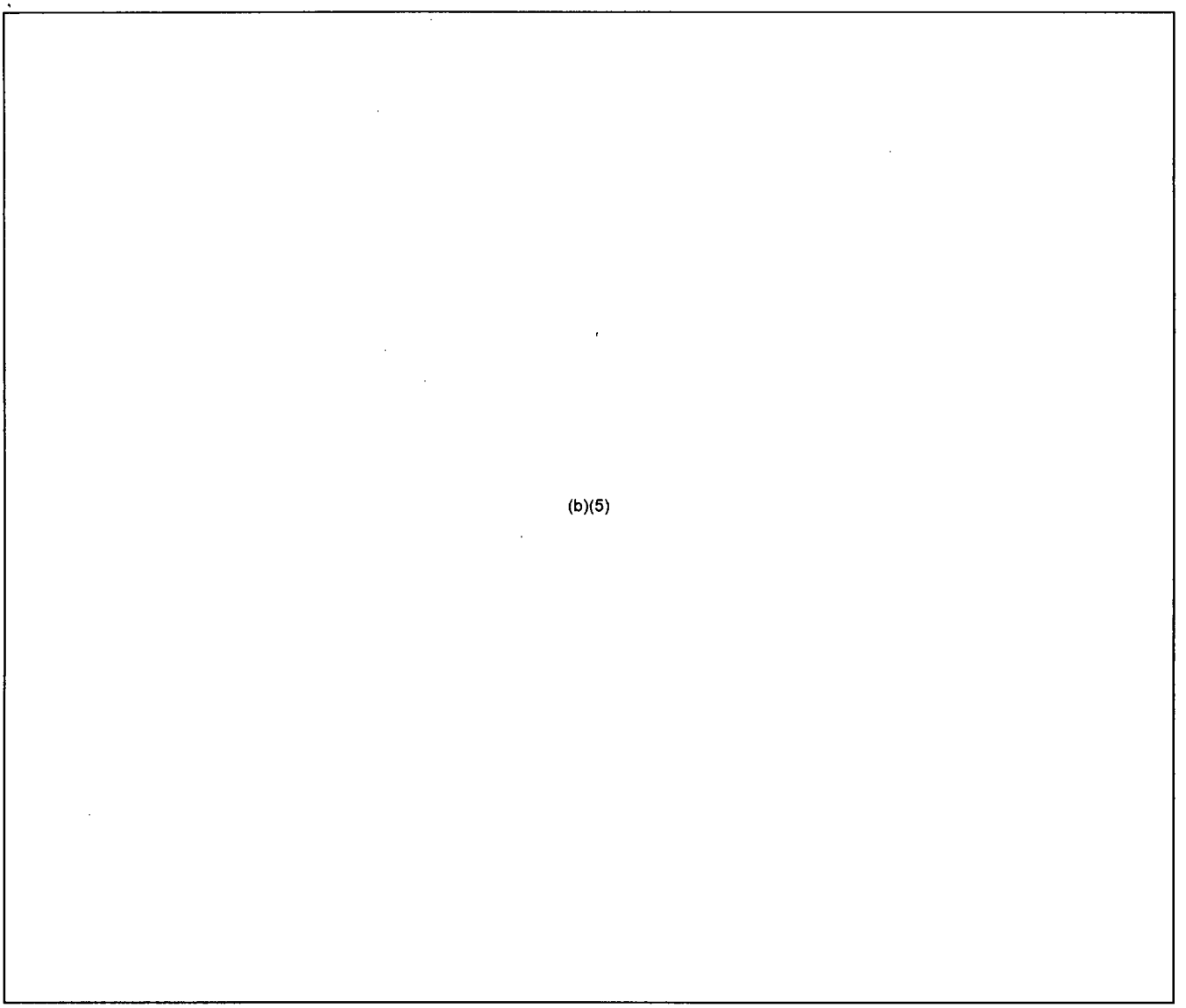
All - below you will find draft Naval Reactors assessment and views on the path forward for making recommendations on the acceptability of U.S.
citizens returning to Japan and associated limitations. The attached assessment, performed by the Knolls Atomic Power Laboratory, provides the basis for the Naval Reactors recommendations. We would appreciate your technical review of the attached assessment and the recommendations provided below before we finalize our thoughts on this issue. As this assessment is needed in the near future, I would appreciate comments by the end of the day if possible.

Thanks and Very Respectfully,
Troy

T. J. Mueller
Director, Nuclear Technology Division
Naval Reactors
(202) 781-6144
ECC (202) 781-6387

(b)(5)

(b)(5)


(b)(5)

From: Weber, Michael
Sent: Saturday, April 09, 2011 3:21 PM
To: ET01 Hoc; ET05 Hoc
Cc: OST02 HOC; Virgilio, Martin; PMT01 Hoc
Subject: Action - NRC Comments on Habitability Assessment
Attachments: NRC_Comments.20110408-2036.Long Term Habitability Assessment (Sun Comment).docx

Looks like a good topic for the ET to address. Please eaise to the Director's attention.

(b)(5)

From: Borchardt, Bill
To: Virgilio, Martin; Weber, Michael
Sent: Sat Apr 09 12:55:53 2011
Subject: Fw: NRC Comments on Habitability Assessment

Bill Borchardt
Via blackberry

From: Trautman, Stephen J SES CIV NAVSEA 08 NR (b)(6)
To: Borchardt, Bill; joseph.krol@nnsa.doe.gov <joseph.krol@nnsa.doe.gov>; steven.aoki@nnsa.doe.gov <steven.aoki@nnsa.doe.gov>
Cc: Mueller, Troy J SES CIV NAVSEA 08 NR (b)(6); Donald, Kirkland H ADM SEA 08 (b)(6); Naples, Elmer M SES SEA 08 NR (b)(6); Burrows, Charles W SES CIV NAVSEA 08 NR (b)(6); McKenzie, John M SES CIV NAVSEA 08 NR (b)(6)
Sent: Sat Apr 09 10:43:03 2011
Subject: Fw: NRC Comments on Habitability Assessment

Bill, Steve, Joe,

A few days ago, NR sent your organization a habitability assessment for review and comment. We have received what I would characterize as technical comments from the working level and those are appreciated.

(b)(5)

(b)(5)

There is much more to discuss here.

The email below captures comments received from NRC up to this point.

We stand ready to discuss/meet and have those policy discussions to help inform the interagency as we come through when (and where) to allow US citizens back into regions of Japan.

Thank you and we look forward to engaging with you when you are ready.

Steve

From: Vavoso, Thomas G CIV NAVSEA, 08
To: Trautman, Stephen J SES CIV NAVSEA 08 NR
Sent: Sat Apr 09 08:31:33 2011
Subject: FW: NRC Comments on Habitability Assessment

As discussed. Note comments below as well as in the attached.

From: Vavoso, Thomas G CIV NAVSEA, 08
Sent: Fri 4/8/2011 11:19 PM
To: Conran, Thomas C SES CIV NAVSEA 08 NR; Naples, Elmer M SES SEA 08 NR; Burrows, Charles W SES CIV NAVSEA 08 NR; Hale, Andrew M SES NAVSEA, 08; Mueller, Troy J SES CIV NAVSEA 08 NR; McKenzie, John M SES CIV NAVSEA 08 NR; Roros, John CIV NAVSEA, 08
Cc: Roberts, Thomas E CIV SEA 08 NR; Bingman, Bruce M CIV SEA 08 NR; Steele, Jeffrey M CIV SEA 08 NR; Herman, David R CIV NAVSEA, 08; Bell, Stephen T CIV SEA 08 NR; Szeto, Gordon CIV SEA 08 NR; Steinhurst, Laurel A CIV SEA 08 NR; Kepple, Alan C CIV NAVSEA, 08
Subject: NRC Comments on Habitability Assessment

See NRC comments on paper below I sent paper separately, but forgot to include email text.

From: Hoc, PMT12
Sent: Friday, April 08, 2011 8:36 PM
To: RST03 Hoc
Cc: PMT02 Hoc; PMT09 Hoc; PMT11 Hoc
Subject: NRC Comments on "Conclusions of Long Term Habitability Assessment"

Tom

Here are our comments on the Long Term Habitability Assessment document. Overall the NRC has four general comments:

1.
2. (b)(5)
3.
4.

The attachment provides some additional specific comments.

Sandi

PMT-PAAD

(b)(5)

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April 8, 2011

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(b)(5)

From: LIA07 Hoc
Sent: Friday, March 18, 2011 10:22 AM
To: Hoc, PMT12; RST01 Hoc; OST01 HOC; OST02 HOC; LIA11 Hoc; LIA01 Hoc; LIA06 Hoc; LIA07 Hoc
Subject: FW: Fax from unknown sender.
Attachments: File1.PDF

This looks like a fax from Naval Reactors?

-----Original Message-----
From: HOO Hoc
Sent: Friday, March 18, 2011 10:10 AM
To: LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: Fax from unknown sender.

FYI

-----Original Message-----
From: hoo1 [mailto:hoo1.hoc@nrc.gov]
Sent: Friday, March 18, 2011 10:07 AM
To: HOO Hoc
Subject: Fax from unknown sender.

RECEIVE NOTIFICATION FOR JOB 00017750

Notice for: HOO1

Remote ID: Received at: 03/18/2011 10:05

Pages: 14

Routed by:

Routed at: 03/18/2011 10:05

18MAR11

ATTN:

TOM ROBERTS

@ NRC ECC

fax: 301-816-5151

From: Gordon Szeto, NR OSZ

Phone: 202-781-5834

fax 202-781-6430

14 pages including cover sheet.

~~OFFICIAL USE ONLY~~

Update: 17 March 2011 15:00:00 EDST

Goals of the Actions

Potential actions related to the spent fuel water pit in Reactor 4 were considered with the following goals in mind with the relative order of

1. Prevent Criticality
2. Control Fires
3. Shield the fuel
4. Prevent air borne releases of Activity
5. Cool the bundles

Background information

Based on briefings on 3/16 it is assumed that there are currently no active zirconium fires in the spent fuel pit, that the pit is structurally damaged and that the pit is drained of water. It is assumed that the fuel pit contains ~2 ½ cores worth of fuel bundles nominally still in their original configuration. One core is understood have been out-of–reactor for only a period of ~105 days. It is assumed that there is also no capability to cool the water pit water in the event that it were possible to partially or completely refill the pit. Rough thermal calculations were done considering characteristics of BWR fuel and expected residual decay heats to ballpark that with no cooling of the water pit water to remove heat, approximately 30,000 gallons of water would be needed per day to keep up with boiling due to the heat load just from the one core's worth of fuel bundles with ~100 days of decay time. Assuming the water pit water began draining from the water pit at the point of the last near by hydrogen explosion, the water pit is leaking at an average rate of on the order of ~ 80 gpm (slower when first being filled, faster when nearer to capacity). Support calculations are shown in Attachment 1.

Recommended Action

Recommended actions developed from a multidiscipline team including physics, shielding, thermal and materials engineers and scientists based on the assumptions above are listed below. The rationale for these actions and alternatives considered are discussed in the next section.

1. Cover the spent fuel bundles with an inert substance. The material of choice is commercial grade Zirconia. The advantages of this material is that it is inert with respect to the zirconium and UO_2 fuel making up the bundles, it will have residual hafnia in it to the level of a few percent providing a nuclear poison, and it will provide more gamma shielding capability than typically provided by water alone. While commercial Zirconia is believed to be available, it may not be available in the quantities needed in the required time frame.

   SiO_2 is judged an acceptable second choice although zircon sand ($ZrSiO_4$) would be somewhat better if easily available. SiO_2 has a few disadvantages in relation to Zirconia, in

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that it will not provide as an effective a nuclear poison unless mixed with additional poison prior to application, the gamma shielding capability will not be as good, although more can be added since it has a lower density, and it will be more reactive with the Zirconium metal at very high temperatures. Reaction energy liberated from SiO_2-Zr reactions is much less than that liberated from water and is believed to be acceptable.

2. Deliver the inert substance described above with a nuclear poison to prevent criticality. Zirconia identified above has the advantage that it will provide several percent hafnia with it; however we would recommend mixing an additional substance with the material above. The material of choice is a mixture of the rare earth oxides (gadolinia, erbia, and samaria). These have the advantage that they are again very stable materials to high temperatures. Rare earth oxides are judged fairly available as they are used extensively in the electronics industry, and relatively small quantities would be needed (Kilograms as opposed to metric tons).

   B_4C was previously judged to be another viable choice for a poison material. There are questions at this point as to its stability in steam and water that need to be resolved prior to recommendation (B_4C is predicted from thermodynamics to react exothermically with steam and air to create boric acid). It might be more available than the rare earth oxides. Like the rare earth oxides it will be quite stable to high temperatures, however near the melting temperatures of zirconium B_4C will be more likely to volatilize and thereby leave the vicinity of the bundles.

   If a continuous flow of water is provided, it should be borated.

3. Provide cooling water to the bundles. A great deal of debate occurred regarding whether to supply cooling water or not with the understanding that the spent fuel pool is damaged. The primary advantage is that if the water can be contained in the pit it will provide cooling to the bundles. Depending upon the geometry of the bundles, even a good supply of steam up the bundles will be very effective in cooling. Without some sources of cooling it is likely that at least some fraction of the zirconium cladding will melt leading to release of fission products and a change in geometry. (If a zirconium fire was actually going in the bundles earlier, some melting may however already have happened.) An additional advantage is that the water itself might provide a delivery method for the inert materials and poison materials described above through water jets or water cannons.

   Several disadvantages do exist. The initial quenching of the rods may cause further mechanical damage to them leading to further release of fission products. The initial quenching will also be a source of steam which may reignite a zirconium fire. (This is more likely with the combination of fracturing of the rods as identified above exposing fresh unoxidized zirconium.) An insufficient supply may act to add chemical reactivity rather than quench the temperature. The high temperature water reaction on quenching will be a source of hydrogen. Finally, if the water leaks from the pool it will provide a pathway to further spread of fission products, assuming at least some fraction of the fuel rods are not intact. Despite these disadvantages, the consensus view is that all efforts should be made to cool the bundles.

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Attack Sequences:

1. The preferred attack sequence is to add some sand to the pool first. This primarily provides shielding, but also displaces unused volume of the pool, may slow pool leakage, and may provide some filtering of fission product gases and particulate. This should be quickly followed by a fully committed flooding campaign – all possible volume of water should be applied simultaneously until the fuel is covered. As noted earlier in point #3, too little volume may simply fuel further zirconium-water reactions without carrying away sufficient heat.

2. If sand addition is not feasible or for other reasons we have not yet analyzed is determined to not be the desired course of action (weight to the structure or difficulty in delivery), the addition of water should still be pursued. Difficulties include the following.

   a. Of the pumps supplied, only two have the capacity to deliver water up the ~50m into the spent fuel pit area. With pumping and head loss a maximum delivery rate of between 500 and 800gpm could be provided. These pumps are not sufficient to deliver slurries of water and sand.

   b. As discussed in the Background section above, water loss rates of ~ 30gpm from evaporation and ~80 gpm from water pit leakage are estimated. Depending upon the efficiency of the delivery system, significantly less than 500 to 800 gpm may actually get into the water pit. Assuming an efficiency of 50 percent, a fill time of on the order of half a day will likely be required. This is however judged to be sufficiently fast to be successful.

   c. Since it is reported that the fuel is currently dry, it is expected that there is fuel damage and that the fuel and zirconium will be very hot when the initial water is introduced. This will likely thermally shock the fuel resulting in additional failures of any non-failed rods, entrainment of volatile and particulate fission products, and potentially some period of accelerated zirconium-water interaction. This will likely lead to a burst release that will decrease as the fuel cools and is more covered (see following Figure). Assuming the fuel bundles sitting in the dry water pit are currently at a high temperature of ~2200 F (used because there is reportedly no active zirconium fires) approximately 17000 gal of water will be required to cool a 2.5 core's worth of rods to 212.F. A preliminary analysis of the data from yesterday's water addition are shown below in Attachment 2.

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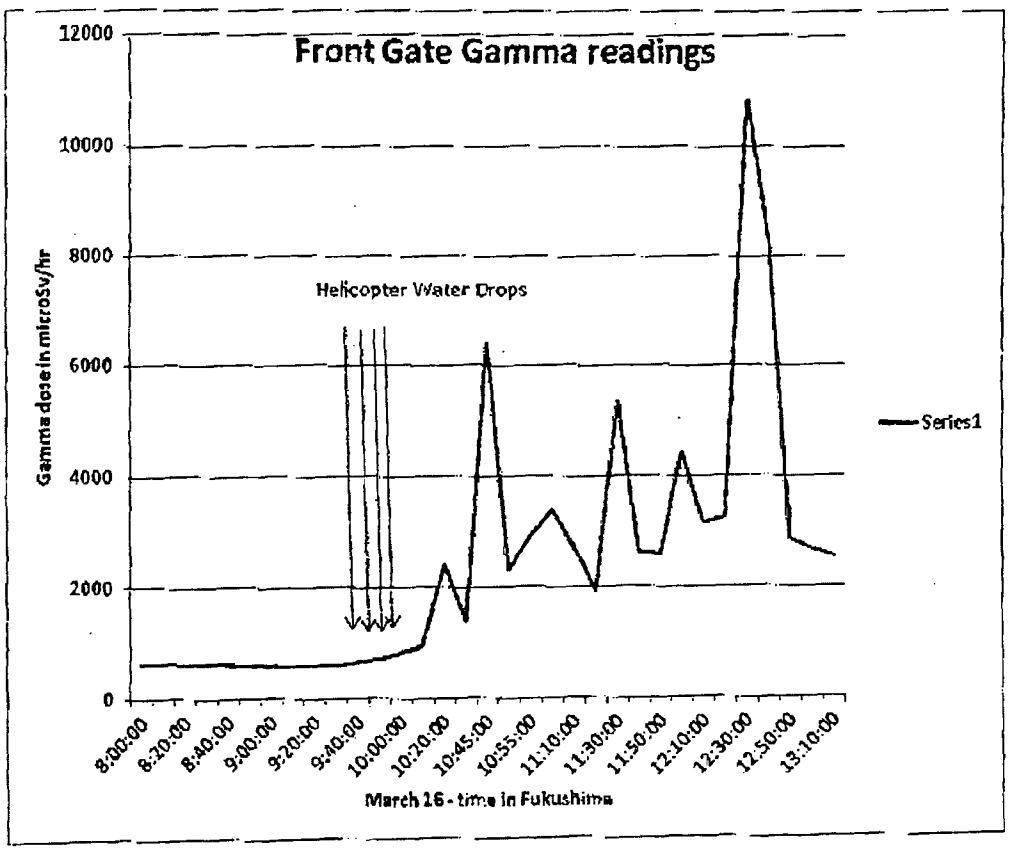

These are data taken from the front gate detector immediately before and after the helicopter water drops of 16 March 2011. There was also a wind shift at the time of the change in readings and a separate effort is underway to determine if this is directly correlated with the helicopter drops or if the wind shift can account for the change in detector readings. If it is determined that this is not due to the wind shift, it would indicate that this level of water introduction (misting or perhaps a small fraction of one or two of the drops) is not worth conducting. This will be a focus of continued analysis.

d. Radioactive water will leak via the path that drained the pool in the first place and any cessation of filling will drain the pool again in a few days time. As discussed above, loss rates are estimated at ~110 gpm, thus less source is needed than for the initial fill. Since high flow pumps capable of delivering water to the water pit area appear to be limited in supply, possibilities for maintaining water pit levels (once filled) with existing plant pumping and piping capabilities should be considered.

e. If possible the water should be borated. That could be facilitated by a two stage pumping process of water, first into a holding tank where the boration can be added and then into the water pit area.

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Alternatives Considered

A number of alternatives were considered. Both the recommended actions with their pro's and con's as well as the alternatives considered are summarized in Table 1.

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Poisons		
Substance	Pro's	Con's
B_4C	- High melting point - Can be put into a slurry form - Readily Available - Strong neutron poison	- Will become volatile at temperatures near the melting point of zirconium. - May react with steam and oxygen to yield heat and boric acid. - The resulting boric acid will vaporize at 572F.
Rare earth oxides (gadolinia, erbia, and samaria)	- Very stable to high temperatures (especially erbia) - Strong neutronic poison (Sm and Gd) - Non volatile	- More dense than B_4C (although only relatively small amounts will be needed) - Gadolinia and samaria may become reactive with zirconium near the melting point of zirconium. - May be less available than B_4C
Hafnia	- Very stable - Non volatile - Non reactive with zirconium	- Likely more limited in availability than B_4C
Boric Acid	- Likely readily available at the plant - Readily put into solution with water and should be used if continuous feed of water is feasible.	- More chemically reactive than the other suggestions, but doesn't appear to pose a chemical reactivity concern with the fuel - More volatile than the other suggestions - Will react eventually with carbon and low alloy steel structural components of the pit.
Cadmium, Indium, Silver		Very chemically reactive, would not use.

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Fillers		
Substance	Pro's	Con's
Commercial grade Zirconia Sand or pieces	- Not reactive with either the zirconium or the fuel and its fission products - Very Stable - Will provide better gamma shielding than water - Will contain several percent hafnia which is a nuclear poison - Very high melting point - Larger pieces may facilitate cooling	- More dense than water - May not be readily available near the plant - Will provide no cooling - May inhibit convective cooling
Silicon Sand (SiO_2)	- High melting point - Better gamma shielding than water - Likely readily available near plant (construction grade would be preferred, however beach sand could be used)	- No cooling capability - May inhibit convective cooling - About 2 ½ times heavier than water, but lighter than Zirconia sand - Will become reactive with zirconium near the melting temperature of zirconia, but less so than water.
Zircon Sand ($ZrSiO_4$)	- High Melting Points - Better gamma shields than water and Silicon Sand	- No cooling capability - May inhibit convective cooling - Less available than silicon sand. - More dense than silicon sand
Salt – road salt ($NaCl+CaCl_2$)or evaporated sea salt	- Melts at ~1340F (727 C) to remove heat and limit temperatures while melting is occurring - May be self sealing if it melts and re-freezes in cracks that may exist in the spent fuel pool - May be readily available - Molten salt has reasonable heat transfer (convection) properties as compared to	- Corrosiveness to Zr alloys and UO_2 needs to be evaluated - May not be readily available - Very different strategy than has been employed in the past.

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	insulating sands - Post-event recovery should be easier compared to a molten sand situation	
Alumina Sand	- Better gamma shielding capability than water	- No cooling capability - May inhibit convective cooling - Less gamma shielding capability than previous sands - May react with zirconium near melting point of zirconium, but less so than water
Concrete		- Exothermic as it solidifies - Likely will not set at high temperatures breaking down into components - Heavy
Substance	Pros	Cons
Water or seawater	- Could provide a delivery method for other substances identified above - Provided cooling. (the more intact the original bundle geometry the more effective the cooling - Salt water readily available - Provides shielding approximately equivalent to original pit design - Can tie-up some of the fission products (I and Cs) - Seawater provides some criticality control due to salt	- Quenching could cause further mechanical damage to fuel rods and fuel bundles exposing more fission products and more fresh zirconium metal - Will cause large steam releases on initial quenches which could increase airborne activity - Could re-ignite a zirconium fire, especially if reacting with freshly damaged fuel rods due to the quenching. - Invigorated oxidation reactions will provide a source of hydrogen - Could leach away fission products from damaged rods as it leaks from the

		pool. - Steam will react with UO_2 fuel pellets to form an expansive and friable phase. This expansion could result in "unzipping" of fuel rods; the friable nature of the resulting fuel could increase the particulate source term. - Seawater contains organics and salt that represent longer-term system concerns but this should not rule out its use.
Borated and Leaded Glass	- Low Melting point; aids cooling and seals leaks, distributing poison	- Possible cracking and mechanical damage to core materials due to contraction on freezing. - Complicates ultimate cleanup of area.

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Attachment 1
Leak and Fill rate calculations

Pool dimensions

$L := 35 \cdot ft$ $D := 40 \cdot ft$ $H := 39 \cdot ft$ Taken from Internet

$V_{empty} := L \cdot D \cdot H$ $V_{empty} = 4.084 \times 10^5 \cdot gal$

$eff := 30\%$ Guess

$Pow_{ele} := 784 \cdot MW$ Taken from Internet

$Pow := \frac{Pow_{ele}}{eff}$

The average linear heat generation for a BWR is

$q'_{ave} := 19. \frac{kW}{m}$ Taken from Todreas and Kazimi

The total number of rods is calculated by

$L_{fuel} := 12 \cdot ft$

$N_{rods} := \frac{Pow}{q'_{ave} \cdot L_{fuel}}$ $N_{rods} = 3.76 \times 10^4$

$N_{core} := 2.5$ $L_{rods} := 15 \cdot ft$ Assumed 15 ft for total amount of volume taken by rod

$D_{rod} := 12.27 \cdot mm = 0.483 \cdot in$ Taken from Todreas

$V_{stuff} := N_{rods} \cdot L_{rods} \cdot \frac{\pi}{4} \cdot D_{rod}^2 \cdot N_{core}$ $V_{stuff} = 1.343 \times 10^4 \cdot gal$

$A_{stuff} := \frac{V_{stuff}}{L_{rods}}$ $A_{stuff} = 11.116 \cdot m^2$

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$\frac{A_{stuff}}{L \cdot D} = 0.085$

$t_{total} := 2.5 \cdot day$ This is the assumed boil off time

$boilrate := 28000\left(1 + 1.5\frac{.05}{.12}\right)\frac{gal}{day}$ $boilrate = 31.597 \cdot \frac{gal}{min}$

$boilrate = 4.55 \times 10^4 \frac{gal}{day}$

$leakrate := \frac{V_{empty} - V_{stuff} - boilrate \cdot t_{total}}{t_{total}}$ $leakrate = 78.128 \cdot \frac{gal}{min}$

$fill := 375gpm$ Assumed effective fill rate

$filltt := \frac{\frac{1}{2} \cdot V_{empty} - V_{stuff}}{fill - leakrate}$ $filltt = 0.466 \cdot day$

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Attachment 2
Calculation to cool Fuel

$H_{uo2}(tau) := \left(-21.1762 + 52.1743 \cdot tau + 43.9753 \cdot tau^2 - 28.0404 \cdot tau^3 + 7.8852 \cdot tau^4 - 0.52668 \cdot tau^5 + 0.7\right.$

$tau(T) := \frac{T}{1000K}$

$H_{uo2}(tau(300 \cdot K)) = 0.444 \frac{kJ}{kg} \cdot kJ \qquad H_{uo2}(tau(1000 \cdot K)) = 205.244 \frac{kJ}{kg} \cdot kJ$

$.11 \cdot \frac{BTU}{lb \cdot R} = 0.256 \cdot \frac{kJ}{kg \cdot R}$

$D_{pellet} := 10.4 \cdot mm \qquad rho_f := 10.97 \times 10^3 \cdot \frac{kg}{m^3}$

$mass_{fuel} := N_{core} \cdot N_{rods} \cdot 12.8 \cdot \pi \cdot \frac{D_{pellet}^2}{4} \cdot rho_f$

$energy\_fuel := mass_{fuel} \cdot \left(H_{uo2}(tau(1500 \cdot K)) - H_{uo2}(tau(373.15 \cdot K))\right)$

$energy\_fuel = 1.109 \times 10^{11} J$

$h_{fg} := 970 \cdot \frac{BTU}{lb}$

$t_{clad} := .813 \cdot mm$ From Todreas, table 1.3

$D_{ci} := D_{rod} - 2 \cdot t_{clad}$

$rho_{cl} := 6570 \cdot \frac{kg}{m^3}$ From Incropera

$vol_{clad} := \frac{\pi}{4} \cdot \left(D_{rod}^2 - D_{ci}^2\right)$

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$$TT_{zr} := \begin{pmatrix} 5 \\ 300 \\ 400 \\ 640 \\ 1090 \\ 1093 \\ 1113 \\ 1133 \\ 1153 \\ 1173 \\ 1193 \\ 1213 \\ 1233 \\ 1248 \\ 5000 \end{pmatrix} \qquad VCP_{zr} := \begin{pmatrix} 1.841 \\ 1.841 \\ 1.978 \\ 2.168 \\ 2.457 \\ 3.289 \\ 3.865 \\ 4.029 \\ 4.710 \\ 5.346 \\ 5.044 \\ 4.055 \\ 3.072 \\ 2.332 \\ 2.332 \end{pmatrix} \cdot 10^{6}$$

$$cpv_{zr}(T) := \text{linterp}\left(TT_{zr}, VCP_{zr}, \frac{T}{K}\right) \cdot \frac{J}{m^3 \cdot K}$$

$$T_{init} := 298 \cdot K$$

$$E_{zr}(TTT) := vol_{clad} \cdot \left(\int_{T_{init}}^{TTT} cpv_{zr}(T)\, dT \right)$$

$$energy_{clad} := N_{core} \cdot N_{rods} \cdot L_{rods} \cdot E_{zr}(1500K)$$

$$energy_{clad} = 3.748 \times 10^{10} \cdot J$$

$$V_{quench} := \frac{energy\_fuel + energy_{clad}}{h_{0_2}} \cdot \frac{1}{1000 \cdot \frac{kg}{m^3}}$$

$$V_{quench} = 1.737 \times 10^{4} \cdot gal$$

This is the volume of water required to quench the u02 only from 1500K to 373

From: OST01 HOC
Sent: Monday, March 21, 2011 4:49 AM
To: PMT02 Hoc; PMT11 Hoc; Hoc, PMT12
Subject: FW: Fax from 202 781 5686
Attachments: File1.PDF

Importance: High

-----Original Message-----
From: HOO Hoc
Sent: Monday, March 21, 2011 4:49 AM
To: PMT01 Hoc; Hoc, PMT12; LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: Fax from 202 781 5686

-----Original Message-----
From: hoo1 [mailto:hoo1.hoc@nrc.gov]
Sent: Monday, March 21, 2011 4:47 AM
To: HOO Hoc
Subject: Fax from 202 781 5686

RECEIVE NOTIFICATION FOR JOB 00017783

Notice for: HOO1

Remote ID: 202 781 5686

Received at: 03/21/2011 04:46

Pages: 5

Routed by:

Routed at: 03/21/2011 04:46

To: Protective Measures Team Fax: 301-816-5151

Attn: Greg Casto 301-816-5195

From Charles Burrows, Naval Reactors 202-781-6397/8/9

Attached is the field survey data from the Yokosuka Survey teams (173 miles south of Fukushima) which was previously discussed.

Please do not hesitate to call with any questions.

v/r C W Burrows

USS George Washington (CVN 73) Survey Data					
Yokosuka Japan (35.26667 North, 139.6667 East)					
Date	Time	Airborne Results	Radioiodine	Gamma mrem/hr	Surface pCi/probe
19-Mar	1330	<5.00E-10		0.01	<450
19-Mar	1400	<5.00E-10		0.01	<450
19-Mar	1430				495
19-Mar	1445	<5.00E-10			
19-Mar	1500	<5.00E-10		0.01	<450
19-Mar	1530	<5.00E-10		0.01	900
19-Mar	1600	<5.00E-10		0.01	675
19-Mar	1630	<5.00E-10		0.01	1125
19-Mar	1700	<5.00E-10		0.01	<450
19-Mar	1730	<5.00E-10		0.01	675
19-Mar	1800	5.00E-10		0.01	1800
19-Mar	1830	<5.00E-10		0.01	1800
19-Mar	1900	<5.00E-10		0.01	1350
19-Mar	1930	<5.00E-10		0.01	3375
19-Mar	2000	<5.00E-10		0.01	945
19-Mar	2030	<5.00E-10		0.01	900
19-Mar	2100	<5.00E-10		0.01	<450
19-Mar	2130	<5.00E-10		0.01	<450
19-Mar	2200	<5.00E-10		0.01	<450
19-Mar	2230	<5.00E-10		0.01	<450
19-Mar	2300	<5.00E-10		0.01	<450
19-Mar	2330	<5.00E-10		0.01	495
20-Mar	0000	<5.00E-10		0.01	495
20-Mar	0030	<5.00E-10		0.01	<450
20-Mar	0100	<5.00E-10		0.01	<450
20-Mar	0130	<5.00E-10		0.01	<450
20-Mar	0200	<5.00E-10		0.01	<450
20-Mar	0230	<5.00E-10		0.01	<450
20-Mar	0300	<5.00E-10		0.01	<450
20-Mar	0330	<5.00E-10		0.01	<450
20-Mar	0400	<5.00E-10		0.01	<450
20-Mar	0430	<5.00E-10		0.01	<450
20-Mar	0500	<5.00E-10		0.01	<450
20-Mar	0530	<5.00E-10		0.01	<450

USS George Washington (CVN 73) Survey Data					
Yokosuka Japan (35.26667 North, 139.6667 East)					
Date	Time	Airborne Results	Radioiodine	Gamma mrem/hr	Surface pCi/probe
20-Mar	0600	<5.00E-10		0.01	<450
20-Mar	0630	<5.00E-10		0.01	<450
20-Mar	0700	<5.00E-10		0.01	<450
20-Mar	0900	<5.00E-10		0.01	<450
20-Mar	1000	<5.00E-10		0.01	<450
20-Mar	1200	<5.00E-10		0.01	<450
20-Mar	1500	<5.00E-10		0.01	<450
20-Mar	1709	<5.00E-10		0.01	<450
20-Mar	1803	<5.00E-10		0.01	<450
20-Mar	2000	<5.00E-10		0.01	<450
20-Mar	2118	<5.00E-10		0.01	<450
20-Mar	2300	<1.00E-09		0.01	
21-Mar	0130	1.00E-09		0.01	
21-Mar	0145	5.50E-10		0.01	
21-Mar	0200	7.00E-10		0.01	
21-Mar	0215	8.50E-10		0.01	
21-Mar	0225			<0.01	
21-Mar	0330	<5.00E-10		0.01	
21-Mar	0400	<5.00E-10		0.01	

Nanaban Tower Survey Data					
Yokosuka Japan (35.26667 North, 139.6667 East)					
Date	Time	Airborne Results	Radioiodine	Gamma mrem/hr	Surface pCi/probe
19-Mar	1330	<5.00E-10		0.01	495
19-Mar	1430	<5.00E-10		0.01	495
19-Mar	1630	<5.00E-10		0.01	<450
19-Mar	1730	<5.00E-10		0.01	<450
19-Mar	1831	6.00E-10		0.01	<450
19-Mar	1932	5.50E-10		0.01	540
19-Mar	2031	5.50E-10		0.01	450
19-Mar	2128	6.50E-10		0.01	495
19-Mar	2228	5.50E-10		0.01	450
19-Mar	2328	5.00E-10		0.01	540
20-Mar	0027	5.00E-10		0.01	495
20-Mar	0130	5.50E-10		0.01	450
20-Mar	0230	<5.00E-10		0.01	<450
20-Mar	0325	<5.00E-10		0.01	450
20-Mar	0520	5.50E-10		0.01	450
20-Mar	0630	<5.00E-10		0.01	3150
20-Mar	0730	<5.00E-10		0.01	2475
20-Mar	0830	<5.00E-10		0.01	2475
20-Mar	0930	<5.00E-10		0.01	2025
20-Mar	1030	<5.00E-10		0.01	2700
20-Mar	1130	<5.00E-10		0.01	7200
20-Mar	1230	<5.00E-10		0.01	7200
20-Mar	1330	<5.00E-10		0.01	7200
20-Mar	1430	<5.00E-10		0.01	7200
20-Mar	1530	<5.00E-10		0.01	7200
20-Mar	1630	<5.00E-10		0.01	7200
20-Mar	1730	<5.00E-10		0.01	7200
20-Mar	1830	<5.00E-10		0.01	7200
20-Mar	1928	<5.00E-10		0.01	7200
20-Mar	2035	1.60E-09		0.01	7200
20-Mar	2058	1.50E-09		0.01	7200
20-Mar	2115	2.60E-09		0.01	7200
20-Mar	2140	3.10E-09		0.01	7200
20-Mar	2200	3.20E-09		0.01	7200

Nanaban Tower Survey Data					
Yokosuka Japan (35.26667 North, 139.6667 East)					
Date	Time	Airborne Results	Radioiodine	Gamma mrem/hr	Surface pCi/probe
20-Mar	2218	3.20E-09		0.01	7200
20-Mar	2235	4.80E-09		0.01	7200
20-Mar	2257	6.00E-09		0.01	7200
20-Mar	2318		<1.00E-07	0.01	
20-Mar	2346	6.00E-10		0.01	7200
21-Mar	0012	5.00E-10		0.01	7200
21-Mar	0033	7.50E-10		0.01	6750
21-Mar	0057	1.00E-09		0.01	1800
21-Mar	0120	7.50E-10		0.01	1350
21-Mar	0139	7.50E-10		0.01	1800
21-Mar	0157	8.00E-10		0.01	1800
21-Mar	0214	1.00E-09		0.01	2250
21-Mar	0245	1.30E-09		0.01	1800
21-Mar	0303	7.50E-10		0.01	
21-Mar	0325	8.00E-10		0.01	1800
21-Mar	0345	7.00E-10		0.01	1350
21-Mar	0402	5.00E-10		0.01	900
21-Mar	418	7.00E-10		0.01	1800

From: Hoc, PMT12
Sent: Friday, April 08, 2011 5:24 PM
To: PMT02 Hoc; PMT09 Hoc; PMT11 Hoc
Subject: FW: Recommended Reduction of Protective Action Recommendations.doc
Attachments: Comments on Recommended Reduction of Protective Action recommendations..doc

-----Original Message-----
From: Vavoso, Thomas G CIV NAVSEA, 08 [mailto (b)(6)
Sent: Friday, April 08, 2011 5:16 PM
To: Hoc, PMT12
Subject: Fw: Recommended Reduction of Protective Action Recommendations.doc

----- Original Message -----
From: McKenzie, John M SES CIV NAVSEA 08 NR
To: Vavoso, Thomas G CIV NAVSEA, 08; Kepple, Alan C CIV NAVSEA, 08; Bingman, Bruce M CIV SEA 08 NR; Herman, David R CIV NAVSEA, 08; Dei, Donald E CIV SEA 08 NR; Szeto, Gordon CIV SEA 08 NR; Steele, Jeffrey M CIV SEA 08 NR; Steinhurst, Laurel A CIV SEA 08 NR; Bell, Stephen T CIV SEA 08 NR; Roberts, Thomas E CIV SEA 08 NR
Cc: Burrows, Charles W SES CIV NAVSEA 08 NR; 'rorosj@bettis.gov' <rorosj@bettis.gov>; Smith, Jerry L; Mueller, Troy J SES CIV NAVSEA 08 NR; Nickel, Lee A CIV SEA 08 NR; Trautman, Stephen J SES CIV NAVSEA 08 NR
Sent: Fri Apr 08 17:07:02 2011
Subject: RE: Recommended Reduction of Protective Action Recommendations.doc

Comments attached.

John McKenzie

-----Original Message-----
From: Vavoso, Thomas G CIV NAVSEA, 08
Sent: Friday, April 08, 2011 9:27 AM
To: McKenzie, John M SES CIV NAVSEA 08 NR; Burrows, Charles W SES CIV NAVSEA 08 NR; 'rorosj@bettis.gov'; Smith, Jerry L
Subject: Fw: Recommended Reduction of Protective Action Recommendations.doc
Importance: High

From: Vavoso, Thomas G CIV NAVSEA, 08
To: Mueller, Troy J SES CIV NAVSEA 08 NR; Trautman, Stephen J SES CIV NAVSEA 08 NR; Roberts, Thomas E CIV SEA 08 NR
Sent: Fri Apr 08 06:09:52 2011
Subject: Fw: Recommended Reduction of Protective Action Recommendations.doc

Troy .

See below email forwarded by Kepple last night while at NRC. NRC is requesting NR comments and opportunity to review anything similar NR is working on. (b)(5)

TGV

From: RST03 Hoc <RST03.Hoc@nrc.gov>
To: Kepple, Alan C CIV NAVSEA, 08; Bingman, Bruce M CIV SEA 08 NR; Herman, David R CIV NAVSEA, 08; Dei, Donald E CIV SEA 08 NR; Szeto, Gordon CIV SEA 08 NR; (b)(6); Steinhurst, Laurel A CIV SEA 08 NR; Bell, Stephen T CIV SEA 08 NR; Roberts, Thomas E CIV SEA 08 NR; Vavoso, Thomas G CIV NAVSEA, 08
Sent: Thu Apr 07 21:55:02 2011
Subject: FW: Recommended Reduction of Protective Action Recommendations.doc

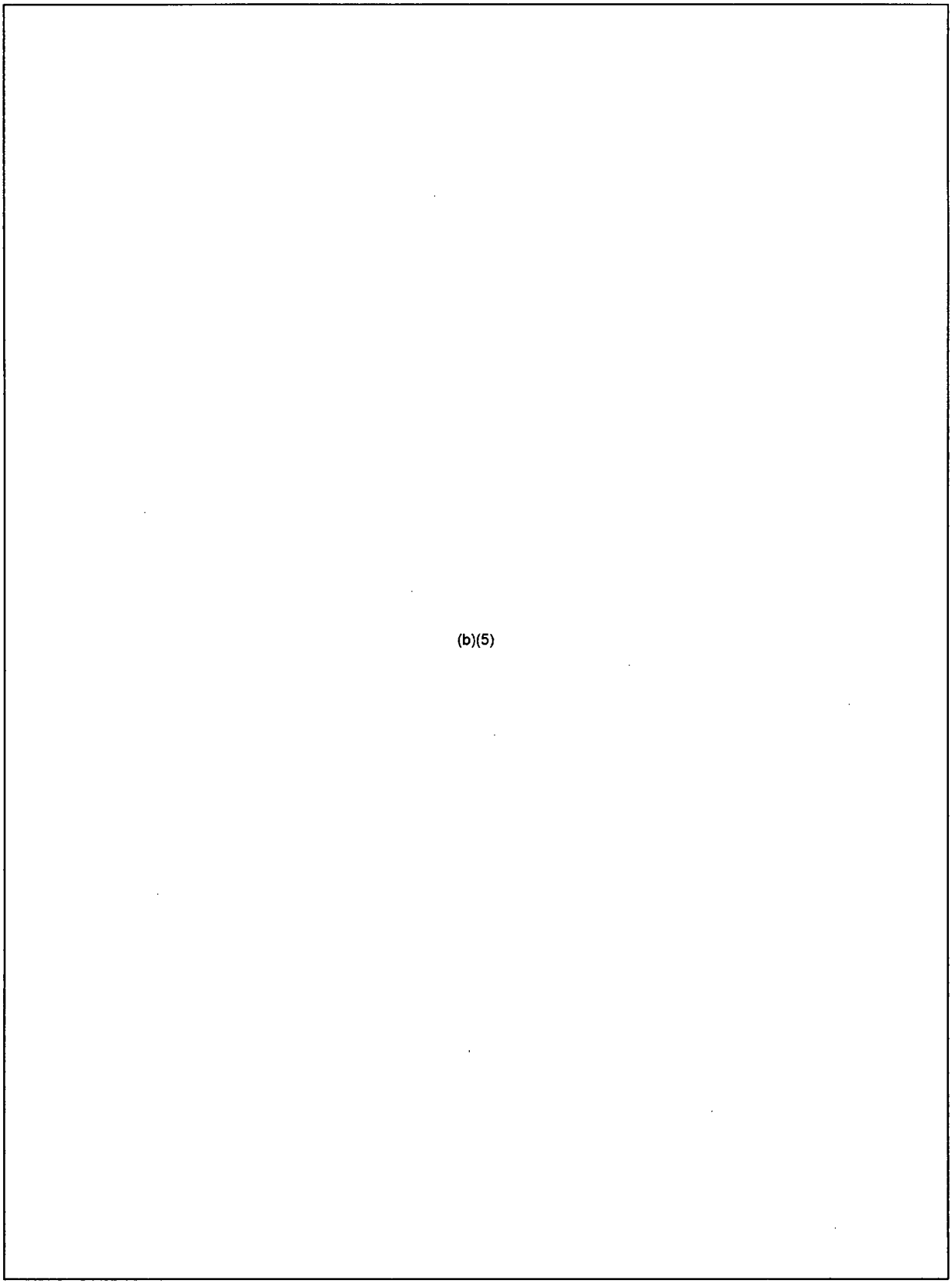
Documents from the NRC PMT for NR review/info.

From: Hoc, PMT12
Sent: Thursday, April 07, 2011 9:47 PM
To: RST03 Hoc
Cc: PMT03 Hoc
Subject: FW: Recommended Reduction of Protective Action Recommendations.doc
Importance: High

Can you please coordinate with Naval Reactors for comment? We would also appreciate the opportunity to review similar NR products, as appropriate.

Tim Harris

PMT - PAAD


(b)(5)

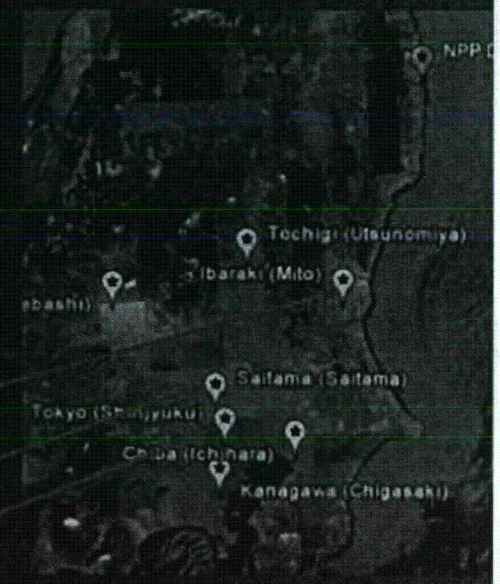
(b)(5)

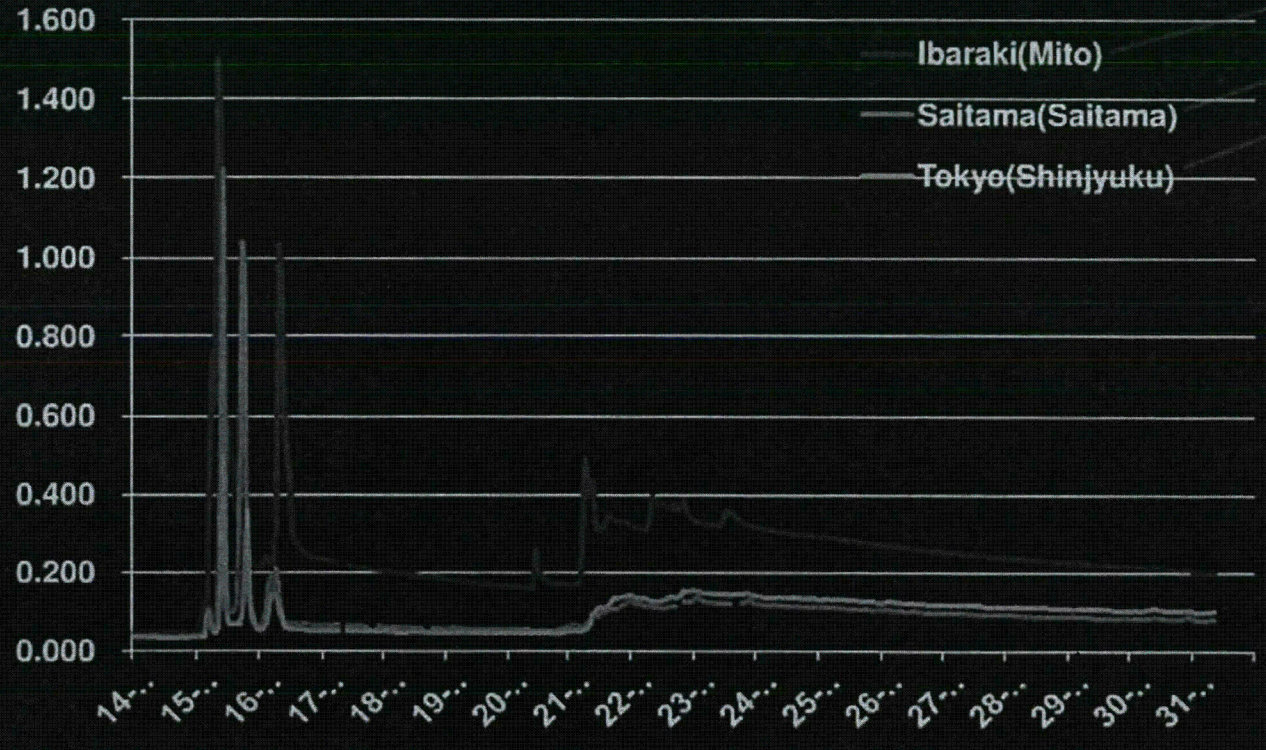
Fukushima Nuclear Accident

Radiological Monitoring and Consequences

April 1, 2011

Gamma Dose Rates in µSv/hour
14-31 March





Natural Background: 0.1 µSv/hour: continue to decrease

Measurements of the IAEA team

March, 31- April 1, Fukushima Team1 and 2

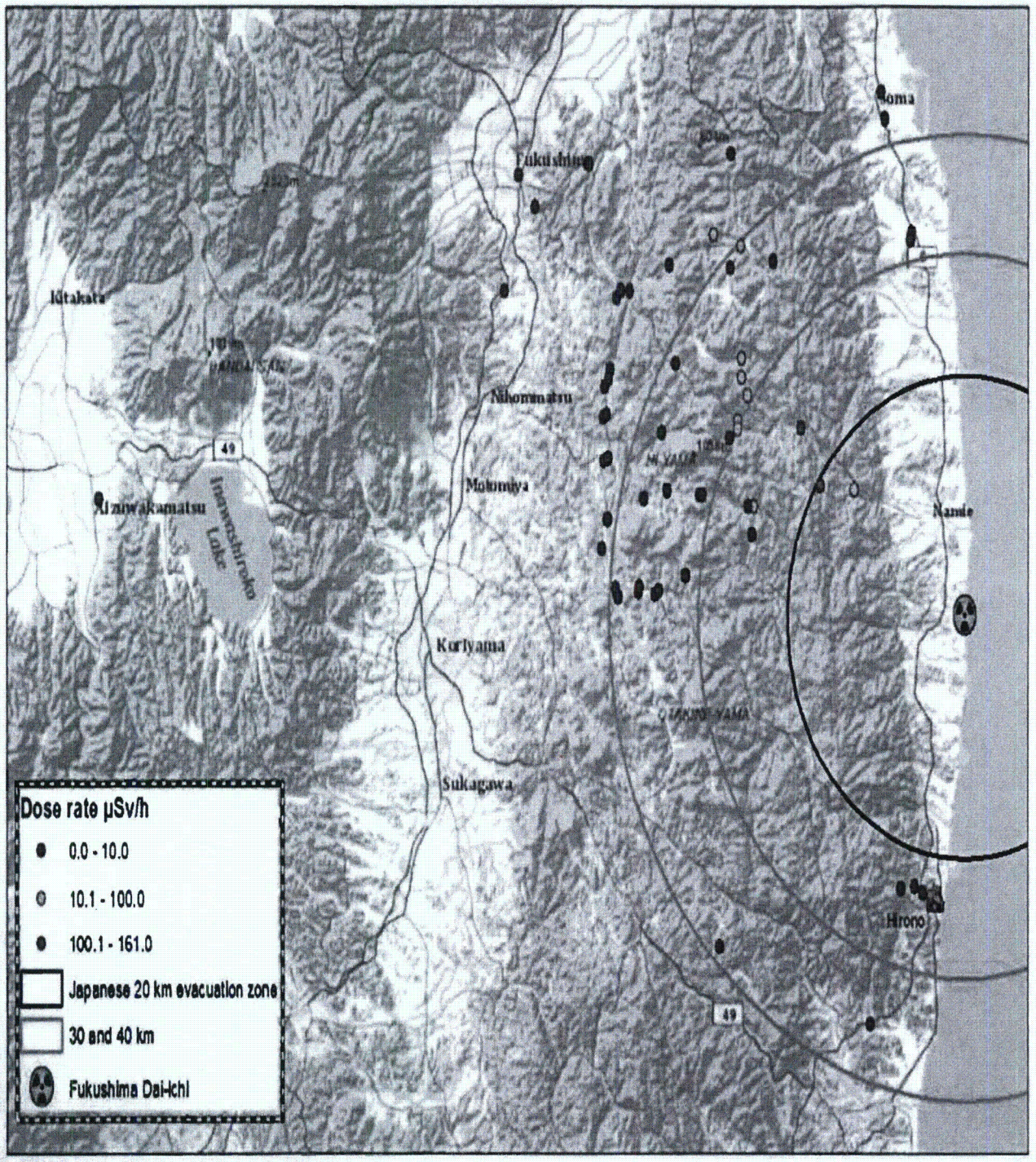
- 1 April, FT2 and FT3 altogether as succession process.
- 7 different points of radius of 23 to 58 km from the Fukushima NPP
- Dose rates: 0.4 to 5 µSv/h
- Beta-gamma contamination: 0.01 to 0.49 MBq/m^2
- Several gamma spectra, air samples and smears collected
- No alpha particles detected in the air.
- 2 April, FT2 back to Tokyo, and then to Vienna

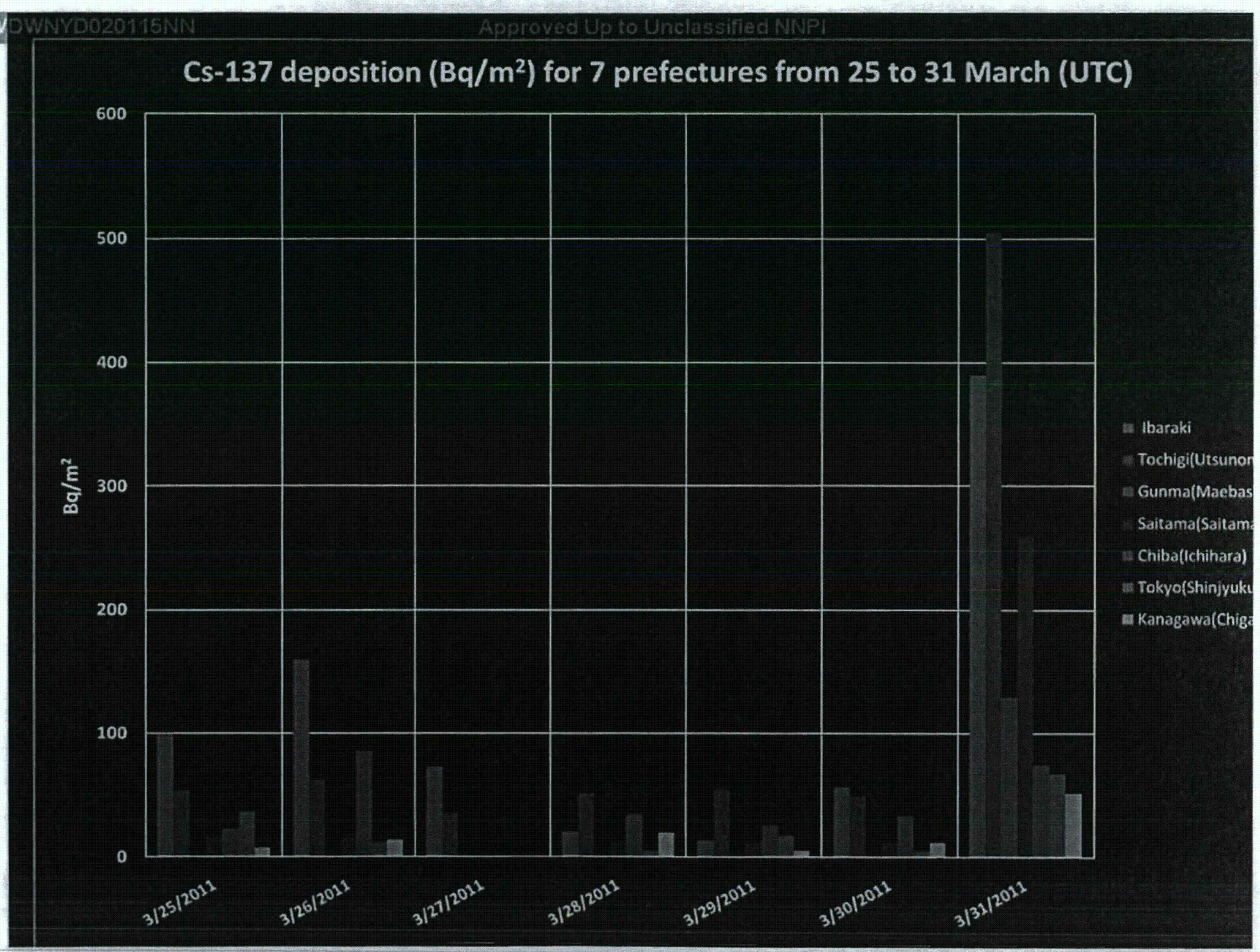
March 31, Tokyo team

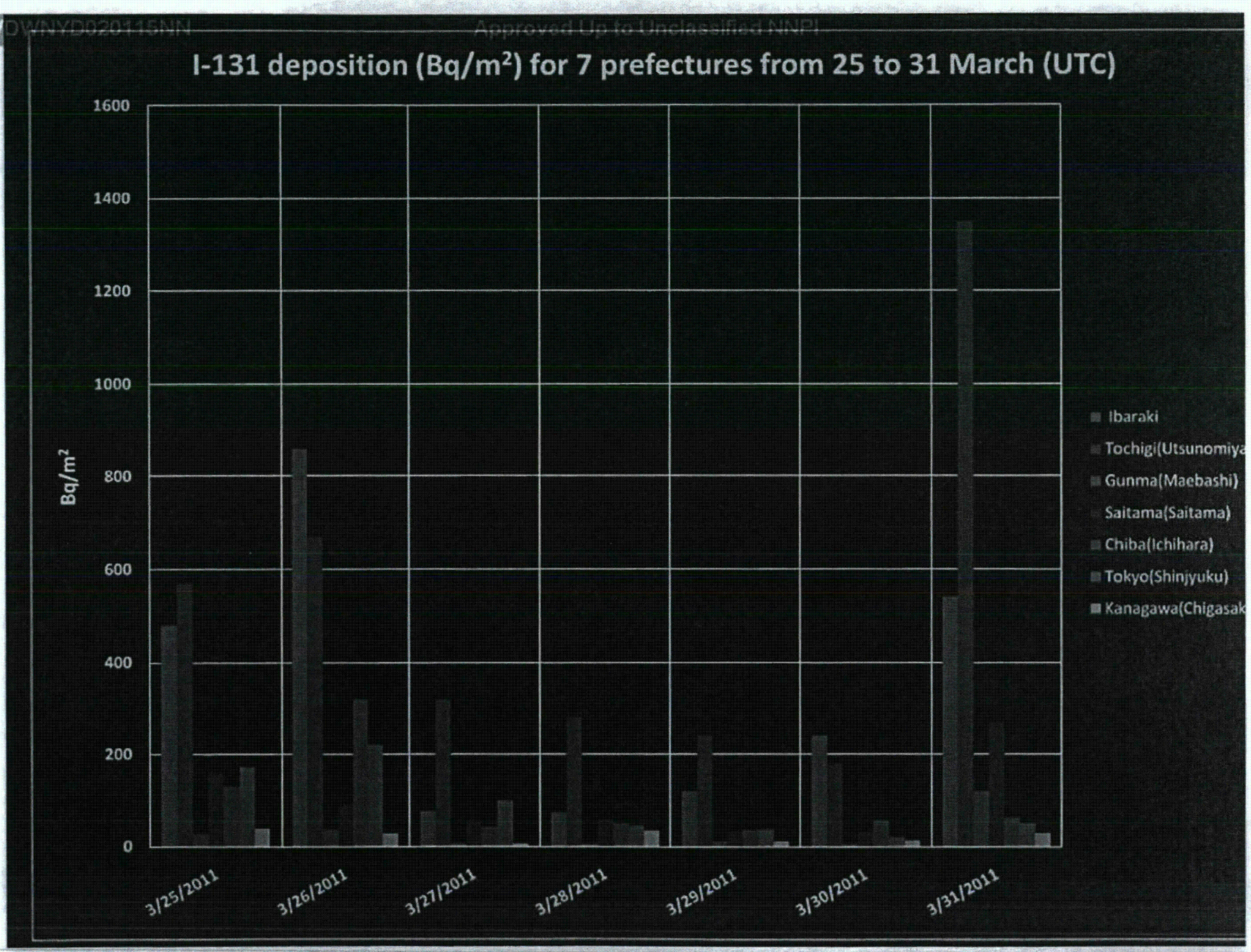
- 31st was the last day for Tokyo-team

IAEA Field Team Measurements up to 2011-03-31

Team Fukushima







Monitoring of Workers 29 March

- **Nuclear and Industrial Safety Agency's report:**
  - 106,095 people in Fukushima
  - 102 above 100,000 counts per minute (cpm)
  - Levels decreased after removal of clothes
  - No cases that may influence health
- Among workers at Fukushima NPP:
  - 20 workers exceeded 100mSv
  - (Dose limit for emergency workers in life saving operation: 250 mSv)

Monitoring of drinking water 28 March

- Recommendations for restrictions on drinking water being lifted in most locations.
- Recommendations for restrictions based on I-131 concentration remain in place in 4 locations of Fukushima prefecture.

Radioactivity in Foodstuffs

- Results reported 31 March by the Japanese Ministry of Health, Labour and Welfare

- 98 of the 111 samples for various vegetables, fruit, seafood, various meats and unprocessed raw milk
- in 8 prefectures (Chiba, Fukushima, Gunma, Ibaraki, Kanagawa, Niigata, Tochigi, and Tokyo),
- I-131, Cs-134 and Cs-137 were either not detected or were below the regulation values set by the Japanese authorities.

Radioactivity in Foodstuffs

- 13 of the 111 samples:
  - for spinach and other leafy vegetables, parsley and beef
  - in Chiba, Fukushima, Ibaraki and Tochigi prefectures indicated that I-131 and/or Cs-134 and Cs-137 exceeded the regulation values set by the Japanese authorities.

Discussion concerning soil

- The Japanese Agriculture Ministry has announced on 30 March the need to establish acceptable levels of radioactive Cs in soils to help farmers to decide whether to plant crops.
- Fukushima prefecture conducted a survey of soil from farmlands on 31 March.

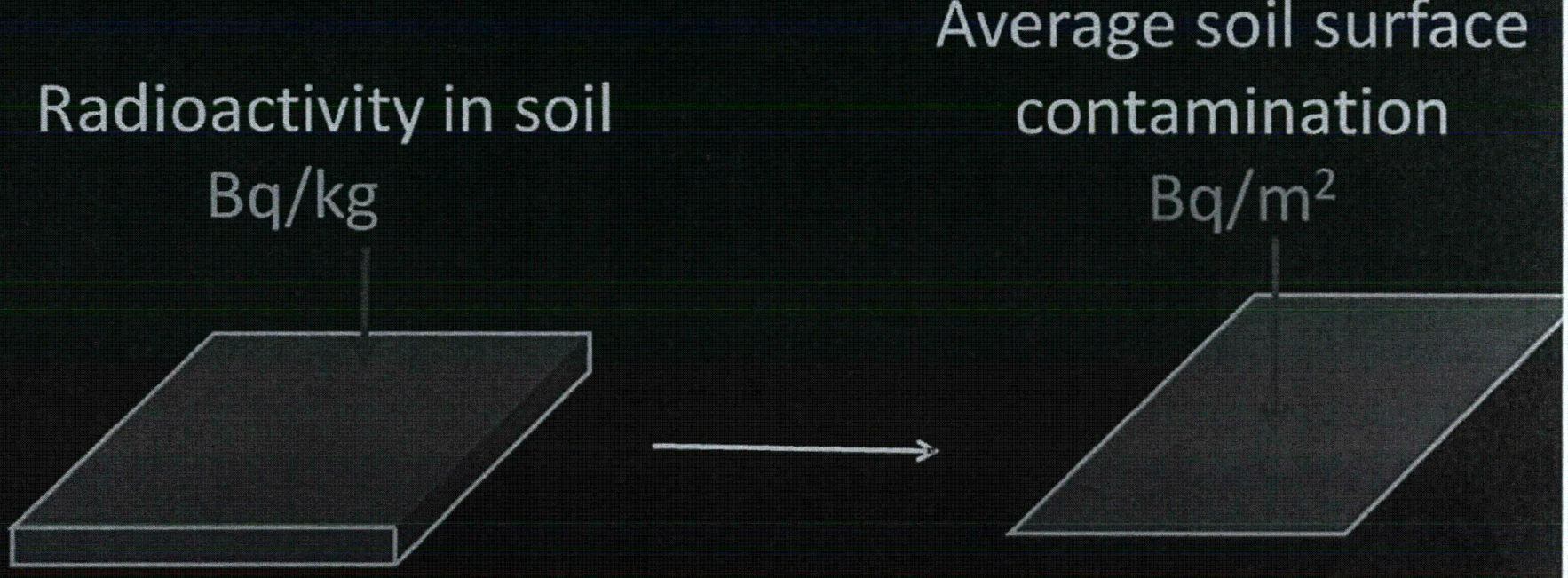
Joint FAO/IAEA Food Safety Assessment Team

- The Joint FAO/IAEA Food Safety Assessment Team has successfully completed its mission.
- The team presented its report to the Japanese Cabinet Office, Ministry of Foreign Affairs, Ministry of Health, Labour and Welfare and the Ministry of Agriculture, Fisheries and Forestry on 31 March.
- The IAEA members of the Team are returning to Vienna today.

From Bq/kg to Bq/m^2

- Soil sample taken with a device that penetrates the ground at the depth of 5 cm
- Measurement of radioactivitiy within the sample, using a spectrometer
- Result: Radioactivity in Bq/kg
- Conversion from Bq/kg to Bq/m^2 depends on:
  - Radioactivity (Bq/kg)
  - Soil density (kg/m^3)
  - Sample depth (m)

Assuming a homogeneous distribution of radioactivity within tha aera considered



Radioactivity (Bq/kg)x Soil density (kg/m³)x sample depth (m)
= Surface contamination (Bq/m²)

U.S. ATOMIC ENERGY COMMISSION

June 1974

REGULATORY GUIDE

DIRECTORATE OF REGULATORY STANDARDS

REGULATORY GUIDE 1.86

TERMINATION OF OPERATING LICENSES FOR NUCLEAR REACTORS

A. INTRODUCTION

Section 50.51, "Duration of license, renewal," of 10 CFR Part 50, "Licensing of Production and Utilization Facilities," requires that each license to operate a production and utilization facility be issued for a specified duration. Upon expiration of the specified period, the license may be either renewed or terminated by the Commission. Section 50.82, "Applications for termination of licenses," specifies the requirements that must be satisfied to terminate an operating license, including the requirement that the dismantlement of the facility and disposal of the component parts not be inimical to the common defense and security or to the health and safety of the public. This guide describes methods and procedures considered acceptable by the Regulatory staff for the termination of operating licenses for nuclear reactors. The Advisory Committee on Reactor Safeguards has been consulted concerning this guide and has concurred in the regulatory position.

B. DISCUSSION

When a licensee decides to terminate his nuclear reactor operating license, he may, as a first step in the process, request that his operating license be amended to restrict him to possess but not operate the facility. The advantage to the licensee of converting to such a possession-only license is reduced surveillance requirements in that periodic surveillance of equipment important to the safety of reactor operation is no longer required. Once this possession-only license is issued, reactor operation is not permitted. Other activities related to cessation of operations such as unloading fuel from the reactor and placing it in storage (either onsite of offsite) may be continued.

A licensee having a possession-only license must retain, with the Part 50 license, authorization for special nuclear material (10 CFR Part 70, "Special Nuclear Material"), byproduct material (10 CFR Part 30, "Rules of General Applicability to Licensing of Byproduct Material"), and source material (10 CFR Part 40, "Licensing of Source Material"), until the fuel, radioactive components, and sources are removed from the facility. Appropriate administrative controls and facility requirements are imposed by the Part 50 license and the technical specifications to assure that proper surveillance is performed and that the reactor facility is maintained in a safe condition and not operated.

A possession-only license permits various options and procedures for decommissioning, such as mothballing, entombment, or dismantling. The requirements imposed depend on the option selected.

Section 50.82 provides that the licensee may dismantle and dispose of the component parts of a nuclear reactor in accordance with existing regulations. For research reactors and critical facilities, this has usually meant the disassembly of a reactor and its shipment offsite, sometimes to another appropriately licensed organization for further use. The site from which a reactor has been removed must be decontaminated, as necessary, and inspected by the Commission to determine whether unrestricted access can be approved. In the case of nuclear power reactors, dismantling has usually been accomplished by shipping fuel offsite, making the reactor inoperable, and disposing of some of the radioactive components.

Radioactive components may be either shipped offsite for burial at an authorized burial ground or secured

on the site. Those radioactive materials remaining on the site must be isolated from the public by physical barriers or other means to prevent public access to hazardous levels of radiation. Surveillance is necessary to assure the long term integrity of the barriers. The amount of surveillance required depends upon (1) the potential hazard to the health and safety of the public from radioactive material remaining on the site and (2) the integrity of the physical barriers. Before areas may be released for unrestricted use, they must have been decontaminated or the radioactivity must have decayed to less than prescribed limits (Table I).

The hazard associated with the retired facility is evaluated by considering the amount and type of remaining contamination, the degree of confinement of the remaining radioactive materials, the physical security provided by the confinement, the susceptibility to release of radiation as a result of natural phenomena, and the duration of required surveillance.

C. REGULATORY POSITION

1. APPLICATION FOR A LICENSE TO POSSESS BUT NOT OPERATE (POSSESSION-ONLY LICENSE)

A request to amend an operating license to a possession-only license should be made to the Director of Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545. The request should include the following information:

a. A description of the current status of the facility.

b. A description of measures that will be taken to prevent criticality or reactivity changes and to minimize releases of radioactivity from the facility.

c. Any proposed changes to the technical specifications that reflect the possession-only facility status and the necessary disassembly/retirement activities to be performed.

d. A safety analysis of both the activities to be accomplished and the proposed changes to the technical specifications.

e. An inventory of activated materials and their location in the facility.

2. ALTERNATIVES FOR REACTOR RETIREMENT

Four alternatives for retirement of nuclear reactor facilities are considered acceptable by the Regulatory staff. These are:

a. **Mothballing.** Mothballing of a nuclear reactor facility consists of putting the facility in a state of protective storage. In general, the facility may be left intact except that all fuel assemblies and the radioactive fluids and waste should be removed from the site. Adequate radiation monitoring, environmental surveillance, and appropriate security procedures should be established under a possession-only license to ensure that the health and safety of the public is not endangered.

b. **In-Place Entombment.** In-place entombment consists of sealing all the remaining highly radioactive or contaminated components (e.g., the pressure vessel and reactor internals) within a structure integral with the biological shield after having all fuel assemblies, radioactive fluids and wastes, and certain selected components shipped offsite. The structure should provide integrity over the period of time in which significant quantities (greater than Table I levels) of radioactivity remain with the material in the entombment. An appropriate and continuing surveillance program should be established under a possession-only license.

c. **Removal of Radioactive Components and Dismantling.** All fuel assemblies, radioactive fluids and waste, and other materials having activities above accepted unrestricted activity levels (Table I) should be removed from the site. The facility owner may then have unrestricted use of the site with no requirement for a license. If the facility owner so desires, the remainder of the reactor facility may be dismantled and all vestiges removed and disposed of.

d. **Conversion to a New Nuclear System or a Fossil Fuel System.** This alternative, which applies only to nuclear power plants, utilizes the existing turbine system with a new steam supply system. The original nuclear steam supply system should be separated from the electric generating system and disposed of in accordance with one of the previous three retirement alternatives.

3. SURVEILLANCE AND SECURITY FOR THE RETIREMENT ALTERNATIVES WHOSE FINAL STATUS REQUIRES A POSSESSION-ONLY LICENSE

A facility which has been licensed under a possession-only license may contain a significant amount of radioactivity in the form of activated and contaminated hardware and structural materials. Surveillance and commensurate security should be provided to assure that the public health and safety are not endangered.

a. Physical security to prevent inadvertent exposure of personnel should be provided by multiple locked barriers. The presence of these barriers should make it extremely difficult for an unauthorized person to gain access to areas where radiation or contamination levels exceed those specified in Regulatory Position C.4. To prevent inadvertent exposure, radiation areas above 5 mR/hr, such as near the activated primary system of a power plant, should be appropriately marked and should not be accessible except by cutting of welded closures or the disassembly and removal of substantial structures

and/or shielding material. Means such as a remote-readout intrusion alarm system should be provided to indicate to designated personnel when a physical barrier is penetrated. Security personnel that provide access control to the facility may be used instead of the physical barriers and the intrusion alarm systems.

b. The physical barriers to unauthorized entrance into the facility, e.g., fences, buildings, welded doors, and access openings, should be inspected at least quarterly to assure that these barriers have not deteriorated and that locks and locking apparatus are intact.

c. A facility radiation survey should be performed at least quarterly to verify that no radioactive material is escaping or being transported through the containment barriers in the facility. Sampling should be done along the most probable path by which radioactive material such as that stored in the inner containment regions could be transported to the outer regions of the facility and ultimately to the environs.

d. An environmental radiation survey should be performed at least semiannually to verify that no signficant amounts of radiation have been released to the environment from the facility. Samples such as soil, vegetation, and water should be taken at locations for which statistical data has been established during reactor operations.

e. A site representative should be designated to be responsible for controlling authorized access into and movement within the facility.

f. Administrative procedures should be established for the notification and reporting of abnormal occurrences such as (1) the entrance of an unauthorized person or persons into the facility and (2) a significant change in the radiation or contamination levels in the facility or the offsite environment.

g. The following reports should be made:

(1) An annual report to the Director of Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545, describing the results of the environmental and facility radiation surveys, the status of the facility, and an evaluation of the performance of security and surveillance measures.

(2) An abnormal occurrence report to the Regulatory Operations Regional Office by telephone within 24 hours of discovery of an abnormal occurrence. The abnormal occurrence will also be reported in the annual report described in the preceding item.

h. Records or logs relative to the following items should be kept and retained until the license is terminated, after which they may be stored with other plant records:

(1) Environmental surveys;

(2) Facility radiation surveys,

(3) Inspections of the physical barriers, and

(4) Abnormal occurrences.

4. DECONTAMINATION FOR RELEASE FOR UNRESTRICTED USE

If it is desired to terminate a license and to eliminate any further surveillance requirements, the facility should be sufficiently decontaminated to prevent risk to the public health and safety. After the decontamination is satisfactorily accomplished and the site inspected by the Commission, the Commission may authorize the license to be terminated and the facility abandoned or released for unrestricted use. The licensee should perform the decontamination using the following guidelines:

a. The licensee should make a reasonable effort to eliminate residual contamination.

b. No covering should be applied to radioactive surfaces of equipment or structures by paint, plating, or other covering material until it is known that contamination levels (determined by a survey and documented) are below the limits specified in Table I. In addition, a reasonable effort should be made (and documented) to further minimize contamination prior to any such covering.

c. The radioactivity of the interior surfaces of pipes, drain lines, or ductwork should be determined by making measurements at all traps and other appropriate access points, provided contamination at these locations is likely to be representative of contamination on the interior of the pipes, drain lines, or ductwork. Surfaces of premises, equipment, or scrap which are likely to be contaminated but are of such size, construction, or location as to make the surface inaccessible for purposes of measurement should be assumed to be contaminated in excess of the permissable radiation limits.

d. Upon request, the Commission may authorize a licensee to relinquish possession or control of premises, equipment, or scrap having surfaces contaminated in excess of the limits specified. This may include, but is not limited to, special circumstances such as the transfer of premises to another licensed organization that will continue to work with radioactive materials. Requests for such authorization should provide:

(1) Detailed, specific information describing the premises, equipment, scrap, and radioactive contaminants and the nature, extent, and degree of residual surface contamination.

(2) A detailed health and safety analysis indicating that the residual amounts of materials on surface areas, together with other considerations such as the prospective use of the premises, equipment, or scrap, are unlikely to result in an unreasonable risk to the health and safety of the public.

e. Prior to release of the premises for unrestricted use, the licensee should make a comprehensive radiation survey establishing that contamination is within the limits specified in Table I. A survey report should be filed with the Director of Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545, with a copy to the Director of the Regulatory Operations Regional Office having jurisdiction. The report should be filed at least 30 days prior to the planned date of abandonment. The survey report should:

(1) Identify the premises;

(2) Show that reasonable effort has been made to reduce residual contamination to as low as practicable levels;

(3) Describe the scope of the survey and the general procedures followed; and

(4) State the finding of the survey in units specified in Table 1.

After review of the report, the Commission may inspect the facilities to confirm the survey prior to granting approval for abandonment.

5. REACTOR RETIREMENT PROCEDURES

As indicated in Regulatory Position C.2, several alternatives are acceptable for reactor facility retirement. If minor disassembly or "mothballing" is planned, this could be done by the existing operating and maintenance procedures under the license in effect. Any planned actions involving an unreviewed safety question or a change in the technical specifications should be reviewed and approved in accordance with the requirements of 10 CFR §50.59.

If major structural changes to radioactive components of the facility are planned, such as removal of the pressure vessel or major components of the primary system, a dismantlement plan including the information required by §50.82 should be submitted to the Commission. A dismantlement plan should be submitted for all the alternatives of Regulatory Position C.2 except mothballing. However, minor disassembly activities may still be performed in the absence of such a plan, provided they are permitted by existing operating and maintenance procedures. A dismantlement plan should include the following:

a. A description of the ultimate status of the facility

b. A description of the dismantling activities and the precautions to be taken.

c. A safety analysis of the dismantling activities including any effluents which may be released.

d. A safety analysis of the facility in its ultimate status.

Upon satisfactory review and approval of the dismantling plan, a dismantling order is issued by the Commission in accordance with §50.82. When dismantling is completed and the Commission has been notified by letter, the appropriate Regulatory Operations Regional Office inspects the facility and verifies completion in accordance with the dismantlement plan. If residual radiation levels do not exceed the values in Table I, the Commission may terminate the license. If these levels are exceeded, the licensee retains the possession-only license under which the dismantling activities have been conducted or, as an alternative, may make application to the State (if an Agreement State) for a byproduct materials license.

TABLE I

ACCEPTABLE SURFACE CONTAMINATION LEVELS

NUCLIDE[a]	AVERAGE[b c]	MAXIMUM[b d]	REMOVABLE[b e]
U-nat, U-235, U-238, and associated decay products	5,000 dpm α/100 cm^2	15,000 dpm α/100 cm^2	1,000 dpm α/100 cm^2
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100 dpm/100 cm^2	300 dpm/100 cm^2	20 dpm/100 cm^2
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1000 dpm/100 cm^2	3000 dpm/100 cm^2	200 dpm/100 cm^2
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.	5000 dpm β-γ/100 cm^2	15,000 dpm β-γ/100 cm^2	1000 dpm β-γ/100 cm^2

[a] Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides should apply independently.

[b] As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

[c] Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

[d] The maximum contamination level applies to an area of not more than 100 cm^2.

[e] The amount of removable radioactive material per 100 cm^2 of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.

From: Weber, Michael
Sent: Saturday, April 09, 2011 9:45 PM
To: Zimmerman, Roy
Cc: ET01 Hoc; ET05 Hoc; OST02 HOC; PMT01 Hoc
Subject: FYI - NNSA Comments on Habitability Assessment

From: Borchardt, Bill
To: Virgilio, Martin; Weber, Michael
Sent: Sat Apr 09 18:40:13 2011
Subject: Fw: NRC Comments on Habitability Assessment

Bill Borchardt
Via blackberry

From: Krol, Joseph <Joseph.Krol@nnsa.doe.gov>
To: (b)(6); Borchardt, Bill; Aoki, Steven <Steven.Aoki@nnsa.doe.gov>; Wilber, Deborah <Deborah.Wilber@nnsa.doe.gov>
Cc: (b)(6)
(b)(6)
Sent: Sat Apr 09 17:15:03 2011
Subject: Re: NRC Comments on Habitability Assessment

Steve, we have been in discussion with Troy and would very much like to have an LNO come over Monday so we can go over the state of play. We expect to have close to a final product from our analysis of 120 airborne samples that came to us from various sources over the past 2weeks. This will include a Strontium analysis to see what contribution if any may be present from beta. The preliminary analysis indicates that the dose we are dealing with is very small. (b)(5)

(b)(5)

(b)(5) . So we need to combine our views along with the NRC to provide the best unified view. JK

From: Trautman, Stephen J SES CIV NAVSEA 08 NR <(b)(6)>
To: bill.borchardt@nrc.gov <bill.borchardt@nrc.gov>; Krol, Joseph; Aoki, Steven
Cc: Mueller, Troy J SES CIV NAVSEA 08 NR <(b)(6)>; Donald, Kirkland H ADM SEA 08 <(b)(6)>; Naples, Elmer M SES SEA 08 NR <(b)(6)>; Burrows, Charles W SES CIV NAVSEA 08 NR <(b)(6)>; McKenzie, John M SES CIV NAVSEA 08 NR (b)(6)>
Sent: Sat Apr 09 10:43:03 2011
Subject: Fw: NRC Comments on Habitability Assessment

Bill, Steve, Joe,

A few days ago, NR sent your organization a habitability assessment for review and comment. We have received what I would characterize as technical comments from the working level and those are appreciated.

(b)(5)

(b)(5)

(b)(5)
There is much more to discuss here.

The email below captures comments received from NRC up to this point.

We stand ready to discuss/meet and have those policy discussions to help inform the interagency as we come through when (and where) to allow US citizens back into regions of Japan.

Thank you and we look forward to engaging with you when you are ready.

Steve

From: Vavoso, Thomas G CIV NAVSEA, 08
To: Trautman, Stephen J SES CIV NAVSEA 08 NR
Sent: Sat Apr 09 08:31:33 2011
Subject: FW: NRC Comments on Habitability Assessment

As discussed. Note comments below as well as in the attached.

From: Vavoso, Thomas G CIV NAVSEA, 08
Sent: Fri 4/8/2011 11:19 PM
To: Conran, Thomas C SES CIV NAVSEA 08 NR; Naples, Elmer M SES SEA 08 NR; Burrows, Charles W SES CIV NAVSEA 08 NR; Hale, Andrew M SES NAVSEA, 08; Mueller, Troy J SES CIV NAVSEA 08 NR; McKenzie, John M SES CIV NAVSEA 08 NR; Roros, John CIV NAVSEA, 08
Cc: Roberts, Thomas E CIV SEA 08 NR; Bingman, Bruce M CIV SEA 08 NR; Steele, Jeffrey M CIV SEA 08 NR; Herman, David R CIV NAVSEA, 08; Bell, Stephen T CIV SEA 08 NR; Szeto, Gordon CIV SEA 08 NR; Steinhurst, Laurel A CIV SEA 08 NR; Kepple, Alan C CIV NAVSEA, 08
Subject: NRC Comments on Habitability Assessment

See NRC comments on paper below I sent paper separately, but forgot to include email text.

From: Hoc, PMT12
Sent: Friday, April 08, 2011 8:36 PM
To: RST03 Hoc
Cc: PMT02 Hoc; PMT09 Hoc; PMT11 Hoc
Subject: NRC Comments on "Conclusions of Long Term Habitability Assessment"

Tom

Here are our comments on the Long Term Habitability Assessment document. Overall the NRC has four general comments:

1. (b)(5)

2.

3. (b)(5)

4.

The attachment provides some additional specific comments.

Sandi

PMT-PAAD

From: Vavoso, Thomas G CIV NAVSEA, 08 <(b)(6)>
Sent: Friday, April 15, 2011 3:13 PM
To: ET02 Hoc
Cc: sal.golub@nuclear.energy.gov
Subject: Fw: Draft NR Habitability Assessment and Associated NR Recommendations for Japan ~~(FOUO)~~ - Rev.1
Attachments: NR Habitability Assessment rev2 (draft for distribution).docx

Sent separately to PMT

----- Original Message -----
From: Mueller, Troy J SES CIV NAVSEA 08 NR
To: 'Edwards.Jonathan@epamail.epa.gov' <Edwards.Jonathan@epamail.epa.gov>; 'Anastas.Paul@epamail.epa.gov' <Anastas.Paul@epamail.epa.gov>; 'EOC_Science_Tiger_Team@epamail.epa.gov' <EOC_Science_Tiger_Team@epamail.epa.gov>; 'Dietrich.Debbie@epamail.epa.gov' <Dietrich.Debbie@epamail.epa.gov>; 'Wilber, Deborah' <Deborah.Wilber@nnsa.doe.gov>; 'Bowman, David' <David.Bowman@nnsa.doe.gov>; 'Garino, Gerard' <Gerard.Garino@nnsa.doe.gov>; 'NITOPS' <NITOPS@nnsa.doe.gov>; 'pmt12.hoc@nrc.gov' <pmt12.hoc@nrc.gov>; 'pmt12@nrc.gov' <pmt12@nrc.gov>; 'rst01.hoc@nrc.gov' <rst01.hoc@nrc.gov>; (b)(6) >; Mittelman, Michael H RADM PACOM, J07
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Sent: Fri Apr 15 14:59:37 2011
Subject: Draft NR Habitability Assessment and Associated NR Recommendations for Japan ~~(FOUO)~~ - Rev.1

~~DRAFT - NOT RELEASABLE - FOR PEER REVIEW ONLY - FOR OFFICIAL USE ONLY (FOUO)~~

All - attached you will find a revised draft Naval Reactors assessment and views on the path forward for making recommendations on the acceptability of U.S. citizens returning to Japan and associated limitations. This revision is intended to incorporate comments and other recommendations received to date on the assessment sent out by NR a week ago. The attached assessment includes detailed analyses performed by Knolls Atomic Power Laboratory that form the basis for the recommendations. We would appreciate your review of the attached assessment and recommendations before we finalize.

I appreciate all of the previous feedback in making the final product much better.

Thanks and Very Respectfully,
Troy

T. J. Mueller
Director, Nuclear Technology Division
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Draft

Department of Energy
Washington, DC 20585

DISTRIBUTION

ACCEPTABILITY OF U.S. CITIZENS RETURNING TO JAPAN; NAVAL REACTORS ASSESSMENT, VIEWS AND RECOMMENDATIONS

Reference: (a) Environmental Protection Agency Manual EPA 400 R-92-001, Manual of Protective Actions for Nuclear Incidents (May 1992), Table 7-2

Background: The 11 March 2011 earthquake and tsunami in Japan resulted in core damage to multiple reactors at the Fukushima Daiichi Reactor Site (FDRS), release of fission products to the environment, evacuation of U.S. citizens within 50-miles of FDRS, and voluntary departure of many U.S. citizens from Honshu Island. This letter communicates the Naval Reactors assessment and views on the path forward for making recommendations on the acceptability of U.S. citizens returning to Japan and associated limitations. The attached assessment, performed by the Knolls Atomic Power Laboratory (KAPL), provides the basis for the Naval Reactors recommendations. A draft of the enclosed "Habitability Assessment" was commented on by the Nuclear Regulatory Commission, the Department of Energy, the Environmental Protection Agency, and the White House Office of Science and Technology Policy. This letter incorporates the Naval Reactors response to those comments.

Naval Reactors Discussion: One method for determining the associated radiation doses and thus acceptability of U.S. citizens returning to Japan is to calculate the doses these individuals would receive at various locations in the first year following the event. One such model is the Department of Energy (DOE) Residual Radioactivity (RESRAD) environmental assessment program from Argonne National Laboratory. Because the radiological assessment for the Japanese reactor accidents in the first year also involves shorter-lived radionuclides than those utilized in RESRAD, this model must be combined with modeling contained in reference (a) to evaluate the dose contribution for some short-lived radionuclides.

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Radiological field data collected following the Japanese reactor accidents by the U.S. Naval Nuclear Propulsion Program at several locations surrounding the FDRS allows for a detailed analysis using the RESRAD and EPA modeling discussed above. The purpose of such analyses and modeling is to determine approximate distances where various exposure thresholds from all pathways could be examined for acceptability for the return of U.S. citizens to Japan.

The modeling performed in this assessment assumes no further deposition of radioactivity from a continuing release at the FDRS. However, decision makers can use the assessment and add reasonable distances for conservatism to account for small continuous releases. In addition, the attached assessment would not be valid for a more severe release at FDRS. However, decision makers could use the attached assessment as a basis for determining acceptable locations for U.S. citizens, and rely on the EPA Early Protective Action Guidelines for the further protection of U.S. citizens for any significant future release from FDRS.

Results: KAPL provides in the attached enclosure a detailed analysis and assessment of many sets of radiological data collected at four different locations in Japan using DOE RESRAD and EPA methodologies. The analyses were performed using multiple scenarios including: suburban resident and subsistence farmer scenarios, and multiple meteorological conditions, including an estimation of actual conditions. Results included radiation doses from all pathways according to the specific model. This analysis is conservative and limiting; however, it is intended to provide insight for decision makers related to returning family members of U.S. personnel to Japan. This analysis allows for the inherent uncertainties in calculating internal exposures due to the nature of having to use mathematical models to determine dose (i.e., RESRAD, PAG methods). The following table shows the results of the analysis of a suburban resident and subsistence farmer using a time weighted average of estimated meteorological conditions at FDRS.

First Year Dose (TEDE)	Estimated Distance from Fukushima Daiichi Site (miles)*		Estimated Ground Contamination Level (ccpm)**	
	Suburban Resident	Subsistence Farmer	Suburban Resident	Subsistence Farmer
2,000 mrem	2.2	2.4	105,483	97,198
1,000 mrem	3.5	3.7	52,870	48,470
500 mrem	5.7	6.0	26,392	24,225
100 mrem	19.5	21.1	5,407	4,847

*Distances decrease by approximately 10% if family members return after 15 April 2011.

**Extrapolated reading by direct survey with a beta-gamma pancake frisker Geiger-Mueller probe with a 20cm^2 probe face. Contamination levels will decay to approximately 30% of these values in 6 months.

Recommendations:

(b)(5)

(b)(5)

(b)(5)

T. J. Mueller
Naval Reactors

Attachment

Draft

CONCLUSION AND EXECUTIVE SUMMARY OF THE HABITABILITY ASSESSMENT

Conclusion of Habitability Assessment

Prepared for Naval Reactors by the Knolls Atomic Power Laboratory

A habitability assessment has been performed based on actual radiological conditions associated with the radionuclide releases from the Fukushima Daiichi Reactor Site, Fukushima, Japan. KAPL performed a detailed analysis and assessment of many sets of radiological data collected at four different locations in Japan (Yokosuka, Atsugi, Mito, and Tsukuba) using DOE RESRAD and EPA methodologies. The analyses were performed using multiple scenarios including: suburban resident and subsistence farmer scenarios, and multiple meteorological conditions, including an estimation of actual conditions. Results included radiation doses from all pathways according to the specific model. This analysis estimated the distances from FDRS that Total Effective Dose Equivalents (TEDE) of 2,000 mrem, 1,000 mrem, 500 mrem, and 100 mrem would occur in the first year. This analysis is conservative and limiting; however, it is intended to provide insight for decision makers related to returning family members of U.S. personnel to Japan. This analysis allows for the inherent uncertainties in calculating internal exposures due to the nature of having to use mathematical models to determine dose (i.e., RESRAD, PAG methods). The following table shows the results of the analysis of a suburban resident and subsistence farmer using a time weighted average of estimated meteorological conditions at FDRS.

Enclosure (1)

First Year Dose (TEDE)	Estimated Distance from Fukushima Daiichi Site (miles)*		Estimated Ground Contamination Level (ccpm)**	
	Suburban Resident	Subsistence Farmer	Suburban Resident	Subsistence Farmer
2,000 mrem	2.2	2.4	105,483	97,198
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*Distances decrease by approximately 10% if family members return after 15 April 2011.

**Extrapolated reading by direct survey with a beta-gamma pancake frisker Geiger-Mueller probe with a 20cm^2 probe face. Contamination levels will decay to approximately 30% of these values in 6 months.

An evaluation for comparison purposes was performed using soil samples taken from J-Village, which is 12.3 miles south of FDRS. The first year dose was estimated using the RESRAD suburban resident scenario. The distance calculated using the dispersion calculation from the Yokosuka location and using time weighted average of the estimated Pasquill Categories during the plumes is about a factor of 1.5 larger (conservative) than the actual distance of J-Village from FDRS.

Enclosure (1)

Executive Summary

Habitability Assessment

A habitability assessment was performed based on actual radiological conditions associated with the radiological releases from the Fukushima Daiichi Reactor Site (FDRS) that have occurred through March 28, 2011. The basis for this habitability assessment is the gamma spectroscopy results for soil samples collected from four locations in Japan (Yokosuka, Atsugi, Mito, and Tsukuba). The assessment estimated distances from FDRS that Total Effective Dose Equivalents (TEDE) of 2,000 mrem, 1,000 mrem, 500 mrem, and 100 mrem would occur in the first year of habitability. TEDE includes radiation contributions from external exposure and all intakes of internally deposited radionuclides.

The U.S. DOE computer code RESRAD and the EPA method provided in Chapter 7 of Reference (a) were used to determine the first year doses at the Yokosuka location. Two methods were necessary because RESRAD does not allow analysis of short-lived radionuclides (e.g., I-131, Te-132), but the EPA method does. Short-lived radionuclides represent a significant portion of deposited contamination. Two RESRAD calculations were performed. The first RESRAD calculation assumes a subsistence farmer scenario and provides the maximum limiting exposure for an adult from all exposure pathways; a) direct radiation from radionuclides in the soil, b) inhalation of re-suspended contaminated soil, c) ingestion of food from crops grown in the contaminated soil, d) ingestion of milk from livestock raised in the contaminated area, e) ingestion of meat from livestock raised in the contaminated area, f) ingestion of contaminated soil, and g) ingestion of drinking water from an on-site well. The second RESRAD calculation assumes a suburban resident scenario where milk, meat, aquatic food, and drinking water pathways are not considered and the percent intake of homegrown plant foods is assumed to be the default value of 10% of all plant foods.

The assessment does not take into account the higher contamination levels seen northwest of the Fukushima Daiichi site out to 25 miles because no soil sample data were available.

The Pasquill Categories used for this analysis were estimated by taking a time weighted average of the NARAC forecasted Pasquill

Categories during three periods between 3/15/11 and 3/23/11. In the absence of actual meteorological data, this is considered the best representation of conditions during the majority of the event. These periods were chosen to coincide with three plumes that were present over Yokosuka. The specific periods that were selected were based on air sampling in Yokosuka and are listed below:

- 0600 JST March 15, 2011 to 0900 JST March 16, 2011 (27 hours)
- 0935 to 2200 JST March 21, 2011 (12.4 hours)
- 1300 JST March 22, 2011 to 0500 JST March 23, 2011 (16 hours)

The specific and averaged distance values for the four locations, including direct probe measurements taken at each sampled location were also extrapolated to each distance and are summarized in Table 1. Variation in the direct probe readings for each soil sample location is likely due to the difference in weathering of the radioactivity in the soil and/or the difference in the surface texture at the location of the direct probe measurement.

An evaluation for comparison purposes was performed using data from J-Village, which is located 12.3 miles (19.8 km) south of the Fukushima Daiichi Plant. Two soil samples were taken at J-Village and gamma spectroscopy analysis of the samples was utilized to calculate the first year dose at the J-Village using the RESRAD suburban resident scenario. The distance calculated using the dispersion calculation from the Yokosuka location and using estimated Pasquill Categories is about a factor of 1.5 larger (conservative) than the actual distance of J-Village from the Fukushima site.

Reference: (a) EPA 400 R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, May 1992

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Table 1 - Estimated First Year Dose Distances[1] from FDRS for Various Annual Dose Rates/Calculated Direct Probe Readings

Location of Soil Sample & actual direct probe ccpm	Pasquill Category	Distance to 100 mrem First Year Dose (miles)		Distance to 500 mrem First Year Dose (miles)		Distance to 1000 mrem First Year Dose (miles)		Distance to 2000 mrem First Year Dose (miles)	
		Subsistence Farmer	Suburban Resident	Subsistence Farmer	Suburban Resident	Subsistence Farmer	Suburban Resident	Subsistence Farmer	Suburban Resident
Yokosuka located 167 miles south 680 ccpm	B	32.2	30.6	11.9	11.4	7.9	7.6	5.4	5.1
	C	16.3	15.4	4.9	4.7	3.1	3.0	2.1	2.0
	D	15.4	14.4	4.3	4.0	2.6	2.4	1.6	1.5
	E	4.7	4.4	1.4	1.3	0.9	0.8	0.6	0.6
	TWA*	15.9	14.9	4.8	4.6	3.0	2.9	2.0	1.9
Direct Probe (ccpm)[2]		8,636	9,384	43,180	46,784	86,360	93,840	173,000	187,000
Mito located 79 miles south 580 ccpm	B	39.7	37.5	14.6	13.8	9.6	9.1	6.4	6.1
	C	29.7	27.4	8.1	7.5	4.9	4.6	3.1	2.9
	D	29.0	26.6	7.3	6.8	4.3	4.0	2.6	2.4
	E	15.1	13.4	3.0	2.8	1.8	1.7	1.1	1.1
	TWA*	28.5	26.2	7.7	7.2	4.7	4.4	2.9	2.7
Direct Probe (ccpm)[2]		1,682	1,844	8,410	9,222	16,820	18,444	33,640	36,540
Tsukuba located 110 miles south 750 ccpm	B	28.3	26.8	10.6	10.0	7.0	6.7	4.7	4.5
	C	16.4	15.3	4.9	4.6	3.1	3.0	2.0	1.9
	D	15.5	14.4	4.3	4.0	2.6	2.4	1.6	1.5
	E	5.7	5.3	1.6	1.5	1.0	1.0	0.7	0.6
	TWA*	15.7	14.7	4.7	4.4	3.0	2.8	1.9	1.8
Direct Probe(ccpm)[2]		6,150	6,750	30,750	33,600	61,500	67,275	123,750	134,550
Atsugi located 158 miles south 400 ccpm	B	43.4	40.9	15.9	15.0	10.4	9.9	7.0	6.6
	C	25.0	23.1	7.0	6.5	4.3	4.1	2.8	2.6
	D	24.0	22.2	6.2	5.8	3.7	3.4	2.2	2.1
	E	7.9	7.2	2.0	1.8	1.2	1.2	0.8	0.8
	TWA*	24.1	22.3	6.8	6.4	4.2	3.9	2.7	2.5
Direct Probe (ccpm)[2]		2,920	3,200	14,560	15,960	29,200	31,920	58,400	63,840
Avg. Direct Probe (ccpm)		4,847	5,407	24,225	26,392	48,470	52,870	97,198	105,483
Average of TWA* Distances (miles)		**21.1**	**19.5**	**6.0**	**5.7**	**3.7**	**3.5**	**2.4**	**2.2**

[1]Distance decreases by approximately 10% if family members return after 15 April 2011. [2]Contamination levels decrease to 30% of these levels in 6 months. *TWA = time weighted average of NARAC forecasted Pasquill Categories (from 3/15/11 0600 JST to 3/23/11 0500 JST) at Fukushima

Enclosure (1)

EVALUATION OF HABITABILITY BASED ON SAMPLE DATA AT YOKOSUKA; SUBURBAN RESIDENT AND SUBSISTENCE FARMER SCENARIOS

Table of Contents:

Enclosure (2)

1. **SUBURBAN RESIDENT SCENARIO: Evaluation of YOKOSUKA Habitability for 2000 mrem, 1000 mrem, 500 mrem, and 100 mrem doses in the First Year**

Source of Radiological Data:

The following radionuclide distribution is based on gamma spectrometry of a representative soil sample taken at Yokosuka on 3/26/2011. Throughout this event, numerous surface contamination measurements were obtained in the Yokosuka area. The contamination level identified on this soil sample is representative of the broader contamination measurement database. Other gamma spectrometry results are similar to the gamma spectrometry results in this sample.

The soil sample was counted at the U.S. Naval Base in Yokosuka, Japan. The counting lab was set up on Barge 95, in a room that had been decontaminated after the initial event. The counting system consisted of a Canberra 35% High Purity Germanium Detector (Model GC3519, s/n 7252), a Canberra Inspector 2000 portable digital signal processor (s/n 09042699), and an HP Compaq 6710b running Canberra Genie 2000 version 3.2.1 Gamma Acquisition and Analysis software. The radionuclide library used in the calculations extracts isotopic half-lives from the standard KAPL library, which references the 9th edition of The Table of Isotopes, the 16th edition of the Chart of the Nuclides, and Radioactive Decay Data Tables from David C. Kocher.

Radionuclide	Concentration (pCi/g)	Half-Life	Comment
I-131	27.1	8.02 days	Not in RESRAD Library - See Below
I-132	2.33	2.28 hours	Not in RESRAD Library - See Below
Te-132	2.75	3.2 days	Not in RESRAD Library - See Below
Cs-134	4.04	2.065 years	
Cs-136	0.54	13.16 days	Not in RESRAD Library
Cs-137	4.56	30.07 years	
Sr-90	0.0456	28.78 years	Assumed in 1:100 ratio to Cs-137
Mo-99	0.096	2.74 days	Not in RESRAD Library
Tc-99	0.107	2.13E05 years	
Te-129m	3.31	33.6 days	Not in RESRAD

			Library
La-140	0.031	1.678 days	Not in RESRAD Library

The contamination level on the soil before the sample was taken was 680 corrected counts per minute (ccpm), that is 680 counts above background as measured with a beta-gamma pancake frisker (DT-304 Geiger-Mueller probe or equivalent with a 20 cm^2 probe face calibrated to read 100 ccpm with a 450 pCi Tc-99 source measured within ½" of the surface).

Using RESRAD and the EPA PAG Manual Method for Radionuclides not in RESRAD

Inputs to RESRAD Calculation

- Suburban Resident Scenario was assumed.
  - Milk, meat, aquatic, and drinking water pathways are not considered
  - Intake of home grown plant foods is assumed to be 10%
- Depth of contamination in soil is assumed to be in the top 1 centimeter
- Indoor time was assumed to be 75%; Outdoor time was assumed to be 25% (default)
- All other parameters were RESRAD defaults

Output of RESRAD Calculation

Using the above inputs and soil radioactivity concentrations for the radionuclides available in RESRAD, the doses at time T=0 years are listed below for each radionuclide and summed.

Cs-134:	4.230 mrem
Cs-137:	2.021 mrem
Sr-90:	0.00036 mrem
Tc-99:	3.35E-06 mrem
Total Dose=	6.252 mrem

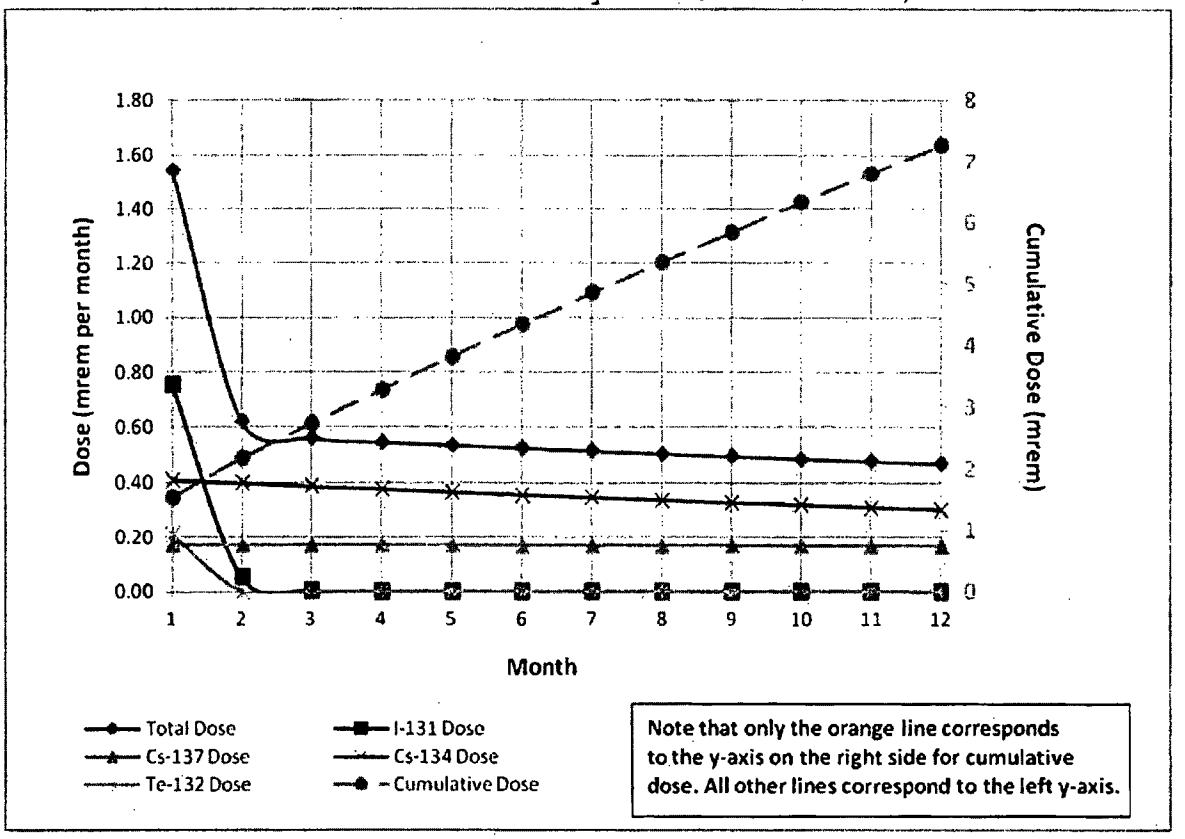
To account for I-131, I-132, and Te-132, Table 7-2 from the 1992 EPA Manual of Protective Action Guides and Protective Actions for Nuclear Incidents was used to estimate the first year doses from these radionuclides. (Note: The dose for I-132 is already included in the dose for Te-132 per the EPA manual.)

Enclosure (2)

Radionuclide	pCi/20 cm^2	pCi/m^2	mrem/pCi/m^2	Dose (mrem)
I-131	1246	6.23E+05	1.30E-06	0.8099
Te-132	126.4	6.32E+04	3.30E-06	0.2086

Note: Cs-134 and Cs-137 are not included in the above table as they are calculated using RESRAD.

First Year Dose = 6.252 mrem + 0.8099 mrem +0.2086 mrem = 7.27 mrem. The dose progression per month is shown below. (Sr-90 and Tc-99 are not shown due to their low first year contribution.)



Enclosure (2)

The time weighted average NARAC Forecasted Pasquill Categories were used for the dispersion calculation to derive the distances from the Fukushima Plant for 100 mrem, 500 mrem, 1000 mrem, and 2000 mrem first year doses. The time weighted average Pasquill Category was derived from the times that the plumes were present over Yokosuka. Based on air sampling the plumes prior to the above soil sample being taken were:

- 0600 JST March 15, 2011 to 0900 JST March 16, 2011 (27 hours)
- 0935 to 2200 JST March 21, 2011 (12.4 hours)
- 1300 JST March 22, 2011 to 0500 JST March 23, 2011 (16 hours)

For these time periods the estimated time weighted average Pasquill Categories were:

Pasquill Category	Percent of Time During Plume
B	8.9%
C	33.9%
D	44.6%
E	8.9%
F	3.6%

In the absence of actual meteorological data this data is considered the best representation of the conditions during the event.

A Summary of Evaluation using Forecasted Pasquill Categories at the Fukushima Plant is provided below:

Dose in First Year	Estimated Distance from Fukushima Daiichi Plant Based on a Representative Yokosuka Soil Sample		Estimated Direct Frisk on Soil Based on Direct Frisk of 680 ccpm at Yokosuka
	Statute Miles	Kilometers	ccpm
100 mrem	14.9	24.0	9,384
500 mrem	4.6	7.3	46,784
1000 mrem	2.9	4.6	93,840
2000 mrem	1.9	3.0	187,000

Enclosure (2)

Example Calculation using Pasquill Category B

Evaluation for 2000 mrem Distance

First year dose of 7.27 mrem is 275 times less than 2000 mrem.

Thus, the contamination level at which the 2000 mrem dose for the first year will be exceeded is 275 x 680 ccpm = 187,000 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Yokosuka from Fukushima Reactors is 167 statute miles. The dispersion factor for this distance: $\sigma_y\sigma_z$ =2.63E08 m^2

Dispersion factor at new distance is (2.63E08)/(275) = 9.56E05 m^2

Distance at which this new dispersion factor is located is approximately 5.1 statute miles.

This is equal to 8.2 kilometers.

The estimated distances for all Pasquill Categories for 2000 mrem are listed below:

Pasquill Category	σ_y σ_z (m2) at 167 statute miles	Factor of 1/275	Estimated Distance (statute miles)
A	6.02E+08	2.19E+06	5.1
B	2.63E+08	9.56E+05	5.1
C	1.63E+07	5.93E+04	2.0
D	3.27E+06	1.19E+04	1.5
E	3.02E+05	1.10E+03	0.6
F	1.07E+05	3.89E+02	0.6

Evaluation for 1000 mrem Distance

First year dose of 7.27 mrem is 138 times less than 1000 mrem.

Thus, the contamination level at which the 1000 mrem dose for the first year will be exceeded is 138 x 680 ccpm = 93,840 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Yokosuka from Fukushima Reactors is 167 statute miles. The dispersion factor for this distance: $\sigma_y\sigma_z$ =2.63E08 m^2

Dispersion factor at new distance is (2.63E08)/(138) = 1.91E06 m^2

Distance at which this new dispersion factor is located is approximately 7.6 statute miles.

This is equal to 12.2 kilometers.

The estimated distances for all Pasquill Categories for 1000 mrem are listed below:

Pasquill Category	σ_y σ_z (m2) at 167 statute miles	Factor of 1/138	Estimated Distance (statute miles)
A	6.02E+08	4.36E+06	7.6
B	2.63E+08	1.91E+06	7.6
C	1.63E+07	1.18E+05	3.0
D	3.27E+06	2.37E+04	2.4
E	3.02E+05	2.19E+03	0.8
F	1.07E+05	7.75E+02	0.8

Evaluation for 500 mrem Distance

The first year dose of 7.27 mrem is 68.8 times less than 500 mrem.

Thus, the contamination level at which the 500 mrem dose for the first year will be exceeded is 68.8 x 680 ccpm = 46,784 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Yokosuka from Fukushima Reactors is 167 statute miles. The dispersion factor for this distance: $\sigma_y\sigma_z$ = 2.63E08 m^2

Dispersion factor at new distance is (2.63E08)/(68.8) = 3.82E06 m^2

Distance at which this new dispersion factor is located is approximately 11.4 statute miles.

This is equal to 18.3 kilometers.

The estimated distances for all Pasquill Categories for 500 mrem are listed below:

Enclosure (2)

Pasquill Category	σ_y σ_z (m2) at 167 statute mile	Factor of 1/68.8	Estimated Distance (statute miles)
A	6.02E+08	8.75E+06	11.4
B	2.63E+08	3.82E+06	11.4
C	1.63E+07	2.37E+05	4.7
D	3.27E+06	4.75E+04	4.0
E	3.02E+05	4.39E+03	1.3
F	1.07E+05	1.56E+03	1.3

Evaluation for the 100 mrem Distance

The first year dose of 7.27 mrem is 13.8 times less than 100 mrem.

Thus, the contamination level at which the 100 mrem dose for the first year will be exceeded is 13.8 x 680 ccpm = 9384 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Yokosuka from Fukushima Reactors is 167 statute miles $\sigma_y\sigma_z$ = 2.63E08 m^2

Dispersion factor at new distance is (2.63E08)/(13.8) = 1.91E07 m^2

Distance at which this new dispersion factor is located is approximately 30.6 statute miles.

This is equal to 49.2 kilometers.

Enclosure (2)

The estimated distances for all Pasquill Categories for 100 mrem are listed below:

Pasquill Category	σ_y σ_z (m2) at 167 statute mile	Factor of 1/13.8	Estimated Distance (statute miles)
A	6.02E+08	4.36E+07	30.6
B	2.63E+08	1.91E+07	30.6
C	1.63E+07	1.18E+06	15.4
D	3.27E+06	2.37E+05	14.4
E	3.02E+05	2.19E+04	4.4
F	1.07E+05	7.75E+03	4.4

Calculation based on Forecasted Pasquill Categories:

For the time periods that plumes existed the estimated time weighted average Pasquill Categories were:

Pasquill Category	Percent of Time During Plume
B	8.9%
C	33.9%
D	44.6%
E	8.9%
F	3.6%

The calculation for each distance is performed using the following equation:

Distance for Time Weighted Average Pasquill Category = (0.089 x Pasquill B distance) + (0.339 x Pasquill C Distance) + (0.446 x Pasquill D Distance) + (0.089 x Pasquill E Distance) + (0.036 x Pasquill F distance)

The above calculation was performed for the 100 mrem, 500 mrem, 1000 mrem, and 2000 mrem dose distance.

The results are as follows:

First Year Dose	Estimated Distance from Fukushima Daiichi Plant	
	Miles	Kilometers
100 mrem	14.9	24.0
500 mrem	4.6	7.3
1000 mrem	2.9	4.6
2000 mrem	1.9	3.0

Enclosure (2)

2. **SUBSISTENCE FARMER SCENARIO: Evaluation of YOKOSUKA Habitability for 2000 mrem, 1000 mrem, 500 mrem, and 100 mrem doses in the First Year**

Source of Radiological Data:

The following radionuclide distribution is based on gamma spectrometry of a representative soil sample taken at Yokosuka on 3/26/2011. Throughout this event, numerous surface contamination measurements were obtained in the Yokosuka area. The contamination level identified on this soil sample is representative of the broader contamination measurement database. Other gamma spectrometry results are similar to the gamma spectrometry results in this sample.

The soil sample was counted at the U.S. Naval Base in Yokosuka, Japan. The counting lab was set up on Barge 95, in a room that had been decontaminated after the initial event. The counting system consisted of a Canberra 35% High Purity Germanium Detector (Model GC3519, s/n 7252), a Canberra Inspector 2000 portable digital signal processor (s/n 09042699), and an HP Compaq 6710b running Canberra Genie 2000 version 3.2.1 Gamma Acquisition and Analysis software. The radionuclide library used in the calculations extracts isotopic half-lives from the standard KAPL library, which references the 9th edition of The Table of Isotopes, the 16th edition of the Chart of the Nuclides, and Radioactive Decay Data Tables from David C. Kocher.

Radionuclide	Concentration (pCi/g)	Half-Life	Comment
I-131	27.1	8.02 days	Not in RESRAD Library - See Below
I-132	2.33	2.28 hours	Not in RESRAD Library - See Below
Te-132	2.75	3.2 days	Not in RESRAD Library - See Below
Cs-134	4.04	2.065 yrs	
Cs-136	0.54	13.16 days	Not in RESRAD Library
Cs-137	4.56	30.07 yrs	
Sr-90	0.0456	28.78 yrs	Assumed in 1:100 ratio to Cs-137
Mo-99	0.096	2.74 days	Not in RESRAD Library
Tc-99	0.107	2.13E05 years	
Te-129m	3.31	33.6 days	Not in RESRAD

			Library
La-140	0.031	1.678 days	Not in RESRAD Library

The contamination level on the soil before the sample was taken was 680 corrected counts per minute (ccpm), that is 680 counts above background as measured with a beta-gamma pancake frisker (DT-304 Geiger-Mueller probe or equivalent with a 20 cm^2 probe face calibrated to read 100 ccpm with a 450 pCi Tc-99 source measured within ½" of the surface).

Using RESRAD and the EPA PAG Manual Method for Radionuclides not in RESRAD

Inputs to RESRAD Calculation

- Subsistence Farmer Scenario was assumed. All pathways except radon were assumed active.
- For ingestion pathway, dietary data, aquatic food, plant food, meat, and milk contaminated fractions are 1.0
- Depth of contamination in soil is assumed to be in the top 1 centimeter
- Outdoors on-site time was changed from 25% to 50% and off-site time was set to zero because RESRAD assumes zero exposure for time spent off-site and some exposure would still occur if a person were to leave the residence due to ground contamination elsewhere. The default of 50% time spent indoors was not changed.
- All other parameters were RESRAD defaults

Output of RESRAD Calculation

Using the above inputs and soil radioactivity concentrations for the radionuclides available in RESRAD, the doses at time T=0 years are listed below for each radionuclide and summed.

Cs-134:	4.628 mrem
Cs-137:	2.235 mrem
Sr-90:	0.00333 mrem
Tc-99:	3.47E-05 mrem
Total Dose=	6.866 mrem

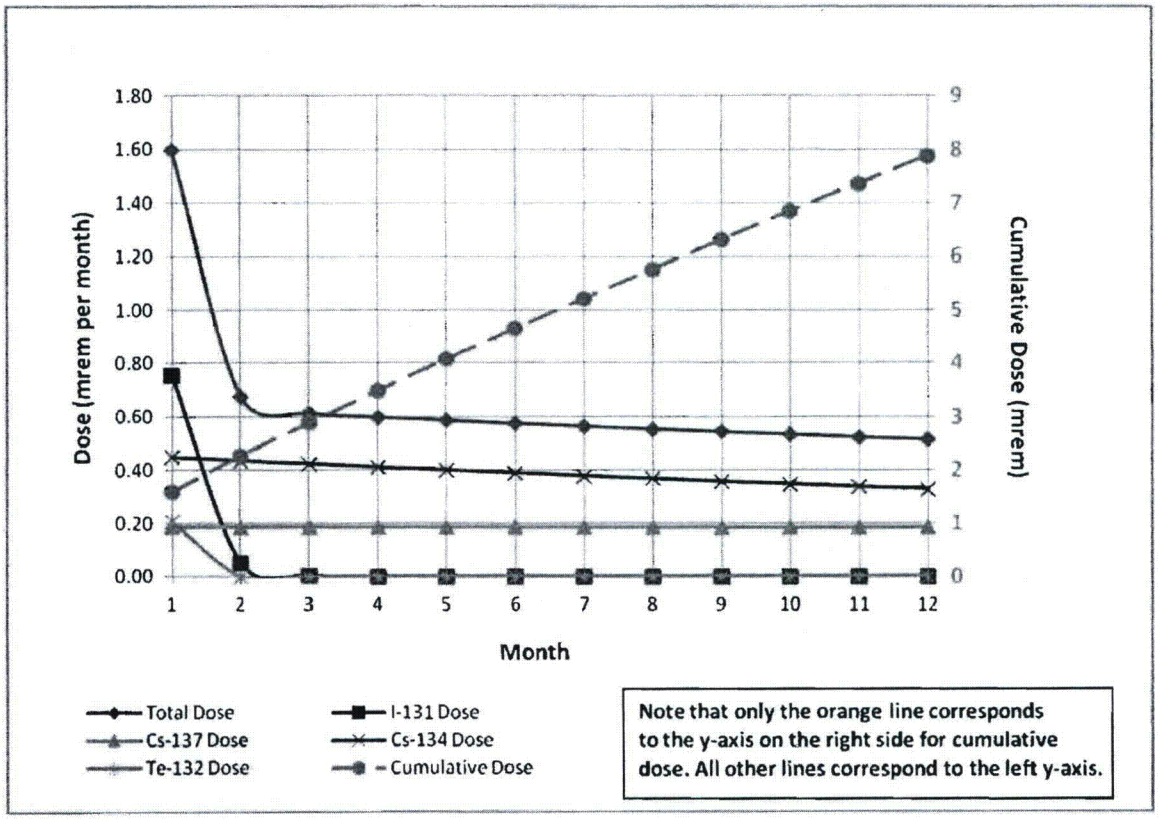
To account for I-131, I-132, and Te-132, Table 7-2 from the 1992 EPA Manual of Protective Action Guides and Protective Actions for Nuclear Incidents was used to estimate the first year doses from these radionuclides. (Note: The dose for I-132 is already included in the dose for Te-132 per the EPA manual.)

Enclosure (2)

Radionuclide	pCi/20 cm^2	pCi/m^2	mrem/pCi/m^2	Dose (mrem)
I-131	1246	6.23E+05	1.30E-06	0.8099
Te-132	126.4	6.32E+04	3.30E-06	0.2086

Note: Cs-134 and Cs-137 are not included in the above table as they are calculated using RESRAD.

First Year Dose = 6.866 mrem + 0.8099 mrem +0.2086 mrem = 7.88 mrem. The dose progression per month is shown below. (Sr-90 and Tc-99 are not shown due to their low first year contribution.)



The time weighted average NARAC Forecasted Pasquill Categories were used for the dispersion calculation to derive the distances from the Fukushima Plant for 100 mrem, 500 mrem, 1000 mrem, and 2000 mrem first year doses. The time weighted average Pasquill Category was derived from the times that the plumes were present over Yokosuka. Based on air sampling the plumes prior to the above soil sample being taken were:

- 0600 JST March 15, 2011 to 0900 JST March 16, 2011 (27 hours)

- 0935 to 2200 JST March 21, 2011 (12.4 hours)
- 1300 JST March 22, 2011 to 0500 JST March 23, 2011 (16 hours)

For these time periods the estimated time weighted average Pasquill Categories were:

Pasquill Category	Percent of Time During Plume
B	8.9%
C	33.9%
D	44.6%
E	8.9%
F	3.6%

In the absence of actual meteorological data this data is considered the best representation of the conditions during the event.

A Summary of Evaluation using Forecasted Pasquill Categories at the Fukushima Plant is provided below:

Dose in First Year	Estimated Distance from Fukushima Daiichi Plant Based on a Representative Yokosuka Soil Sample		Estimated Direct Frisk on Soil Based on Direct Frisk of 680 ccpm at Yokosuka
	Statute Miles	Kilometers	ccpm
100 mrem	15.9	25.5	8,636
500 mrem	4.8	7.8	43,180
1000 mrem	3.0	4.9	86,360
2000 mrem	2.0	3.2	173,000

Example Calculation using Pasquill Category B

Evaluation for 2000 mrem Distance

First year dose of 7.88 mrem is 254 times less than 2000 mrem.

Thus, the contamination level at which the 2000 mrem dose for the first year will be exceeded is 254 x 680 ccpm = 173,000 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Yokosuka from Fukushima Reactors is 167 statute miles. The dispersion factor for this distance: $\sigma_y\sigma_z$ =2.63E08 m^2

Dispersion factor at new distance is (2.63E08)/(254) = 1.04E06 m^2

Distance at which this new dispersion factor is located is approximately 5.4 statute miles.

This is equal to 8.7 kilometers.

The estimated distances for all Pasquill Categories for 2000 mrem are listed below:

Pasquill Category	σ_y σ_z (m2) at 167 statute miles	Factor of 1/254	Estimated Distance (statute miles)
A	6.02E+08	2.37E+06	5.4
B	2.63E+08	1.04E+06	5.4
C	1.63E+07	6.42E+04	2.1
D	3.27E+06	1.29E+04	1.6
E	3.02E+05	1.19E+03	0.6
F	1.07E+05	4.21E+02	0.6

Evaluation for 1000 mrem Distance

First year dose of 7.88 mrem is 127 times less than 1000 mrem.

Thus, the contamination level at which the 1000 mrem dose for the first year will be exceeded is 127 x 680 ccpm = 86,360 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Yokosuka from Fukushima Reactors is 167 statute miles. The dispersion factor for this distance: $\sigma_y\sigma_z$ =2.63E08 m^2

Dispersion factor at new distance is (2.63E08)/(127) = 2.07E06 m^2

Distance at which this new dispersion factor is located is approximately 7.9 statute miles.

This is equal to 12.7 kilometers.

The estimated distances for all Pasquill Categories for 1000 mrem are listed below:

Enclosure (2)

Pasquill Category	σ_y σ_z (m2) at 167 statute miles	Factor of 1/127	Estimated Distance (statute miles)
A	6.02E+08	4.74E+06	7.9
B	2.63E+08	2.07E+06	7.9
C	1.63E+07	1.28E+05	3.1
D	3.27E+06	2.57E+04	2.6
E	3.02E+05	2.38E+03	0.9
F	1.07E+05	8.43E+02	0.9

Evaluation for 500 mrem Distance

The first year dose of 7.88 mrem is 63.5 times less than 500 mrem.

Thus, the contamination level at which the 500 mrem dose for the first year will be exceeded is 63.5 x 680 ccpm = 43,180 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Yokosuka from Fukushima Reactors is 167 statute miles. The dispersion factor for this distance: $\sigma_y\sigma_z$ = 2.63E08 m^2

Dispersion factor at new distance is (2.63E08)/(63.5) = 4.14E06 m^2

Distance at which this new dispersion factor is located is approximately 11.9 statute miles.

This is equal to 19.1 kilometers.

The estimated distances for all Pasquill Categories for 500 mrem are listed below:

Pasquill Category	σ_y σ_z (m^2) at 167 statute mile	Factor of 1/63.5	Estimated Distance (statute miles)
A	6.02E+08	9.48E+06	11.9
B	2.63E+08	4.14E+06	11.9
C	1.63E+07	2.57E+05	4.9
D	3.27E+06	5.15E+04	4.3
E	3.02E+05	4.76E+03	1.4
F	1.07E+05	1.69E+03	1.4

Enclosure (2)

Evaluation for the 100 mrem Distance

The first year dose of 7.88 mrem is 12.7 times less than 100 mrem.

Thus, the contamination level at which the 100 mrem dose for the first year will be exceeded is 12.7 x 680 ccpm = 8636 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Yokosuka from Fukushima Reactors is 167 statute miles $\sigma_y\sigma_z$ = 2.63E08 m^2

Dispersion factor at new distance is (2.63E08)/(12.7) = 2.07E07 m^2

Distance at which this new dispersion factor is located is approximately 32.2 statute miles.

This is equal to 51.8 kilometers.

The estimated distances for all Pasquill Categories for 100 mrem are listed below:

Pasquill Category	σ_y σ_z (m2) at 167 statute mile	Factor of 1/12.7	Estimated Distance (statute miles)
A	6.02E+08	4.70E+07	32.2
B	2.63E+08	2.07E+07	32.2
C	1.63E+07	1.28E+06	16.3
D	3.27E+06	2.57E+05	15.4
E	3.02E+05	2.38E+04	4.7
F	1.07E+05	8.43E+03	4.7

Calculation based on Forecasted Pasquill Categories:

For the time periods that plumes existed the estimated time weighted average Pasquill Categories were:

Pasquill Category	Percent of Time During Plume
B	8.9%
C	33.9%
D	44.6%
E	8.9%
F	3.6%

Enclosure (2)

The calculation for each distance is performed using the following equation:

Distance for Time Weighted Average Pasquill Category = (0.089 x Pasquill B distance) + (0.339 x Pasquill C Distance) + (0.446 x Pasquill D Distance) + (0.089 x Pasquill E Distance) + (0.036 x Pasquill F distance)

The above calculation was performed for the 100 mrem, 500 mrem, 1000 mrem, and 2000 mrem dose distance.

The results are as follows:

First Year Dose	Estimated Distance from Fukushima Daiichi Plant	
	Miles	Kilometers
100 mrem	15.9	25.5
500 mrem	4.8	7.8
1000 mrem	3.0	4.9
2000 mrem	2.0	3.2

3. **SUBURBAN RESIDENT SCENARIO: Evaluation of MITO Habitability for 2000 mrem, 1000 mrem, 500 mrem, and 100 mrem doses in the First Year**

Source of Radiological Data:

The following radionuclide distribution is based on gamma spectrometry of a representative soil sample taken at Mito on 3/27/2011. Throughout this event, numerous surface contamination measurements were obtained in the Mito area. The contamination level identified on this soil sample is representative of the broader contamination measurement database. Other gamma spectrometry results are similar to the gamma spectrometry results in this sample.

The soil sample was counted at the U.S. Naval Base in Yokosuka, Japan. The counting lab was set up on Barge 95, in a room that had been decontaminated after the initial event. The counting system consisted of a Canberra 35% High Purity Germanium Detector (Model GC3519, s/n 7252), a Canberra Inspector 2000 portable digital signal processor (s/n 09042699), and an HP Compaq 6710b running Canberra Genie 2000 version 3.2.1 Gamma Acquisition and Analysis software. The radionuclide library used in the calculations extracts isotopic half-lives from the standard KAPL library, which references the 9th edition of The Table of Isotopes, the 16th edition of the Chart of the Nuclides, and Radioactive Decay Data Tables from David C. Kocher.

Radionuclide	Concentration (pCi/g)	Half-Life	Comment
I-131	109.1	8.02 days	Not in RESRAD Library - See Below
I-132	5.848	2.28 hours	Not in RESRAD Library - See Below
Te-132	6.919	3.2 days	Not in RESRAD Library - See Below
Cs-134	20.01	2.065 yrs	
Cs-136	2.069	13.16 days	Not in RESRAD Library
Cs-137	21.89	30.07 yrs	
Sr-90	0.2189	28.78 yrs	Assumed in 1:100 ratio to Cs-137
Mo-99	0.737	2.74 days	Not in RESRAD Library
Tc-99m	0.644	6.01 hour	Not in RESRAD Library
Te-129	6.976	1.16 hour	Not in RESRAD Library

Enclosure (2)

Te-129m	11.66	33.6 days	Not in RESRAD Library
La-140	0.341	1.678 days	Not in RESRAD Library

The contamination level on the soil before the sample was taken was 580 corrected counts per minute (ccpm), that is 580 counts above background as measured with a beta-gamma pancake frisker (DT-304 Geiger-Mueller probe or equivalent with a 20 cm^2 probe face calibrated to read 100 ccpm with a 450 pCi Tc-99 source measured within ½" of the surface).

Using RESRAD and EPA PAG Manual Method for Radionuclides not in RESRAD

Inputs to RESRAD Calculation

- Suburban Resident Scenario was assumed.
  - Milk, meat, aquatic, and drinking water pathways are not considered
  - Intake of home grown plant foods is assumed to be 10%
- Depth of contamination in soil is assumed to be in the top 1 centimeter
- Indoor time was assumed to be 75%; Outdoor time was assumed to be 25% (default)
- All other parameters were RESRAD defaults

Output of RESRAD Calculation

Using the above inputs and soil radioactivity concentrations for the radionuclides available in RESRAD, the doses at time T=0 years are listed below for each radionuclide and summed.

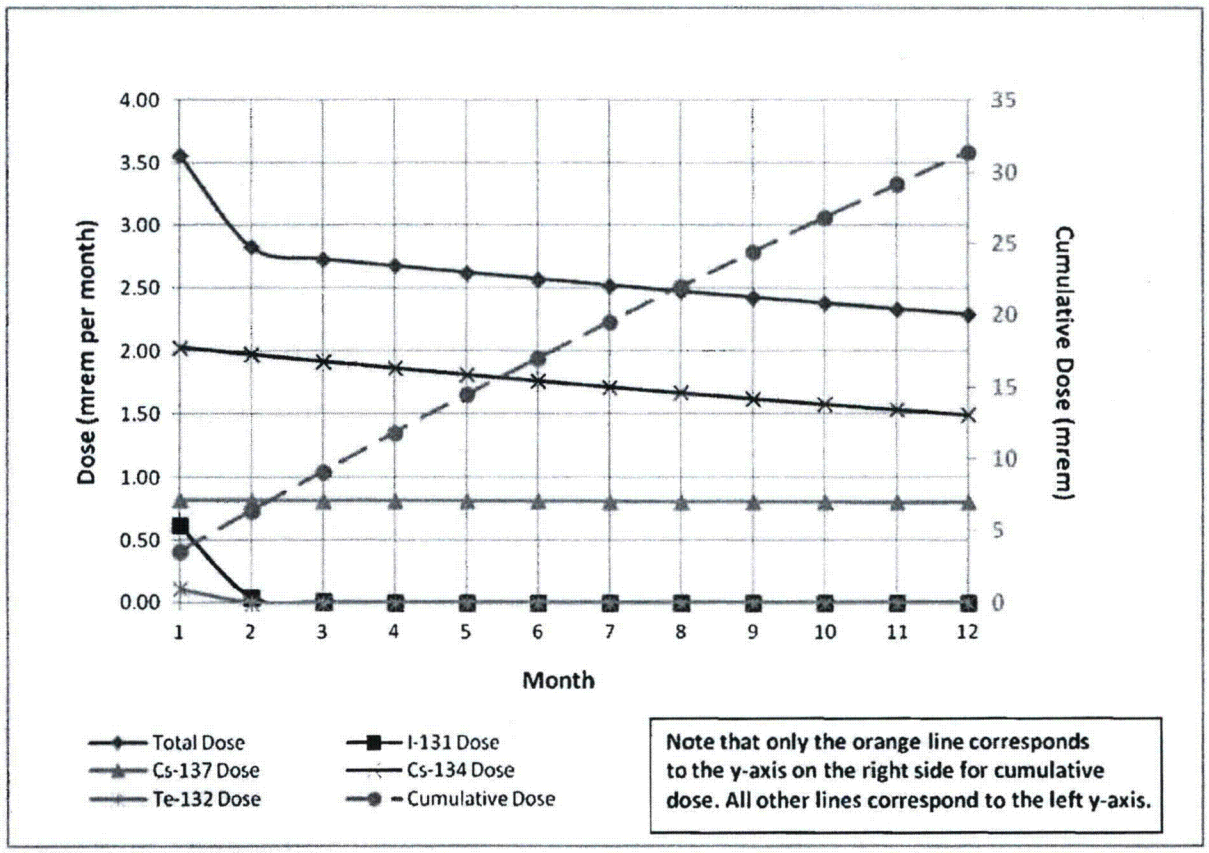
Cs-134:	20.95 mrem
Cs-137:	9.70 mrem
Sr-90:	0.00174 mrem
Total Dose=	30.65 mrem

To account for I-131, I-132, and Te-132, Table 7-2 from the 1992 EPA Protective Action Guide (PAG) Manual was used to estimate the first year doses from these radionuclides. (Note: the dose for I-132 is already included in the dose for Te-132 per the PAG manual.)

Radionuclide	pCi/20cm^2	pCi/m^2	mrem/pCi/m^2	Dose (mrem)
I-131	1014	5.07E+05	1.30E-06	0.6591
Te-132	64.2	3.21E+04	3.30E-06	0.1059

Note: Cs-134 and Cs-137 are not included in the above table as they are calculated using RESRAD.

First Year Dose = 30.65 mrem + 0.6591 mrem +0.1059 mrem = 31.42 mrem. The dose progression per month is shown below. (Sr-90 is not shown due to the low first year contribution.)



The time weighted average NARAC Forecasted Pasquill Categories were used for the dispersion calculation to derive the distances from the Fukushima Plant for 100 mrem, 500 mrem, 1000 mrem, and 2000 mrem first year doses. The time weighted average Pasquill Category was derived from the times that the plumes were present over Yokosuka. Based on air sampling the plumes prior to the above soil sample being taken were:

- 0600 JST March 15, 2011 to 0900 JST March 16, 2011 (27 hours)
- 0935 to 2200 JST March 21, 2011 (12.4 hours)
- 1300 JST March 22, 2011 to 0500 JST March 23, 2011 (16 hours)

For these time periods the estimated time weighted average Pasquill Categories were:

Pasquill Category	Percent of Time During Plume
B	8.9%
C	33.9%
D	44.6%
E	8.9%
F	3.6%

In the absence of actual meteorological data this data is considered the best representation of the conditions during the event.

Summary of Evaluation using Forecasted Pasquill Categories at the Fukushima Plant

Dose in First Year	Estimated Distance from Fukushima Daiichi Plant Based on a Representative Mito Soil Sample		Estimated Direct Frisk on Soil Based on Direct Frisk of 580 ccpm at Mito
	Statute Miles	Kilometers	ccpm
100 mrem	26.2	42.1	1,844
500 mrem	7.2	11.5	9,222
1000 mrem	4.4	7.0	18,444
2000 mrem	2.7	4.4	36,540

Example Calculation using Pasquill Category B

Evaluation for 2000 mrem Distance

First year dose of 31.42 mrem is 63.6 times less than 2000 mrem.

Thus, the contamination level at which the 2000 mrem dose for the first year will be exceeded is 58 x 580 ccpm = 36,540 ccpm

Enclosure (2)

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Mito from Fukushima Reactors is 79 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ =8.38E07 m^2

Dispersion factor at new distance is (8.38E07)/(63.6) = 1.32E06 m^2

Distance at which this new dispersion factor is located is approximately 6.1 statute miles.

This is equal to 9.8 kilometers.

The estimated distances for all Pasquill Categories for 2000 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 79 statute miles	Factor of 1/63.6	Estimated Distance (statute miles)
A	1.92E+08	3.01E+06	6.1
B	8.38E+07	1.32E+06	6.1
C	7.47E+06	1.17E+05	2.9
D	1.51E+06	2.37E+04	2.4
E	2.01E+05	3.16E+03	1.1
F	7.14E+04	1.12E+03	1.1

Evaluation for 1000 mrem Distance

First year dose of 31.42 mrem is 31.8 times less than 1000 mrem.

Thus the contamination level at which the 1000 mrem dose for the first year will be exceeded is 29 x 580 ccpm = 18,444 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Mito from Fukushima Reactors is 79 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ =8.38E07 m^2

Dispersion factor at new distance is (8.38E07)/(31.8) = 2.64E06 m^2

Distance at which this new dispersion factor is located is approximately 9.1 statute miles.

This is equal to 14.6 kilometers.

Enclosure (2)

The estimated distances for all Pasquill Categories for 1000 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 79 statute miles	Factor of 1/31.8	Estimated Distance (statute miles)
A	1.92E+08	6.04E+06	9.1
B	8.38E+07	2.64E+06	9.1
C	7.47E+06	2.35E+05	4.6
D	1.51E+06	4.75E+04	4.0
E	2.01E+05	6.32E+03	1.7
F	7.14E+04	2.25E+03	1.7

Evaluation for 500 mrem Distance

The first year dose of 31.42 mrem is 15.9 times less than 500 mrem.

Thus, the contamination level at which the 500 mrem dose for the first year will be exceeded is 15.9 x 580 ccpm = 9222 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Mito from Fukushima Reactors is 79 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ = 8.38E07 m^2

Dispersion factor at new distance is (8.38E07)/(15.9) = 5.27E06 m^2

Distance at which this new dispersion factor is located is approximately 13.8 statute miles

This is equal to 22.2 kilometers.

The estimated distances for all Pasquill Categories for 500 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 79 statute mile	Factor of 1/15.9	Estimated Distance (statute miles)
A	1.92E+08	1.21E+07	13.8
B	8.38E+07	5.27E+06	13.8
C	7.47E+06	4.70E+05	7.5
D	1.51E+06	9.50E+04	6.8
E	2.01E+05	1.26E+04	2.8
F	7.14E+04	4.49E+03	2.8

Enclosure (2)

Evaluation for the 100 mrem Distance

The first year dose of 31.42 mrem is 3.18 times less than 100 mrem.

Thus, the contamination level at which the 100 mrem dose for the first year will be exceeded is 2.90 x 580 ccpm = 1844 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Mito from Fukushima Reactors is 79 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ = 8.38E07 m^2

Dispersion factor at new distance is (8.38E07)/(3.18) = 2.64E07 m^2

Distance at which this new dispersion factor is located is approximately 37.5 statute miles.

This is equal to 60.3 kilometers.

The estimated distances for all Pasquill Categories for 100 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 79 statute mile	Factor of 1/3.18	Estimated Distance (statute miles)
A	1.92E+08	6.04E+07	37.5
B	8.38E+07	2.64E+07	37.5
C	7.47E+06	2.35E+06	27.4
D	1.51E+06	4.75E+05	26.6
E	2.01E+05	6.32E+04	13.4
F	7.14E+04	2.25E+04	13.4

Calculation based on Forecasted Pasquill Categories:

For the time periods that plumes existed the estimated time weighted average Pasquill Categories were:

Pasquill Category	Percent of Time During Plume
B	8.9%
C	33.9%
D	44.6%
E	8.9%
F	3.6%

Enclosure (2)

The calculation for each distance is performed using the following equation:

Distance for Time Weighted Average Pasquill Category = (0.089 x Pasquill B distance) + (0.339 x Pasquill C Distance) + (0.446 x Pasquill D Distance) + (0.089 x Pasquill E Distance) + (0.036 x Pasquill F distance)

The above calculation was performed for the 100 mrem, 500 mrem, 1000 mrem, and 2000 mrem dose distance.

The results are as follows:

First Year Dose	Estimated Distance from Fukushima Daiichi Plant	
	Miles	Kilometers
100 mrem	26.2	42.1
500 mrem	7.2	11.5
1000 mrem	4.4	7.0
2000 mrem	2.7	4.4

Enclosure (2)

4. **SUBSISTENCE FARMER SCENARIO: Evaluation of MITO Habitability for 2000 mrem, 1000 mrem, 500 mrem, and 100 mrem doses in the First Year**

Source of Radiological Data:

The following radionuclide distribution is based on gamma spectrometry of a representative soil sample taken at Mito on 3/27/2011. Throughout this event, numerous surface contamination measurements were obtained in the Mito area. The contamination level identified on this soil sample is representative of the broader contamination measurement database. Other gamma spectrometry results are similar to the gamma spectrometry results in this sample.

The soil sample was counted at the U.S. Naval Base in Yokosuka, Japan. The counting lab was set up on Barge 95, in a room that had been decontaminated after the initial event. The counting system consisted of a Canberra 35% High Purity Germanium Detector (Model GC3519, s/n 7252), a Canberra Inspector 2000 portable digital signal processor (s/n 09042699), and an HP Compaq 6710b running Canberra Genie 2000 version 3.2.1 Gamma Acquisition and Analysis software. The radionuclide library used in the calculations extracts isotopic half-lives from the standard KAPL library, which references the 9th edition of The Table of Isotopes, the 16th edition of the Chart of the Nuclides, and Radioactive Decay Data Tables from David C. Kocher.

Radionuclide	Concentration (pCi/g)	Half-Life	Comment
I-131	109.1	8.02 days	Not in RESRAD Library - See Below
I-132	5.848	2.28 hours	Not in RESRAD Library - See Below
Te-132	6.919	3.2 days	Not in RESRAD Library - See Below
Cs-134	20.01	2.065 yrs	
Cs-136	2.069	13.16 days	Not in RESRAD Library
Cs-137	21.89	30.07 yrs	
Sr-90	0.2189	28.78 yrs	Assumed in 1:100 ratio to Cs-137
Mo-99	0.737	2.74 days	Not in RESRAD Library
Tc-99m	0.644	6.01 hour	Not in RESRAD Library
Te-129	6.976	1.16 hour	Not in RESRAD Library

Enclosure (2)

Te-129m	11.66	33.6 days	Not in RESRAD Library
La-140	0.341	1.678 days	Not in RESRAD Library

The contamination level on the soil before the sample was taken was 580 corrected counts per minute (ccpm), that is 580 counts above background as measured with a beta-gamma pancake frisker (DT-304 Geiger-Mueller probe or equivalent with a 20 cm^2 probe face calibrated to read 100 ccpm with a 450 pCi Tc-99 source measured within ½" of the surface).

Using RESRAD and EPA PAG Manual Method for Radionuclides not in RESRAD

Inputs to RESRAD Calculation

- Subsistence Farmer Scenario was assumed. All pathways except radon were assumed active.
- For ingestion pathway, dietary data, aquatic food, plant food, meat, and milk contaminated fractions are 1.0
- Depth of contamination in soil is assumed to be in the top 1 centimeter
- Outdoors on-site time was changed from 25% to 50% and off-site time was set to zero because RESRAD assumes zero exposure for time spent off-site and some exposure would still occur if a person were to leave the residence due to ground contamination elsewhere. The default of 50% time spent indoors was not changed.
- All other parameters were RESRAD defaults

Output of RESRAD Calculation

Using the above inputs and soil radioactivity concentrations for the radionuclides available in RESRAD, the doses at time T=0 years are listed below for each radionuclide and summed.

Cs-134:	22.93 mrem
Cs-137:	10.73 mrem
Sr-90:	0.016 mrem
Total Dose=	33.68 mrem

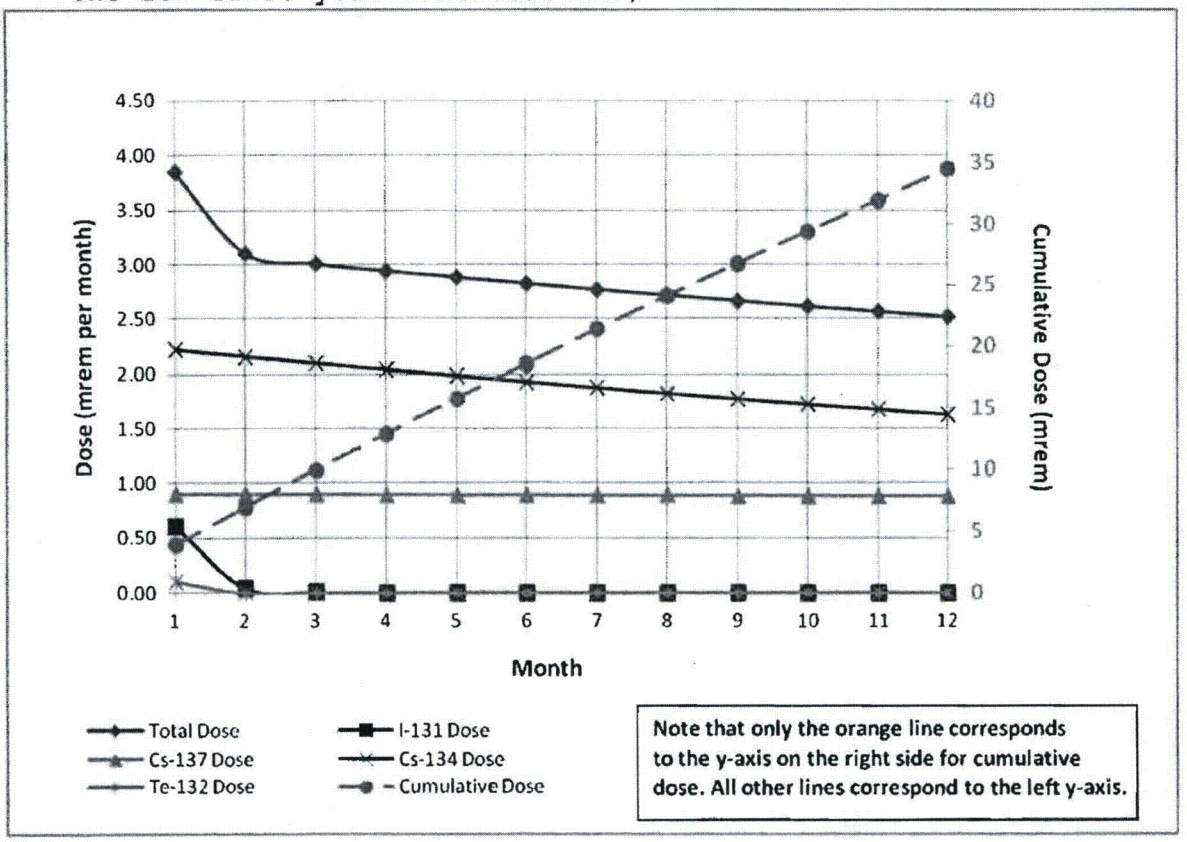
To account for I-131, I-132, and Te-132, Table 7-2 from the 1992 EPA Protective Action Guide (PAG) Manual was used to estimate the first year doses from these radionuclides. (Note: the dose for I-132 is already included in the dose for Te-132 per the PAG manual.)

Radionuclide	$pCi/20cm^2$	pCi/m^2	$mrem/pCi/m^2$	Dose (mrem)

I-131	1014	5.07E+05	1.30E-06	0.6591
Te-132	64.2	3.21E+04	3.30E-06	0.1059

Note: Cs-134 and Cs-137 are not included in the above table as they are calculated using RESRAD.

First Year Dose = 33.68 mrem + 0.6591 mrem +0.1059 mrem = 34.44 mrem. The dose progression per month is shown below. (Sr-90 is not shown due to the low first year contribution.)



The time weighted average NARAC Forecasted Pasquill Categories were used for the dispersion calculation to derive the distances from the Fukushima Plant for 100 mrem, 500 mrem, 1000 mrem, and 2000 mrem first year doses. The time weighted average Pasquill Category was derived from the times that the plumes were present over Yokosuka. Based on air sampling the plumes prior to the above soil sample being taken were

- 0600 JST March 15, 2011 to 0900 JST March 16, 2011 (27 hours)
- 0935 to 2200 JST March 21, 2011 (12.4 hours)
- 1300 JST March 22, 2011 to 0500 JST March 23, 2011 (16 hours)

Enclosure (2)

For these time periods the estimated time weighted average Pasquill Categories were:

Pasquill Category	Percent of Time During Plume
B	8.9%
C	33.9%
D	44.6%
E	8.9%
F	3.6%

In the absence of actual meteorological data this data is considered the best representation of the conditions during the event.

A Summary of Evaluation using Forecasted Pasquill Categories at the Fukushima Plant is provided below:

First Year Dose	Estimated Distance from Fukushima Daiichi Plant Based on a Representative Mito Soil Sample		Estimated Direct Frisk on Soil Based on Direct Frisk of 580 ccpm at Mito
	Statute Miles	Kilometers	ccpm
100 mrem	28.5	45.8	1,682
500 mrem	7.7	12.4	8,410
1000 mrem	4.7	7.5	16,820
2000 mrem	2.9	4.7	33,640

Example Calculation using Pasquill Category B

Evaluation for 2000 mrem Distance

First year dose of 34.44 mrem is 58 times less than 2000 mrem.

Thus, the contamination level at which the 2000 mrem dose for the first year will be exceeded is 58 x 580 ccpm = 33,640 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Mito from Fukushima Reactors is 79 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ =8.38E+07 m^2

Enclosure (2)

Dispersion factor at new distance is (8.38E+07)/(58) = 1.44E+06 m^2

Distance at which this new dispersion factor is located is approximately 6.4 statute miles.

This is equal to 10.4 kilometers.

The estimated distances for all Pasquill Categories for 2000 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 79 statute miles	Factor of 1/58	Estimated Distance (statute miles)
A	1.92E+08	3.31E+06	6.4
B	8.38E+07	1.44E+06	6.4
C	7.47E+06	1.29E+05	3.1
D	1.51E+06	2.61E+04	2.6
E	2.01E+05	3.46E+03	1.1
F	7.14E+04	1.23E+03	1.1

Evaluation for 1000 mrem Distance

First year dose of 34.44 mrem is 29 times less than 1000 mrem.

Thus the contamination level at which the 1000 mrem dose for the first year will be exceeded is 29 x 580 ccpm = 16,820 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Mito from Fukushima Reactors is 79 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ =8.38E+07 m^2

Dispersion factor at new distance is (8.38E+07)/(29) = 2.89E+06 m^2

Distance at which this new dispersion factor is located is approximately 9.6 statute miles.

This is equal to 15.5 kilometers.

Enclosure (2)

The estimated distances for all Pasquill Categories for 1000 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 79 statute miles	Factor of 1/29	Estimated Distance (statute miles)
A	1.92E+08	6.62E+06	9.6
B	8.38E+07	2.89E+06	9.6
C	7.47E+06	2.58E+05	4.9
D	1.51E+06	5.22E+04	4.3
E	2.01E+05	6.92E+03	1.8
F	7.14E+04	2.46E+03	1.8

Evaluation for 500 mrem Distance

The first year dose of 34.44 mrem is 14.5 times less than 500 mrem.

Thus, the contamination level at which the 500 mrem dose for the first year will be exceeded is 14.5 x 580 ccpm = 8410 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Mito from Fukushima Reactors is 79 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ = 8.38E+07 m^2

Dispersion factor at new distance is (8.38E+07)/(14.5) = 5.78E+06 m^2

Distance at which this new dispersion factor is located is approximately 14.6 statute miles

This is equal to 23.4 kilometers.

The estimated distances for all Pasquill Categories for 500 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 79 statute mile	Factor of 1/14.5	Estimated Distance (statute miles)
A	1.92E+08	1.32E+07	14.6
B	8.38E+07	5.78E+06	14.6
C	7.47E+06	5.15E+05	8.1
D	1.51E+06	1.04E+05	7.3
E	2.01E+05	1.38E+04	3.0
F	7.14E+04	4.92E+03	3.0

Enclosure (2)

Evaluation for the 100 mrem Distance

The first year dose of 34.44 mrem is 2.90 times less than 100 mrem.

Thus, the contamination level at which the 100 mrem dose for the first year will be exceeded is 2.90 x 580 ccpm = 1682 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Mito from Fukushima Reactors is 79 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ = 8.38E+07 m^2

Dispersion factor at new distance is (8.38E+07)/(2.90) = 2.89E+07 m^2

Distance at which this new dispersion factor is located is approximately 39.7 statute miles.

This is equal to 63.9 kilometers.

The estimated distances for all Pasquill Categories for 100 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 79 statute mile	Factor of 1/2.9	Estimated Distance (statute miles)
A	1.92E+08	6.62E+07	39.7
B	8.38E+07	2.89E+07	39.7
C	7.47E+06	2.58E+06	29.7
D	1.51E+06	5.22E+05	29.0
E	2.01E+05	6.92E+04	15.1
F	7.14E+04	2.46E+04	15.1

Calculation based on Forecasted Pasquill Categories:

For the time periods that plumes existed the estimated time weighted average Pasquill Categories were:

Pasquill Category	Percent of Time During Plume
B	8.9%
C	33.9%
D	44.6%
E	8.9%
F	3.6%

Enclosure (2)

The calculation for each distance is performed using the following equation:

Distance for Time Weighted Average Pasquill Category = (0.089 x Pasquill B distance) + (0.339 x Pasquill C Distance) + (0.446 x Pasquill D Distance) + (0.089 x Pasquill E Distance) + (0.036 x Pasquill F distance)

The above calculation was performed for the 100 mrem, 500 mrem, 1000 mrem, and 2000 mrem dose distance.

The results are as follows:

First Year Dose	Estimated Distance from Fukushima Daiichi Plant	
	Miles	Kilometers
100 mrem	28.5	45.8
500 mrem	7.7	12.4
1000 mrem	4.7	7.5
2000 mrem	2.9	4.7

5. **SUBURBAN RESIDENT SCENARIO: Evaluation of TSUKUBA Habitability for 2000 mrem, 1000 mrem, 500 mrem, and 100 mrem doses in the First Year**

Source of Radiological Data:

The following radionuclide distribution is based on gamma spectrometry of a representative soil sample taken at Tsukuba on 3/27/2011. Throughout this event, numerous surface contamination measurements were obtained in the Tsukuba area. The contamination level identified on this soil sample is representative of the broader contamination measurement database. Other gamma spectrometry results are similar to the gamma spectrometry results in this sample.

The soil sample was counted at the U.S. Naval Base in Yokosuka, Japan. The counting lab was set up on Barge 95, in a room that had been decontaminated after the initial event. The counting system consisted of a Canberra 35% High Purity Germanium Detector (Model GC3519, s/n 7252), a Canberra Inspector 2000 portable digital signal processor (s/n 09042699), and an HP Compaq 6710b running Canberra Genie 2000 version 3.2.1 Gamma Acquisition and Analysis software. The radionuclide library used in the calculations extracts isotopic half-lives from the standard KAPL library, which references the 9th edition of The Table of Isotopes, the 16th edition of the Chart of the Nuclides, and Radioactive Decay Data Tables from David C. Kocher.

Radionuclide	Concentration (pCi/g)	Half-Life	Comment
I-131	53.1	8.02 days	Not in RESRAD Library - See Below
I-132	1.64	2.28 hours	Not in RESRAD Library - See Below
Te-132	2.00	3.2 days	Not in RESRAD Library - See Below
Cs-134	6.53	2.065 yrs	
Cs-136	0.707	13.16 days	Not in RESRAD Library
Cs-137	7.31	30.07 yrs	
Sr-90	0.0731	28.78 yrs	Assumed in 1:100 ratio to Cs-137
Mo-99	0.203	2.74 days	Not in RESRAD Library
Tc-99m	0.215	6.01 hour	Not in RESRAD Library
Te-129	2.83	1.16 hour	Not in RESRAD Library

Enclosure (2)

Te-129m	4.31	33.6 days	Not in RESRAD Library

The contamination level on the soil before the sample was taken was 750 corrected counts per minute (ccpm), that is 750 counts above background as measured with a beta-gamma pancake frisker (DT-304 Geiger-Mueller probe or equivalent with a 20 cm^2 probe face calibrated to read 100 ccpm with a 450 pCi Tc-99 source measured within ½" of the surface).

Using RESRAD and EPA PAG Manual Method for Radionuclides not in RESRAD

Inputs to RESRAD Calculation

- Suburban Resident Scenario was assumed.
  - o Milk, meat, aquatic, and drinking water pathways are not considered
  - o Intake of home grown plant foods is assumed to be 10%
- Depth of contamination in soil is assumed to be in the top 1 centimeter
- Indoor time was assumed to be 75%; Outdoor time was assumed to be 25% (default)
- All other parameters were RESRAD defaults

Output of RESRAD Calculation

Using the above inputs and soil radioactivity concentrations for the radionuclides available in RESRAD, the doses at time T=0 years are listed below for each radionuclide and summed.

Cs-134:	6.84 mrem
Cs-137:	3.24 mrem
Sr-90:	0.00058 mrem
Total Dose=	10.08 mrem

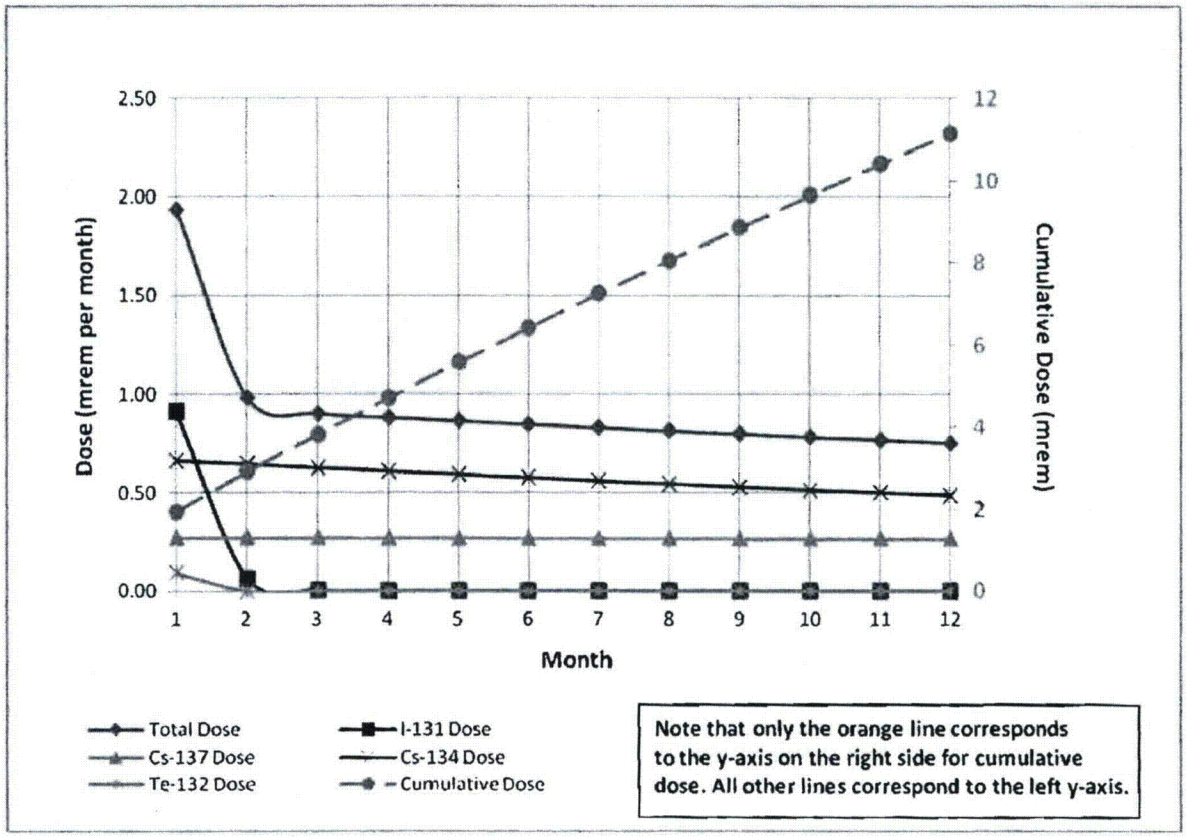
To account for I-131, I-132, and Te-132, Table 7-2 from the 1992 EPA Manual of Protective Action Guides and Protective Actions for Nuclear Incidents was used to estimate the first year doses from these radionuclides. (Note: The dose for I-132 is already included in the dose for Te-132 per the EPA manual.)

Enclosure (2)

Radionuclide	pCi/20cm^2	pCi/m^2	mrem/pCi/m^2	Dose (mrem)
I-131	1502	7.51E+05	1.30E-06	0.9763
Te-132	56.6	2.83E+04	3.30E-06	0.0934

Note: Cs-134 and Cs-137 are not included in the above table as they are calculated using RESRAD.

First Year Dose = 10.08 mrem + 0.9763 mrem +0.0934 mrem = 11.15 mrem. The dose progression per month is shown below. (Sr-90 is not shown due to the low first year contribution.)



The time weighted average forecasted Pasquill Categories were used for the dispersion calculation to derive the distances from the Fukushima Plant for 100 mrem, 500 mrem, 1000 mrem, and 2000 mrem first year doses. The time weighted average Pasquill Category was derived from the times that the plumes were present over Yokosuka. Based on air sampling the plumes prior to the above soil sample being taken were:

- 0600 JST March 15, 2011 to 0900 JST March 16, 2011 (27 hours)

- 0935 to 2200 JST March 21, 2011 (12.4 hours)
- 1300 JST March 22, 2011 to 0500 JST March 23, 2011 (16 hours)

For these time periods the estimated time weighted average Pasquill Categories were:

Pasquill Category	Percent of Time During Plume
B	8.9%
C	33.9%
D	44.6%
E	8.9%
F	3.6%

In the absence of actual meteorological data this data is considered the best representation of the conditions during the event.

Summary of Evaluation using Forecasted Pasquill Categories at the Fukushima Plant

Dose in First Year	Estimated Distance from Fukushima Daiichi Plant Based on a Representative Tsukuba Soil Sample		Estimated Direct Frisk on Soil Based on Direct Frisk of 750 ccpm at Tsukuba
	Statute Miles	Kilometers	ccpm
100 mrem	14.7	23.7	6,750
500 mrem	4.4	7.1	33,600
1000 mrem	2.8	4.5	67,275
2000 mrem	1.8	2.9	134,550

Enclosure (2)

Example Calculation using Pasquill Category B

Evaluation for 2000 mrem Distance

First year dose of 11.15 mrem is 179.4 times less than 2000 mrem.

Thus, the contamination level at which the 2000 mrem dose for the first year will be exceeded is 179.4 x 750 ccpm = 134,550 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Tsukuba from Fukushima Reactors is 110 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ =1.39E+08 m^2

Dispersion factor at new distance is (1.39E08)/(179.4) = 7.75E+05 m^2

Distance at which this new dispersion factor is located is approximately 4.5 statute miles.

This is equal to 7.3 kilometers.

The estimated distances for all Pasquill Categories for 2000 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 110 statute miles	Factor of 1/179.4	Estimated Distance (statute miles)
A	3.19E+08	1.78E+06	4.5
B	1.39E+08	7.75E+05	4.5
C	1.06E+07	5.89E+04	1.9
D	2.13E+06	1.19E+04	1.5
E	2.41E+05	1.34E+03	0.6
F	8.57E+04	4.78E+02	0.6

Evaluation for 1000 mrem Distance

First year dose of 11.15 mrem is 89.7 times less than 1000 mrem.

Thus, the contamination level at which the 1000 mrem dose for the first year will be exceeded is 89.7 x 750 ccpm = 67,275 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Tsukuba from Fukushima Reactors is 110 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ =1.39E+08 m^2

Dispersion factor at new distance is (1.39E+08)/(89.7) = 1.55E+06 m^2

Distance at which this new dispersion factor is located is approximately 7.1 statute miles.

This is equal to 11.4 kilometers.

The estimated distances for all Pasquill Categories for 1000 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 110 statute miles	Factor of 1/89.7	Estimated Distance (statute miles)
A	3.19E+08	3.55E+06	6.7
B	1.39E+08	1.55E+06	6.7
C	1.06E+07	1.18E+05	3.0
D	2.13E+06	2.37E+04	2.4
E	2.41E+05	2.69E+03	1.0
F	8.57E+04	9.55E+02	1.0

Evaluation for 500 mrem Distance

The first year dose of 11.15 mrem is 44.8 times less than 500 mrem.

Thus, the contamination level at which the 500 mrem dose for the first year will be exceeded is 44.8 x 750 ccpm = 33,600 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Tsukuba from Fukushima Reactors is 110 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ = 1.39E+08 m^2

Dispersion factor at new distance is (1.39E+08)/(44.8) = 3.38E+06 m^2

Distance at which this new dispersion factor is located is approximately 10.0 statute miles

This is equal to 16.2 kilometers.

Enclosure (2)

The estimated distances for all Pasquill Categories for 500 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 110 statute mile	Factor of 1/44.8	Estimated Distance (statute miles)
A	3.19E+08	7.11E+06	10.0
B	1.39E+08	3.10E+06	10.0
C	1.06E+07	2.36E+05	4.6
D	2.13E+06	4.75E+04	4.0
E	2.41E+05	5.38E+03	1.5
F	8.57E+04	1.91E+03	1.5

Evaluation for the 100 mrem Distance

The first year dose of 11.15 mrem is 9 times less than 100 mrem.

Thus, the contamination level at which the 100 mrem dose for the first year will be exceeded is 9 x 750 ccpm = 6750 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Tsukuba from Fukushima Reactors is 110 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ = 1.39E+08 m^2

Dispersion factor at new distance is (1.39E+08)/(9) = 1.55E+07 m^2

Distance at which this new dispersion factor is located is approximately 28.4 statute miles.

This is equal to 43.2 kilometers.

The estimated distances for all Pasquill Categories for 100 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 110 statute mile	Factor of 1/9	Estimated Distance (statute miles)
A	3.19E+08	3.54E+07	26.8
B	1.39E+08	1.55E+07	26.8
C	1.06E+07	1.17E+06	15.3
D	2.13E+06	2.37E+05	14.4
E	2.41E+05	2.68E+04	5.3
F	8.57E+04	9.02E+03	5.3

Enclosure (2)

Calculation based on Forecasted Pasquill Categories:

For the time periods that plumes existed the estimated time weighted average Pasquill Categories were:

Pasquill Category	Percent of Time During Plume
B	8.9%
C	33.9%
D	44.6%
E	8.9%
F	3.6%

The calculation for each distance is performed using the following equation:

Distance for Time Weighted Average Pasquill Category = (0.089 x Pasquill B distance) + (0.339 x Pasquill C Distance) + (0.446 x Pasquill D Distance) + (0.089 x Pasquill E Distance) + (0.036 x Pasquill F distance)

The above calculation was performed for the 100 mrem, 500 mrem, 1000 mrem, and 2000 mrem dose distance.

The results are as follows:

First Year Dose	Estimated Distance from Fukushima Daiichi Plant	
	Miles	Kilometers
100 mrem	14.7	23.7
500 mrem	4.4	7.1
1000 mrem	2.8	4.5
2000 mrem	1.8	2.9

Enclosure (2)

6. **SUBSISTENCE FARMER SCENARIO: Evaluation of TSUKUBA Habitability for 2000 mrem, 1000 mrem, 500 mrem, and 100 mrem doses in the First Year**

Source of Radiological Data:

The following radionuclide distribution is based on gamma spectrometry of a representative soil sample taken at Tsukuba on 3/27/2011. Throughout this event, numerous surface contamination measurements were obtained in the Tsukuba area. The contamination level identified on this soil sample is representative of the broader contamination measurement database. Other gamma spectrometry results are similar to the gamma spectrometry results in this sample.

The soil sample was counted at the U.S. Naval Base in Yokosuka, Japan. The counting lab was set up on Barge 95, in a room that had been decontaminated after the initial event. The counting system consisted of a Canberra 35% High Purity Germanium Detector (Model GC3519, s/n 7252), a Canberra Inspector 2000 portable digital signal processor (s/n 09042699), and an HP Compaq 6710b running Canberra Genie 2000 version 3.2.1 Gamma Acquisition and Analysis software. The radionuclide library used in the calculations extracts isotopic half-lives from the standard KAPL library, which references the 9th edition of The Table of Isotopes, the 16th edition of the Chart of the Nuclides, and Radioactive Decay Data Tables from David C. Kocher.

Radionuclide	Concentration (pCi/g)	Half-Life	Comment
I-131	53.1	8.02 days	Not in RESRAD Library - See Below
I-132	1.64	2.28 hours	Not in RESRAD Library - See Below
Te-132	2.00	3.2 days	Not in RESRAD Library - See Below
Cs-134	6.53	2.065 yrs	
Cs-136	0.707	13.16 days	Not in RESRAD Library
Cs-137	7.31	30.07 yrs	
Sr-90	0.0731	28.78 yrs	Assumed in 1:100 ratio to Cs-137
Mo-99	0.203	2.74 days	Not in RESRAD Library
Tc-99m	0.215	6.01 hour	Not in RESRAD Library
Te-129	2.83	1.16 hour	Not in RESRAD Library

Te-129m	4.31	33.6 days	Not in RESRAD Library

The contamination level on the soil before the sample was taken was 750 corrected counts per minute (ccpm), that is 750 counts above background as measured with a beta-gamma pancake frisker (DT-304 Geiger-Mueller probe or equivalent with a 20 cm^2 probe face calibrated to read 100 ccpm with a 450 pCi Tc-99 source measured within ½" of the surface).

Using RESRAD and EPA PAG Manual Method for Radionuclides not in RESRAD

Inputs to RESRAD Calculation

- Subsistence Farmer Scenario was assumed. All pathways except radon were assumed active.
- For ingestion pathway, dietary data, aquatic food, plant food, meat, and milk contaminated fractions are 1.0
- Depth of contamination in soil is assumed to be in the top 1 centimeter
- Outdoors on-site time was changed from 25% to 50% and off-site time was set to zero because RESRAD assumes zero exposure for time spent off-site and some exposure would still occur if a person were to leave the residence due to ground contamination elsewhere. The default of 50% time spent indoors was not changed.
- All other parameters were RESRAD defaults

Output of RESRAD Calculation

Using the above inputs and soil radioactivity concentrations for the radionuclides available in RESRAD, the doses at time T=0 years are listed below for each radionuclide and summed.

Cs-134:	7.48 mrem
Cs-137:	3.58 mrem
Sr-90:	0.0053 mrem
Total Dose=	11.07 mrem

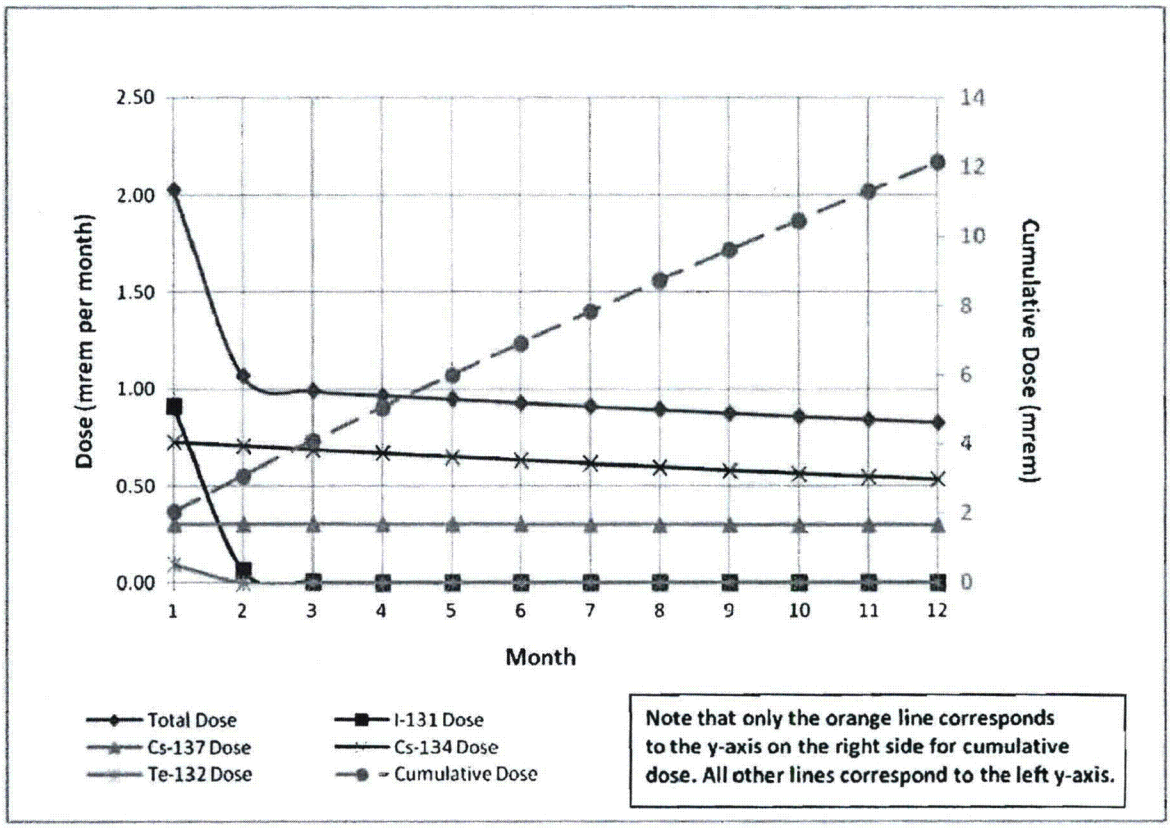
To account for I-131, I-132, and Te-132, Table 7-2 from the 1992 EPA Manual of Protective Action Guides and Protective Actions for Nuclear Incidents was used to estimate the first year doses from these radionuclides. (Note: The dose for I-132 is already included in the dose for Te-132 per the EPA manual.)

Radionuclide	$pCi/20cm^2$	pCi/m^2	$mrem/pCi/m^2$	Dose (mrem)

I-131	1502	7.51E+05	1.30E-06	0.9763
Te-132	56.6	2.83E+04	3.30E-06	0.0934

Note: Cs-134 and Cs-137 are not included in the above table as they are calculated using RESRAD.

First Year Dose = 11.07 mrem + 0.9763 mrem +0.0934 mrem = 12.14 mrem. The dose progression per month is shown below. (Sr-90 is not shown due to the low first year contribution.)



The time weighted average NARAC Forecasted Pasquill Categories were used for the dispersion calculation to derive the distances from the Fukushima Plant for 100 mrem, 500 mrem, 1000 mrem, and 2000 mrem first year doses. The time weighted average Pasquill Category was derived from the times that the plumes were present over Yokosuka. Based on air sampling the plumes prior to the above soil sample being taken were:

- 0600 JST March 15, 2011 to 0900 JST March 16, 2011 (27 hours)
- 0935 to 2200 JST March 21, 2011 (12.4 hours)
- 1300 JST March 22, 2011 to 0500 JST March 23, 2011 (16 hours)

Enclosure (2)

For these time periods the estimated time weighted average Pasquill Categories were:

Pasquill Category	Percent of Time During Plume
B	8.9%
C	33.9%
D	44.6%
E	8.9%
F	3.6%

In the absence of actual meteorological data this data is considered the best representation of the conditions during the event.

Summary of Evaluation using Forecasted Pasquill Categories at the Fukushima Plant

Dose in First Year	Estimated Distance from Fukushima Daiichi Plant Based on a Representative Tsukuba Soil Sample		Estimated Direct Frisk on Soil Based on Direct Frisk of 750 ccpm at Tsukuba
	Statute Miles	Kilometers	ccpm
100 mrem	15.7	25.3	6,150
500 mrem	4.7	7.6	30,750
1000 mrem	3.0	4.8	61,500
2000 mrem	1.9	3.1	123,750

Enclosure (2)

Example Calculation using Pasquill Category B

Evaluation for 2000 mrem Distance

First year dose of 12.14 mrem is 165 times less than 2000 mrem.

Thus, the contamination level at which the 2000 mrem dose for the first year will be exceeded is 165 x 750 ccpm = 123,750 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Tsukuba from Fukushima Reactors is 110 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ =1.39E+08 m^2

Dispersion factor at new distance is (1.39E+08)/(165) = 8.42E+05 m^2

Distance at which this new dispersion factor is located is approximately 4.7 statute miles.

This is equal to 7.6 kilometers.

The estimated distances for all Pasquill Categories for 2000 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 110 statute miles	Factor of 1/165	Estimated Distance (statute miles)
A	3.19E+08	1.93E+06	4.7
B	1.39E+08	8.43E+05	4.7
C	1.06E+07	6.40E+04	2.0
D	2.13E+06	1.29E+04	1.6
E	2.41E+05	1.46E+03	0.7
F	8.57E+04	5.19E+02	0.7

Evaluation for 1000 mrem Distance

First year dose of 12.14 mrem is 82 times less than 1000 mrem.

Thus, the contamination level at which the 1000 mrem dose for the first year will be exceeded is 82 x 750 ccpm = 61,500 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Enclosure (2)

Distance of Tsukuba from Fukushima Reactors is 110 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ =1.39E+08 m^2

Dispersion factor at new distance is (1.39E+08)/(82) = 1.70E+06 m^2

Distance at which this new dispersion factor is located is approximately 7.0 statute miles.

This is equal to 11.3 kilometers.

The estimated distances for all Pasquill Categories for 1000 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 110 statute miles	Factor of 1/82.4	Estimated Distance (statute miles)
A	3.19E+08	3.87E+06	7.0
B	1.39E+08	1.69E+06	7.0
C	1.06E+07	1.28E+05	3.1
D	2.13E+06	2.59E+04	2.6
E	2.41E+05	2.93E+03	1.0
F	8.57E+04	1.04E+03	1.0

Evaluation for 500 mrem Distance

The first year dose of 12.14 mrem is 41 times less than 500 mrem.

Thus, the contamination level at which the 500 mrem dose for the first year will be exceeded is 41 x 750 ccpm = 30,750 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Tsukuba from Fukushima Reactors is 110 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ = 1.39E+08 m^2

Dispersion factor at new distance is (1.39E+08)/(41) = 3.39E+06 m^2

Distance at which this new dispersion factor is located is approximately 10.6 statute miles

This is equal to 17 kilometers.

The estimated distances for all Pasquill Categories for 500 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 110 statute mile	Factor of 1/41.2	Estimated Distance (statute miles)
A	3.19E+08	7.74E+06	10.6
B	1.39E+08	3.38E+06	10.6
C	1.06E+07	2.56E+05	4.9
D	2.13E+06	5.17E+04	4.3
E	2.41E+05	5.85E+03	1.6
F	8.57E+04	2.08E+03	1.6

Evaluation for the 100 mrem Distance

The first year dose of 12.14 mrem is 8.2 times less than 100 mrem.

Thus, the contamination level at which the 100 mrem dose for the first year will be exceeded is 8.2 x 750 ccpm = 6150 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Tsukuba from Fukushima Reactors is 110 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ = 1.39E+08 m^2

Dispersion factor at new distance is (1.39E+08)/(8.2) = 1.70E+07 m^2

Distance at which this new dispersion factor is located is approximately 28.3 statute miles.

This is equal to 45.5 kilometers.

Enclosure (2)

The estimated distances for all Pasquill Categories for 100 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 110 statute mile	Factor of 1/8.2	Estimated Distance (nautical miles)
A	3.19E+08	3.89E+07	28.3
B	1.39E+08	1.70E+07	28.3
C	1.06E+07	1.29E+06	16.4
D	2.13E+06	2.60E+05	15.5
E	2.41E+05	2.94E+04	5.7
F	8.57E+04	1.05E+04	5.7

Calculation based on Forecasted Pasquill Categories:

For the time periods that plumes existed the estimated time weighted average Pasquill Categories were:

Pasquill Category	Percent of Time During Plume
B	8.9%
C	33.9%
D	44.6%
E	8.9%
F	3.6%

The calculation for each distance is performed using the following equation:

Distance for Time Weighted Average Pasquill Category = (0.089 x Pasquill B distance) + (0.339 x Pasquill C Distance) + (0.446 x Pasquill D Distance) + (0.089 x Pasquill E Distance) + (0.036 x Pasquill F distance)

Enclosure (2)

The above calculation was performed for the 100 mrem, 500 mrem, 1000 mrem, and 2000 mrem dose distance.

The results are as follows:

First Year Dose	Estimated Distance from Fukushima Daiichi Plant	
	Miles	Kilometers
100 mrem	15.7	25.3
500 mrem	4.7	7.6
1000 mrem	3.0	4.8
2000 mrem	1.9	3.1

7. **SUBURBAN RESIDENT SCENARIO: Evaluation of ATSUGI Habitability for 2000 mrem, 1000 mrem, 500 mrem, and 100 mrem doses in the First Year**

Source of Radiological Data:

The following radionuclide distribution is based on gamma spectrometry of a representative soil sample taken at Atsugi on 3/28/2011. Throughout this event, numerous surface contamination measurements were obtained in the Atsugi area. The contamination level identified on this soil sample is representative of the broader contamination measurement database. Other gamma spectrometry results are similar to the gamma spectrometry results in this sample.

The soil sample was counted at the U.S. Naval Base in Yokosuka, Japan. The counting lab was set up on Barge 95, in a room that had been decontaminated after the initial event. The counting system consisted of a Canberra 35% High Purity Germanium Detector (Model GC3519, s/n 7252), a Canberra Inspector 2000 portable digital signal processor (s/n 09042699), and an HP Compaq 6710b running Canberra Genie 2000 version 3.2.1 Gamma Acquisition and Analysis software. The radionuclide library used in the calculations extracts isotopic half-lives from the standard KAPL library, which references the 9th edition of The Table of Isotopes, the 16th edition of the Chart of the Nuclides, and Radioactive Decay Data Tables from David C. Kocher.

Radionuclide	Concentration (pCi/g)	Half-Life	Comment
I-131	30.96	8.02 days	Not in RESRAD Library - See Below
I-132	3.012	2.28 hours	Not in RESRAD Library - See Below
Te-132	3.939	3.2 days	Not in RESRAD Library - See Below
Cs-134	7.668	2.065 yrs	
Cs-136	0.9030	13.16 days	Not in RESRAD Library
Cs-137	9.175	30.07 yrs	
Sr-90	0.09175	28.78 yrs	Assumed in 1:100 ratio to Cs-137
Mo-99	3.513	2.74 days	Not in RESRAD Library
Tc-99m	3.513	6.01 hour	Not in RESRAD Library
Te-129	4.00	1.16 hour	Not in RESRAD Library

Enclosure (2)

Te-129m	8.12	33.6 days	Not in RESRAD Library

The contamination level on the soil before the sample was taken was 400 corrected counts per minute (ccpm), that is 400 counts above background as measured with a beta-gamma pancake frisker (DT-304 Geiger-Mueller probe or equivalent with a 20 cm^2 probe face calibrated to read 100 ccpm with a 450 pCi Tc-99 source measured within ½" of the surface).

A. Using RESRAD and EPA PAG Manual Method for Radionuclides not in RESRAD

Inputs to RESRAD Calculation

- Suburban Resident Scenario was assumed.
  - o Milk, meat, aquatic, and drinking water pathways are not considered
  - o Intake of home grown plant foods is assumed to be 10%
- Depth of contamination in soil is assumed to be in the top 1 centimeter
- Indoor time was assumed to be 75%; Outdoor time was assumed to be 25% (default)
- All other parameters were RESRAD defaults

Output of RESRAD Calculation

Using the above inputs and soil radioactivity concentrations for the radionuclides available in RESRAD, the doses at time T=0 years are listed below for each radionuclide and summed.

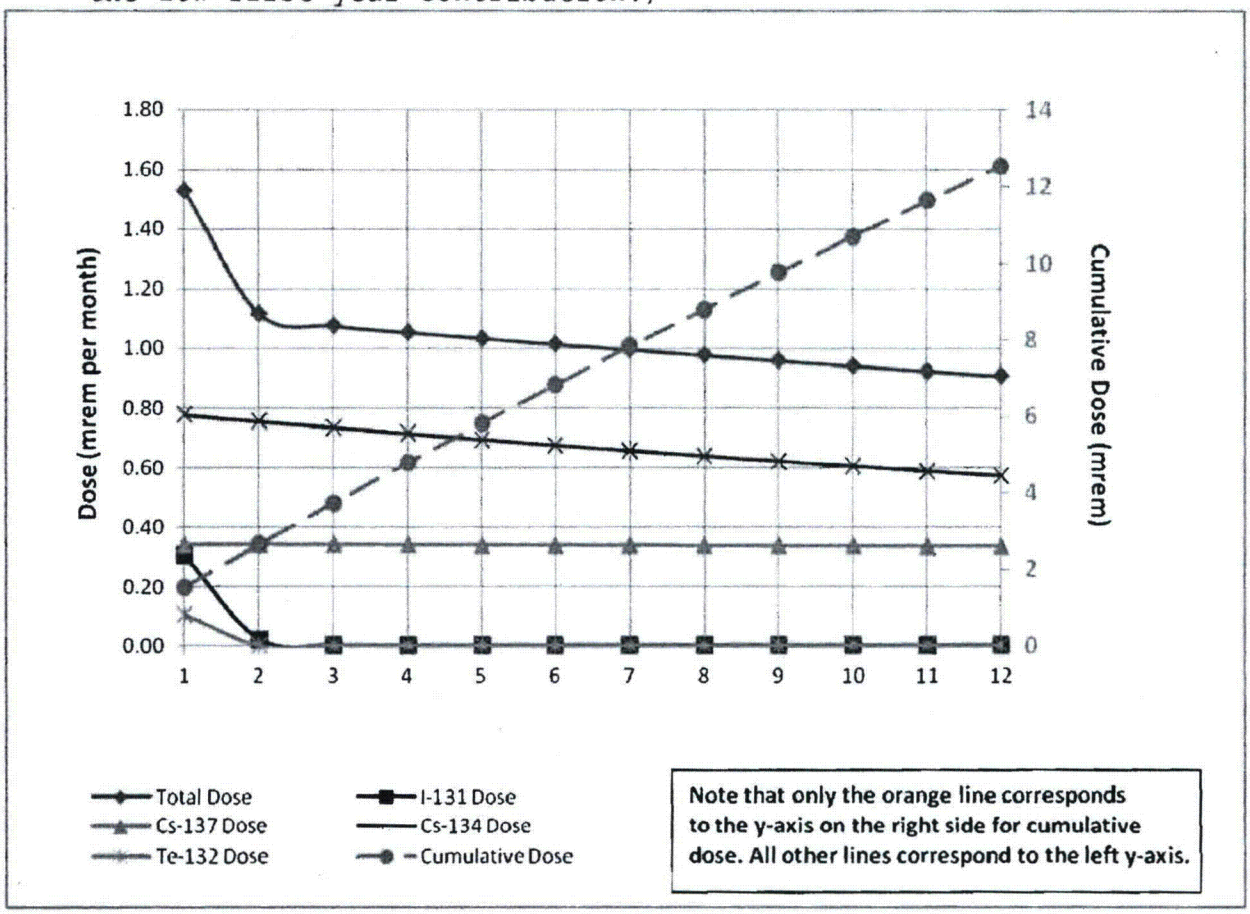
Cs-134:	8.03 mrem
Cs-137:	4.07 mrem
Sr-90:	0.00073 mrem
Total Dose=	12.10 mrem

To account for I-131, I-132, and Te-132, Table 7-2 from the 1992 EPA Protective Action Guide (PAG) Manual was used to estimate the first year doses from these radionuclides. (Note: the dose for I-132 is already included in the dose for Te-132 per the PAG manual.)

Radionuclide	pCi/20cm^2	pCi/m^2	mrem/pCi/m^2	Dose (mrem)
I-131	506	2.53E+05	1.30E-06	0.3289
Te-132	64.2	3.21E+04	3.30E-06	0.1059

Note: Cs-134 and Cs-137 are not included in the above table as they are calculated using RESRAD.

First Year Dose = 12.10 mrem + 0.3289 mrem + 0.1059 mrem = 12.53 mrem. The dose progression per month is shown below. (Sr-90 is not shown due to the low first year contribution.)



The time weighted average NARAC Forecasted Pasquill Categories were used for the dispersion calculation to derive the distances from the Fukushima Plant for 100 mrem, 500 mrem, 1000 mrem, and 2000 mrem first year doses. The time weighted average Pasquill Category was derived from the times that the plumes were present over Yokosuka. Based on air sampling the plumes prior to the above soil sample being taken were:

Enclosure (2)

- 0600 JST March 15, 2011 to 0900 JST March 16, 2011 (27 hours)
- 0935 to 2200 JST March 21, 2011 (12.4 hours)
- 1300 JST March 22, 2011 to 0500 JST March 23, 2011 (16 hours)

For these time periods the estimated time weighted average Pasquill Categories were:

Pasquill Category	Percent of Time During Plume
B	8.9%
C	33.9%
D	44.6%
E	8.9%
F	3.6%

In the absence of actual meteorological data this data is considered the best representation of the conditions during the event.

Summary of Evaluation using Forecasted Pasquill Categories at the Fukushima Plant

Dose in First Year	Estimated Distance from Fukushima Daiichi Plant Based on a Representative Atsugi Soil Sample		Estimated Direct Frisk on Soil Based on Direct Frisk of 400 ccpm at Atsugi
	Statute Miles	Kilometers	ccpm
100 mrem	22.3	35.9	3,200
500 mrem	6.4	10.2	15,960
1000 mrem	3.9	6.3	31,920
2000 mrem	2.5	4.0	63,840

Enclosure (2)

Example Calculation using Pasquill Category B

Evaluation for 2000 mrem Distance

First year dose of 12.53 mrem is 159.6 times less than 2000 mrem.

Thus, the contamination level at which the 2000 mrem dose for the first year will be exceeded is 159.6 x 400 ccpm = 63,840 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Atsugi from Fukushima Reactors is 158 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ =2.41E+08 m^2

Dispersion factor at new distance is (2.41E+08)/(159.6) = 1.51E+06 m^2

Distance at which this new dispersion factor is located is approximately 6.6 statute miles.

This is equal to 10.6 kilometers.

The estimated distances for all Pasquill Categories for 2000 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 158 statute miles	Factor of 1/159.6	Estimated Distance (statute miles)
A	5.53E+08	3.47E+06	6.6
B	2.41E+08	1.51E+06	6.6
C	1.47E+07	9.63E+04	2.6
D	3.09E+06	1.93E+04	2.1
E	2.93E+05	1.84E+03	0.8
F	1.04E+05	6.52E+02	0.8

Evaluation for 1000 mrem Distance

First year dose of 12.53 mrem is 79.8 times less than 1000 mrem.

Thus, the contamination level at which the 1000 mrem dose for the first year will be exceeded is 79.8 x 400 ccpm = 31,920 ccpm

Enclosure (2)

The distance where this will be exceeded based on Category B dispersion factors:

Distance of Atsugi from Fukushima Reactors is 158 statute miles. The dispersion factor at this distance: $\sigma_y \sigma_z$ =2.41E+08 m^2

Dispersion factor at new distance is (2.41E+08)/(79.8) = 3.03E+06 m^2

Distance at which this new dispersion factor is located is approximately 9.9 statute miles.

This is equal to 15.9 kilometers.

The estimated distances for all Pasquill Categories for 1000 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 158 statute miles	Factor of 1/79.8	Estimated Distance (statute miles)
A	5.53E+08	6.93E+06	9.9
B	2.41E+08	3.03E+06	9.9
C	1.47E+07	1.93E+05	4.1
D	3.09E+06	3.87E+04	3.4
E	2.93E+05	3.67E+03	1.2
F	1.04E+05	1.31E+03	1.2

Evaluation for 500 mrem Distance

The first year dose of 12.53 mrem is 39.9 times less than 500 mrem.

Thus, the contamination level at which the 500 mrem dose for the first year will be exceeded is 39.9 x 400 ccpm = 15,960 ccpm

The distance where this will be exceeded based on Category B dispersion factors:

Distance of Atsugi from Fukushima Reactors is 158 statute miles $\sigma_y \sigma_z$ = 2.41E+08 m^2

Dispersion factor at new distance is (2.41E+08)/(39.9) = 6.05E+06 m^2

Distance at which this new dispersion factor is located is approximately 15.0 statute miles

This is equal to 24.1 kilometers.

Enclosure (2)

The estimated distances for all Pasquill Categories for 500 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 158 statute mile	Factor of 1/39.9	Estimated Distance (statute miles)
A	5.53E+08	1.39E+07	15.0
B	2.41E+08	6.05E+06	15.0
C	1.47E+07	3.85E+05	6.5
D	3.09E+06	7.74E+04	5.8
E	2.93E+05	7.34E+03	1.8
F	1.04E+05	2.61E+03	1.8

Evaluation for the 100 mrem Distance

The first year dose of 12.53 mrem is 8 times less than 100 mrem.

Thus, the contamination level at which the 100 mrem dose for the first year will be exceeded is 8 x 400 ccpm = 3200 ccpm

The distance where this will be exceeded based on Category B dispersion factors:

Distance of Atsugi from Fukushima Reactors is 158 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ = 2.41E+08 m^2

Dispersion factor at new distance is (2.41E+08)/(8) = 3.02E+07 m^2

Distance at which this new dispersion factor is located is approximately 40.9 statute miles.

This is equal to 65.9 kilometers.

Enclosure (2)

The estimated distances for all Pasquill Categories for 100 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 158 statute mile	Factor of 1/8	Estimated Distance (statute miles)
A	5.53E+08	6.92E+07	40.9
B	2.41E+08	3.02E+07	40.9
C	1.47E+07	1.92E+06	23.1
D	3.09E+06	3.86E+05	22.2
E	2.93E+05	3.66E+04	7.2
F	1.04E+05	1.30E+04	7.2

Calculation based on Forecasted Pasquill Categories:

For the time periods that plumes existed the estimated time weighted average Pasquill Categories were:

Pasquill Category	Percent of Time During Plume
B	8.9%
C	33.9%
D	44.6%
E	8.9%
F	3.6%

The calculation for each distance is performed using the following equation:

Distance for Time Weighted Average Pasquill Category = (0.089 x Pasquill B distance) + (0.339 x Pasquill C Distance) + (0.446 x Pasquill D Distance) + (0.089 x Pasquill E Distance) + (0.036 x Pasquill F distance)

Enclosure (2)

The above calculation was performed for the 100 mrem, 500 mrem, 1000 mrem, and 2000 mrem dose distance.

The results are as follows:

First Year Dose	Distance from Fukushima Daiichi Plant	
	Miles	Kilometers
100 mrem	22.3	35.9
500 mrem	6.4	10.2
1000 mrem	3.9	6.3
2000 mrem	2.5	4.0

Enclosure (2)

8. **SUBSISTENCE FARMER SCENARIO: Evaluation of ATSUGI Habitability for 2000 mrem, 1000 mrem, 500 mrem, and 100 mrem doses in the First Year**

Source of Radiological Data:

The following radionuclide distribution is based on gamma spectrometry of a representative soil sample taken at Atsugi on 3/28/2011. Throughout this event, numerous surface contamination measurements were obtained in the Atsugi area. The contamination level identified on this soil sample is representative of the broader contamination measurement database. Other gamma spectrometry results are similar to the gamma spectrometry results in this sample.

The soil sample was counted at the U.S. Naval Base in Yokosuka, Japan. The counting lab was set up on Barge 95, in a room that had been decontaminated after the initial event. The counting system consisted of a Canberra 35% High Purity Germanium Detector (Model GC3519, s/n 7252), a Canberra Inspector 2000 portable digital signal processor (s/n 09042699), and an HP Compaq 6710b running Canberra Genie 2000 version 3.2.1 Gamma Acquisition and Analysis software. The radionuclide library used in the calculations extracts isotopic half-lives from the standard KAPL library, which references the 9th edition of The Table of Isotopes, the 16th edition of the Chart of the Nuclides, and Radioactive Decay Data Tables from David C. Kocher.

Radionuclide	Concentration (pCi/g)	Half-Life	Comment
I-131	30.96	8.02 days	Not in RESRAD Library - See Below
I-132	3.012	2.28 hours	Not in RESRAD Library - See Below
Te-132	3.939	3.2 days	Not in RESRAD Library - See Below
Cs-134	7.668	2.065 yrs	
Cs-136	0.9030	13.16 days	Not in RESRAD Library
Cs-137	9.175	30.07 years	
Sr-90	0.09175	28.78 yrs	Assumed in 1:100 ratio to Cs-137
Mo-99	3.513	2.74 days	Not in RESRAD Library
Tc-99m	3.513	6.01 hour	Not in RESRAD Library
Te-129	4.00	1.16 hour	Not in RESRAD

Enclosure (2)

			Library
Te-129m	8.12	33.6 days	Not in RESRAD Library

The contamination level on the soil before the sample was taken was 400 corrected counts per minute (ccpm), that is 400 counts above background as measured with a beta-gamma pancake frisker (DT-304 Geiger-Mueller probe or equivalent with a 20 cm^2 probe face calibrated to read 100 ccpm with a 450 pCi Tc-99 source measured within ½" of the surface).

B. Using RESRAD and EPA PAG Manual Method for Radionuclides not in RESRAD

Inputs to RESRAD Calculation

- Subsistence Farmer Scenario was assumed. All pathways except radon were assumed active.
- For ingestion pathway, dietary data, aquatic food, plant food, meat, and milk contaminated fractions are 1.0
- Depth of contamination in soil is assumed to be in the top 1 centimeter
- Outdoors on-site time was changed from 25% to 50% and off-site time was set to zero because RESRAD assumes zero exposure for time spent off-site and some exposure would still occur if a person were to leave the residence due to ground contamination elsewhere. The default of 50% time spent indoors was not changed.
- All other parameters were RESRAD defaults

Output of RESRAD Calculation

Using the above inputs and soil radioactivity concentrations for the radionuclides available in RESRAD, the doses at time T=0 years are listed below for each radionuclide and summed.

Cs-134:	8.79 mrem
Cs-137:	4.50 mrem
Sr-90:	0.0067 mrem
Total Dose=	13.297 mrem

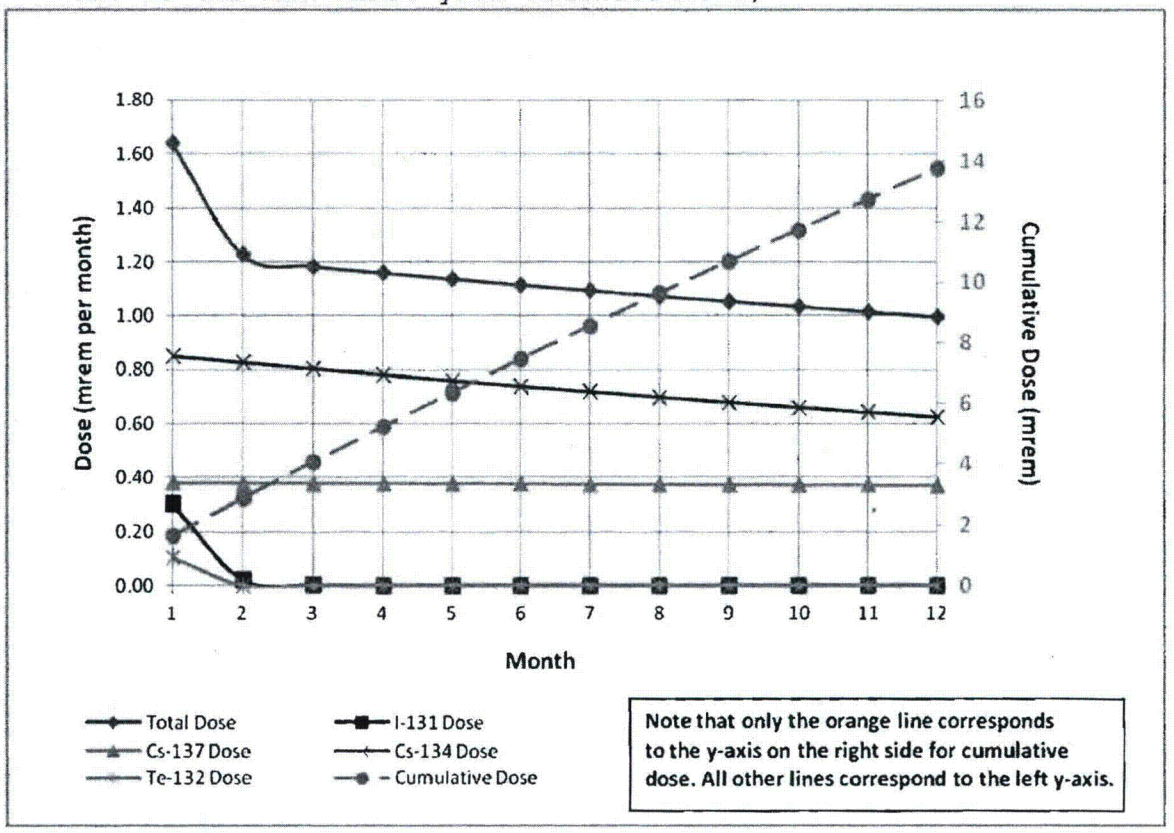
To account for I-131, I-132, and Te-132, Table 7-2 from the 1992 EPA Protective Action Guide (PAG) Manual was used to estimate the first year doses from these radionuclides. (Note: the dose for I-132 is already included in the dose for Te-132 per the PAG manual.)

Radionuclide	$pCi/20cm^2$	pCi/m^2	$mrem/pCi/m^2$	Dose (mrem)

I-131	506	2.53E+05	1.30E-06	0.3289
Te-132	64.2	3.21E+04	3.30E-06	0.1059

Note: Cs-134 and Cs-137are not included in the above table as they are calculated using RESRAD.

First Year Dose = 13.297 mrem + 0.3289 mrem + 0.1059 mrem = 13.73 mrem.
The dose progression per month is shown below. (Sr-90 is not shown due to the low first year contribution.)



The time weighted average NARAC Forecasted Pasquill Categories were used for the dispersion calculation to derive the distances from the Fukushima Plant for 100 mrem, 500 mrem, 1000 mrem, and 2000 mrem first year doses. The time weighted average Pasquill Category was derived from the times that the plumes were present over Yokosuka. Based on air sampling the plumes prior to the above soil sample being taken were:

- 0600 JST March 15, 2011 to 0900 JST March 16, 2011 (27 hours)
- 0935 to 2200 JST March 21, 2011 (12.4 hours)
- 1300 JST March 22, 2011 to 0500 JST March 23, 2011 (16 hours)

Enclosure (2)

For these time periods the estimated time weighted average Pasquill Categories were:

Pasquill Category	Percent of Time During Plume
B	8.9%
C	33.9%
D	44.6%
E	8.9%
F	3.6%

In the absence of actual meteorological data this data is considered the best representation of the conditions during the event.

Summary of Evaluation using Forecasted Pasquill Categories at the Fukushima Plant

Dose in First Year	Estimated Distance from Fukushima Daiichi Plant Based on a Representative Atsugi Soil Sample		Estimated Direct Frisk on Soil Based on Direct Frisk of 400 ccpm at Atsugi
	Statute Miles	Kilometers	ccpm
100 mrem	24.1	38.7	2,920
500 mrem	6.8	11.0	14,560
1000 mrem	4.2	6.7	29,200
2000 mrem	2.7	4.3	58,400

Enclosure (2)

Example Calcuation using Pasquill Category B

Evaluation for 2000 mrem Distance

First year dose of 13.73 mrem is 146 times less than 2000 mrem.

Thus, the contamination level at which the 2000 mrem dose for the first year will be exceeded is 146 x 400 ccpm = 58,400 ccpm

The distance where this will be exceeded based on Pasquill Category B dispersion factors:

Distance of Atsugi from Fukushima Reactors is 158 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ =2.41E+08 m^2

Dispersion factor at new distance is (2.41E+08)/(146) = 1.65E+06 m^2

Distance at which this new dispersion factor is located is approximately 7.0 statute miles.

This is equal to 11.2 kilometers.

The estimated distances for all Pasquill Categories for 2000 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 158 statute miles	Factor of 1/146	Estimated Distance (statute miles)
A	5.53E+08	3.79E+06	7.0
B	2.41E+08	1.65E+06	7.0
C	1.47E+07	1.05E+05	2.8
D	3.09E+06	2.11E+04	2.2
E	2.93E+05	2.01E+03	0.8
F	1.04E+05	7.13E+02	0.8

Evaluation for 1000 mrem Distance

First year dose of 13.73 mrem is 73 times less than 1000 mrem.

Thus, the contamination level at which the 1000 mrem dose for the first year will be exceeded is 73 x 400 ccpm = 29,200 ccpm

Enclosure (2)

The distance where this will be exceeded based on Category B dispersion factors:

Distance of Atsugi from Fukushima Reactors is 158 statute miles. The dispersion factor at this distance: $\sigma_y \sigma_z$ =2.41E+08 m^2

Dispersion factor at new distance is (2.41E+08)/(73) = 3.32E+06 m^2

Distance at which this new dispersion factor is located is approximately 10.4 statute miles.

This is equal to 16.8 kilometers.

The estimated distances for all Pasquill Categories for 1000 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 158 statute miles	Factor of 1/72.8	Estimated Distance (statute miles)
A	5.53E+08	7.60E+06	10.4
B	2.41E+08	3.32E+06	10.4
C	1.47E+07	2.11E+05	4.3
D	3.09E+06	4.24E+04	3.7
E	2.93E+05	4.02E+03	1.2
F	1.04E+05	1.43E+03	1.2

Evaluation for 500 mrem Distance

The first year dose of 13.73 mrem is 36.4 times less than 500 mrem.

Thus, the contamination level at which the 500 mrem dose for the first year will be exceeded is 36.4 x 400 ccpm = 14,560 ccpm

The distance where this will be exceeded based on Category B dispersion factors:

Distance of Atsugi from Fukushima Reactors is 158 statute miles $\sigma_y \sigma_z$ = 2.41E+08 m^2

Dispersion factor at new distance is (2.41E+08)/(36.4) = 6.63E+06 m^2

Distance at which this new dispersion factor is located is approximately 15.9 statute miles

This is equal to 25.5 kilometers.

Enclosure (2)

The estimated distances for all Pasquill Categories for 500 mrem are listed below:

Pasquill Category	$\sigma_y \sigma_z$ (m^2) at 158 statute mile	Factor of 1/36.4	Estimated Distance (statute miles)
A	5.53E+08	1.52E+07	15.9
B	2.41E+08	6.63E+06	15.9
C	1.47E+07	4.22E+05	7
D	3.09E+06	8.48E+04	6.2
E	2.93E+05	8.05E+03	2
F	1.04E+05	2.86E+03	2

Evaluation for the 100 mrem Distance

The first year dose of 13.73 mrem is 7.3 times less than 100 mrem.

Thus, the contamination level at which the 100 mrem dose for the first year will be exceeded is 7.3 x 400 ccpm = 2920 ccpm

The distance where this will be exceeded based on Category B dispersion factors:

Distance of Atsugi from Fukushima Reactors is 158 statute miles. The dispersion factor for this distance: $\sigma_y \sigma_z$ = 2.41E+08 m^2

Dispersion factor at new distance is (2.41E+08)/(7.3) = 3.31E+07 m^2

Distance at which this new dispersion factor is located is approximately 43.4 statute miles.

This is equal to 69.8 kilometers.

Enclosure (2)

The estimated distances for all Pasquill Categories for 100 mrem are listed below:

Pasquill Category	σ_y σ_z (m^2) at 158 statute mile	Factor of 1/7.3	Estimated Distance (statute miles)
A	5.53E+08	7.58E+07	43.4
B	2.41E+08	3.31E+07	43.4
C	1.47E+07	2.10E+06	25
D	3.09E+06	4.23E+05	24
E	2.93E+05	4.01E+04	7.9
F	1.04E+05	1.43E+04	7.9

Calculation based on Forecasted Pasquill Categories:

For the time periods that plumes existed the estimated time weighted average Pasquill Categories were:

Pasquill Category	Percent of Time During Plume
B	8.9%
C	33.9%
D	44.6%
E	8.9%
F	3.6%

The calculation for each distance is performed using the following equation:

Distance for Time Weighted Average Pasquill Category = (0.089 x Pasquill B distance) + (0.339 x Pasquill C Distance) + (0.446 x Pasquill D Distance) + (0.089 x Pasquill E Distance) + (0.036 x Pasquill F distance)

The above calculation was performed for the 100 mrem, 500 mrem, 1000 mrem, and 2000 mrem dose distance.

The results are as follows:

First Year Dose	Estimated Distance from Fukushima Daiichi Plant	
	Miles	Kilometers
100 mrem	24.1	38.7
500 mrem	6.8	11.0
1000 mrem	4.2	6.7
2000 mrem	2.7	4.3

Enclosure (2)

9. **SUBURBAN RESIDENT SCENARIO: Evaluation of J-VILLAGE distance and dose rate using methods herein**

A. Summary of Evaluation:

Two soil samples were taken at J-Village which is located 12.3 miles (19.8 km) south of the Fukushima Daiichi Plant. The radioactivity analysis of soil samples was utilized to calculate the first year dose at the J-Village using the RESRAD suburban resident scenario. For the purposes of the evaluation Cs-134, Cs-137, and Sr-90 concentrations (Cs:Sr is used in a ratio of 1:100 based on Air Force data) were used as input to the RESRAD program. The first year dose calculated using RESRAD based on the average of the two soil sample results was approximately 66 mrem. (This ignores any dose from I-131 and T-132.) A calculation was performed extrapolating the RESRAD calculated dose at Yokosuka (6.252 mrem) (this also ignores the I-131 and Te-132 dose) to determine at what distance from the Fukushima Plant would result in a dose of 66 mrem. Using NARAC forecasted Pasquill Categories for time periods the plumes existed in Yokosuka from 3/15 through 3/23, the calculated distance was 18.5 miles which is about a factor of 1.5 larger.

B. Evaluation:

The first year dose calculated at Yokosuka (excluding I-131 and Te-132) using the RESRAD suburban resident scenario was 6.252 mrem. Cs-137 and Cs-134 account for 99.98% of the total RESRAD dose with Sr-90, and to an even lesser extent Tc-99, making up the difference.

Two soil samples were taken at J-Village (12.3 miles or 19.8 km from the Fukushima Plant). Using these soil samples to calculate a RESRAD dose at J-Village this result can be compared to a predicted result based on the Yokosuka assessment.

The Cs-134 and Cs-137 concentrations for the two soil samples were as follows:

Soil Sample #1 taken on 3/27/11

Cs-134: 47.5 pCi/gm
Cs-137: 61.1 pCi/gm
Sr-90 0.611 pCi/gm (in the ratio of 1:100 with Cs-137)

Soil Sample #2 taken on 3/27/11

Cs-134: 34.6 pCi/gm
Cs-137: 40.8 pCi/gm
Sr-90 0.408 pCi/gm (in the ratio of 1:100 with Cs-137)

Using the suburban resident scenario in RESRAD and using the above soil concentrations results in first year doses of 77 mrem for location #1 and 54 mrem for location #2. (I-131 and Te-132 doses are ignored since comparisons are just made to the Cs-134, Cs-137, and Sr-90 doses.) The average first year dose is about 66 mrem.

Calculation of Expected Distance from the Fukushima Plant for First Year Dose of 66 mrem using Yokosuka Data and NARAC Forecasted Pasquill Categories (Assuming no Plume Depletion due to Ground Deposition):

The first year dose of 66 mrem is 10.56 times larger than 6.252 mrem, the dose in Yokosuka from Cs-134 and Cs-137.

The distance of Yokosuka from the Fukushima Plant is 167 miles. The Pasquill Category B, C, D, E and F dispersion factors for this distance and dispersion factors at 66 mrem distance are:

Pasquill B at 167 mi: 2.63E08 m^2 Dispersion factor for 66 mrem distance is 2.63E08/10.56 = 2.49E07

Pasquill C at 167 mi: 1.63E07 m^2 Dispersion factor for 66 mrem distance is 1.63E07/10.56 = 1.54E06

Pasquill D at 167 mi: 3.27E06 m^2 Dispersion factor for 66 mrem distance is 3.27E06/10.56 = 3.10E05

Pasquill E at 167 mi: 3.02E05 m^2 Dispersion factor for 66 mrem distance is 3.02E05/10.56 = 2.86E04

Pasquill F at 167 mi: 1.07E05 m^2 Dispersion factor for 66 mrem distance is 1.07E05/10.56 = 1.01E04

The distances for 66 mrem at each of the above dispersion factors are:

Pasquill B: 36.2 miles
Pasquill C: 19.1 miles
Pasquill D: 18.2 miles
Pasquill E: 5.6 miles
Pasquill F: 5.6 miles

Calculation based on Forecasted Pasquill Categories:

The time weighted average NARAC Forecasted Pasquill Categories were used for the dispersion calculation to derive the distances from the Fukushima Plant for 100 mrem, 500 mrem, 1000 mrem, and 2000 mrem first year doses. The time weighted average Pasquill Category was derived from the times that the plumes were present over Yokosuka. Based on air sampling the plumes prior to the above soil sample being taken were:

- 0600 JST March 15, 2011 to 0900 JST March 16, 2011 (27 hours)
- 0935 to 2200 JST March 21, 2011 (12.4 hours)
- 1300 JST March 22, 2011 to 0500 JST March 23, 2011 (16 hours)

For these time periods the estimated time weighted average Pasquill Categories were:

Pasquill Category	Percent of Time During Plume
B	8.9%
C	33.9%
D	44.6%
E	8.9%
F	3.6%

The calculation for each distance is performed using the following equation:

Distance for Time Weighted Average Pasquill Category = (0.089 x Pasquill B distance) + (0.339 x Pasquill C Distance) + (0.446 x Pasquill D Distance) + (0.089 x Pasquill E Distance) + (0.036 x Pasquill F distance) =

(0.089 x 36.2) + (0.339 x 19.1) + (0.446 x 18.2) + (0.089 x 5.6) + (0.036 x 5.6) = 18.5 miles

The calculated distance (18.5 miles) is within a factor of 1.5 of the actual distance (12.3 miles).

Overall Conclusion:

The distance calculated using dispersion calculation from the Yokosuka location and the time weighted average forecasted Pasquill categories is about a factor of 1.5 larger (conservative) than the actual distance of J-Village from the Fukushima Plant.