Dapas, Marc

From: Dapas, Marc
Sent: Thursday, April 17, 2014 2:55 PM
To: R4
Subject: Fukushima Knowledge Management Session

As I mentioned during a couple of this week's DRP/DRS morning meetings, on next Thursday (April 24th) while I am back at headquarters, I will be participating in a knowledge management (KM) panel discussion titled, "Senior Leadership Reflections on Fukushima", from 12 to 3 p.m. (CST). This KM session will feature the senior leadership team for the reactor and preparedness programs, including all four Regional Administrators. Over the last three years since the Fukushima Daiichi accident, the NRC has been engaged in a number of lessons-learned activities that are geared towards strengthening the safety of U.S. nuclear power plants. The subject KM session provides an opportunity for staff, supervisors, and managers to hear from and engage participating senior agency leaders on key insights from their recent visit to Japan, and to understand how these insights relate to the agency's lessons-learned activities and regulatory actions. The session will include a presentation on the accident sequence, videos from Japan, and a question and answer period. The session is being video-conferenced to the regions and resident inspectors will be able to participate via Go-To-Meeting.

I encourage all of you to listen in/participate as your schedule/other priorities permit.

Thanks ☺

B/6

Dapas, Marc

From:	Dapas, Marc
Sent:	Monday, February 24, 2014 7:25 PM
To:	R4
Cc:	Johnson, Michael; Pederson, Cynthia; McCree, Victor; Dean, Bill; Flanders, Scott; Skeen, David; Wiggins, Jim; Leeds, Eric; Tracy, Glenn; West, Steven; Satorius, Mark; Weber, Michael
Subject:	Summary of my trip last week to Japan

As several of you already know, I visited Japan last week as part of a delegation of senior agency executives, including the four Regional Administrators, Office Directors from the Offices of Nuclear Reactor Regulation (NRR), Nuclear Security and Incident Response, and New Reactors (NRO), the Deputy Office Director from the Office of Nuclear Regulatory Research, the Director of the Japan Lessons-Learned Directorate within NRR, and the Director for the Division of Site Safety and Environmental Analysis in NRO. Our delegation was led by Michael Johnson, the Deputy Executive Director for Reactor and Emergency Preparedness Programs, and this was the first time that the entire contingent of agency senior managers responsible for the operating reactor program travelled together to a foreign country. It was a very busy week for us with visits to the Kashiwazaki Kariwa site, which has seven reactor units and experienced a significant earthquake in 2007; the Fukushima Daini site, consisting of four units; the six-unit Fukushima Daiichi site; the recently created Japanese Nuclear Safety Institute (JANSI), which is modeled after the U.S. industry's Institute of Nuclear Power Operations (INPO); the recently established Japan Nuclear Regulatory Agency (JNRA); and the Tokyo Electric Power Company (TEPCO) headquarters office (owner and operator of the two Fukushima sites). The trip was highly informative and particularly rewarding in terms of the significant insights provided to the delegation with respect to the impact of the March 2011, East Japan Earthquake and associated Tsunami on the Fukushima sites, the significant safety measures being put in place at all of the operating reactor sites, the tremendous recovery efforts underway by the Japanese to clean up the land contamination from the Fukushima accident, and the country's revised regulatory structure. Of particular note, the description by the various TEPCO operators and site management directly involved in the event response to the East Japan Earthquake/Tsunami at both Fukushima Daini and Daiichi, was compelling in terms of the almost unimaginable challenges faced by TEPCO in trying to prevent core damage to the associated reactors.

After each site/organization visit, we devoted time to reflect on what we had seen and heard. These discussions were particularly valuable given the many different perspectives shared and resulted in alignment around some common themes. Specifically, we (the NRC and the U.S. nuclear industry) need to prepare for the unexpected by ensuring the people, equipment, and infrastructure are sufficiently established to provide for effective event response. This entails an appropriate balance between prevention and mitigation. As was so readily apparent from what we observed and heard first hand from our Japanese counterparts, the consequences of not being prepared is the displacement of large percentages of the population, e.g., in one of the surrounding communities to the Fukushima sites, 190,000 people currently can't return to their homes, 30% of which won't ever be able to return; loss of public trust in the regulator and industry; and considerable monetary costs to clean up land contamination from the uncontrolled releases of radioactive material. Another central theme that emerged from our collective discussions was deepened appreciation for the importance of ensuring our licensees fully implement, maintain, and exercise the measures we are requiring of licensees in response to the NRC's assessment of the Fukushima lessons-learned, i.e., Near-Term Task Force adopted recommendations. And finally, we aligned on the need to maintain an appropriate level of technical expertise within the regulatory and licensee organizations rather than relying excessively on contractors.

For me personally, there were a number of things that resonated with me. Even though it has been three years since the East Japan Earthquake occurred, the extent of devastation caused by that earthquake and resulting tsunami is clearly visible. Driving through the surrounding towns of Tomioka and Naraha, one of which had been a vibrant seaside village and resort community, we saw countless houses and businesses that had been reduced to mere rubble, evidence of large landslides and uprooted trees, and as a result of the

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extensive ongoing land decontamination efforts, huge piles of top soil cleared from fields under large green tarps, police enforcing access restrictions at various checkpoints, and numerous workers wearing protective clothing to prevent personal contamination. For me, one of the more striking visuals, was a roadside café where I could still see coffee cups and plates on the counter, almost as if people were in the midst of having breakfast or lunch when they had to get up and evacuate due to the radioactive releases from the plant.

I was also struck by the resiliency and perseverance of the TEPCO operators in responding to the Fukushima events despite daunting challenges and risk of personal injury/death in dealing with the extreme plant conditions. Hearing the firsthand accounts of what these individuals faced and how they responded, the almost continual setbacks encountered, and their not knowing for weeks if their families were safe, was truly amazing. While there certainly were many acts of heroism displayed by the TEPCO employees, hearing the various stories reinforced in our minds that we must ensure we do all we reasonably can to prevent situations from occurring where the only recourse to prevent core damage is some sort of heroic action. Our collective view was that if a licensee found itself in that situation, it represents a failure on part of both the industry and regulator.

In the coming weeks, you will have the opportunity to learn more about our trip as a video of our trip, including interviews of each NRC participant, is being prepared and we finish developing other communication tools. As I mentioned at the DRP/DRS morning meeting today, I plan on hosting for those that are interested, a brown bag lunch to further share my impressions, show pictures from our trip, and describe in more detail what we learned and observed from our various activities.

While it was a most rewarding trip for me, I am glad to be back home and working with all of you again as we implement our regional mission in the highest quality manner. It does make a difference ☺

Introduction

From Technology to Safety

The accident at the Fukushima Daiichi Nuclear PowerStation on March 11, 2011 has overturned the public trust on nuclear energy, which we have worked hard to nurture over many years.
Reflecting upon the Fukushima Daiichi accident, and in a bid to further reinforce nuclear plants' safety assurance measures (including severe accident countermeasures), the Japan Nuclear Technology Institute (JANTI) has been disbanded and the Japan Nuclear Safety Institute (JANSI) has been established as a new entity that can serve as a powerful industry driver and also has autonomy of making judgments unaffected by the intentions of nuclear operators.

Mission

In order to improve the safety of nuclear power plant, it is necessary for operators themselves to engage in continuing measures to improve safety, and to engage in untiring pursuit of the world's highest level of safety. In addition, safety improvement must not become a self-centered, self-satisfied activity of the operator alone. Rather, it requires constant evaluation from different perspectives. JANSI will create mechanisms and systems for independence in technical evaluation that will not be influenced by the operator's intentions and as well as providing operator s with objective assessments, and proposals and /or recommendations. Through its support of operators' safety improvement activities, JANSI will raise the level of nuclear safety across Japan as a whole.

Initiatives for fulfilling the mission

As a group of experts independent from nuclear operators, JANSI will assess safety improvement measures from advanced and far-fetching perspec tives, and play the power ful func tion of ex tending

proposals and /or recommendations to nuclear operators, while working in coordination with related organizations in and outside Japan. Specific areas of operation that JANSI will undertake are as follows:

1. Assessments, proposals and/or recommendations, and support for safety improvement measures

Gather and analyze the latest information inside and outside of Japan, and provide assessments, proposals and/or recommendations, and support, for operators to raise their nuclear safety level so that each operator can pursue initiatives towards excellence.
The initial priority will be on dealing with severe accidents (accidents causing severe core damage beyond design basis), but the scope will be expanded in future to include measures addressing design basis events.

2. Assessments, proposals and/or recommendations, and support for nuclear power facilities

Conduct verification on the operating conditions at nuclear power facilities (NPFs) by periodic peer review and reviews on specific themes. Through comparison with best practices, evaluate the condition of equipment and operational state of nuclear power facilities, as well as initiatives about the strength of their safety culture and improvement. Make proposals and/or recommendations, and give support for raising levels in those areas.
Periodically dispatch senior representative to NPFs, provide support, and take steps to raise relevant levels at NPFs by establishing communications with NPFs executives, introducing good practices from other NPFs, and other such means.

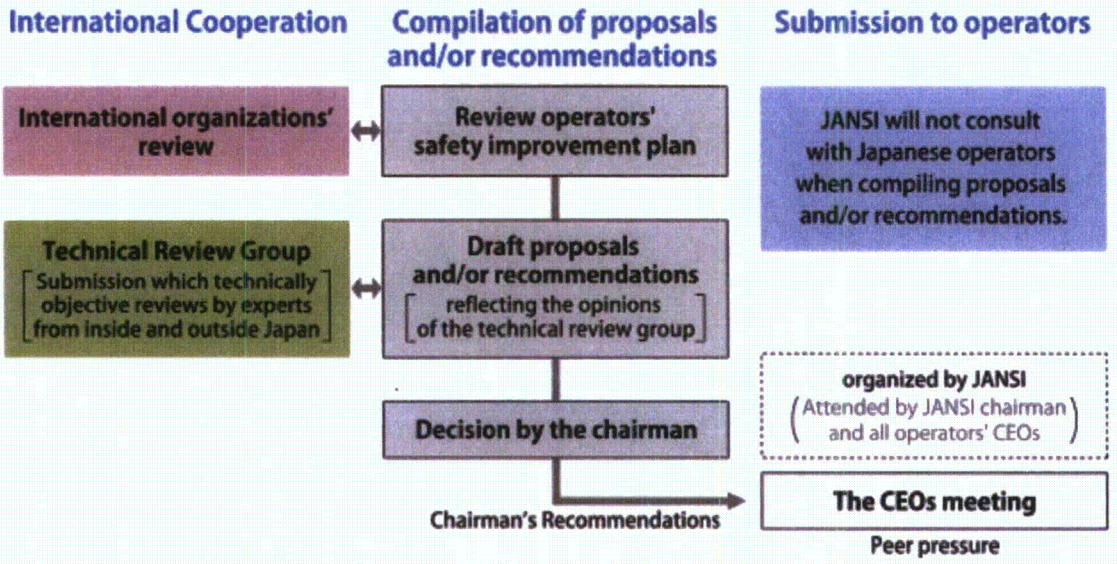
3. Promotion of other related business

Other activities to support those on the left such as analyze information on trouble, prepare standards and develop human resources.

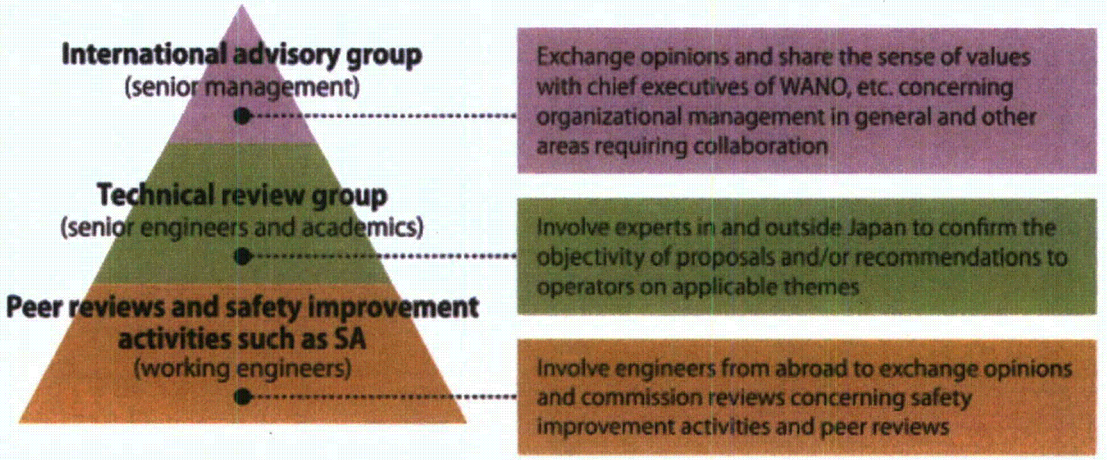
Mechanism of fulfilling the mission

Ensuring the autonomy of technical review (assessments, and proposals and/or recommendations)

In compiling proposals and/or recommendations, JANSI will assign the task to a technical review group consisting of experts from overseas organizations and experts in and outside Japan so as to ensure objectivity. Compiled proposals and/or recommendations are directly presented by the JANSI chairman at an operator CEO conference organized by JANSI.



Collaboration with overseas organizations



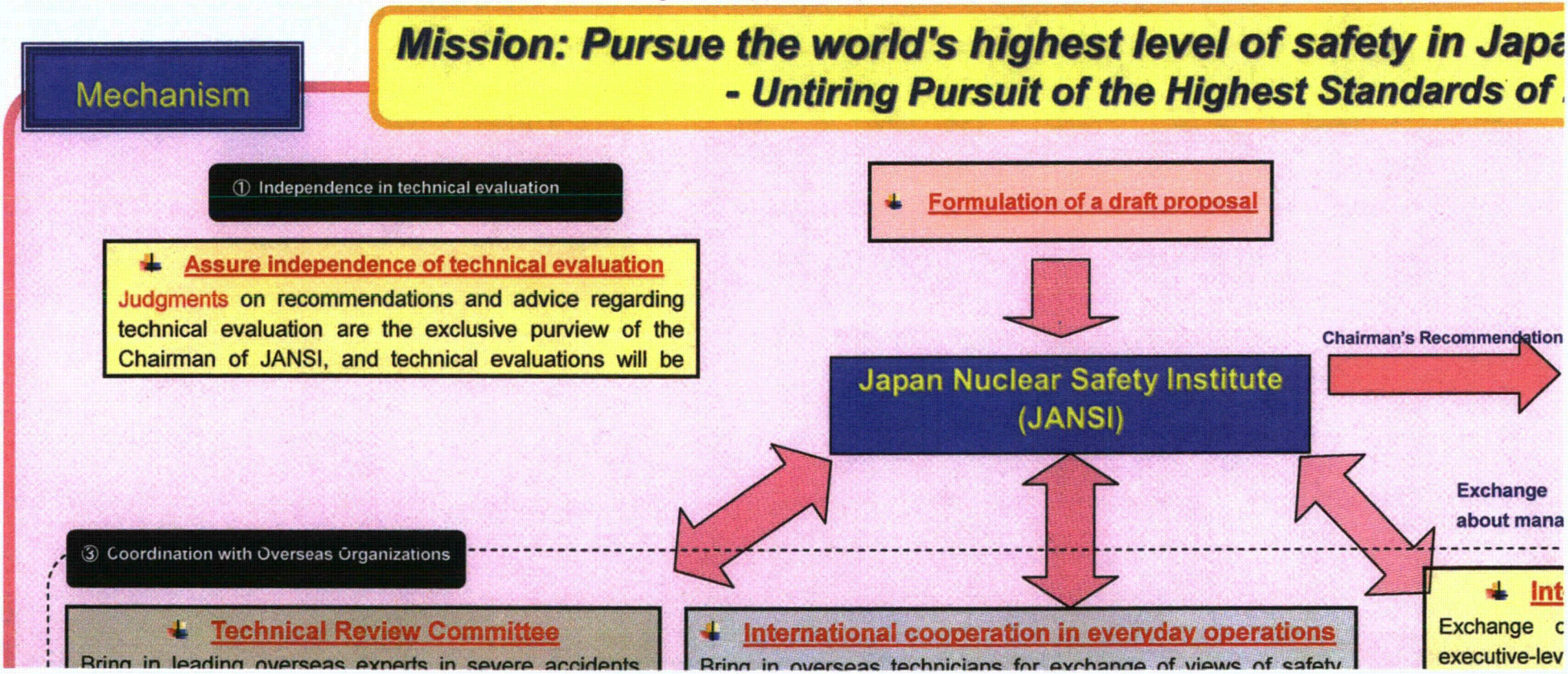
Establishment of the Japan Nuclear Safety Institute (JANSI)

1. Introduction

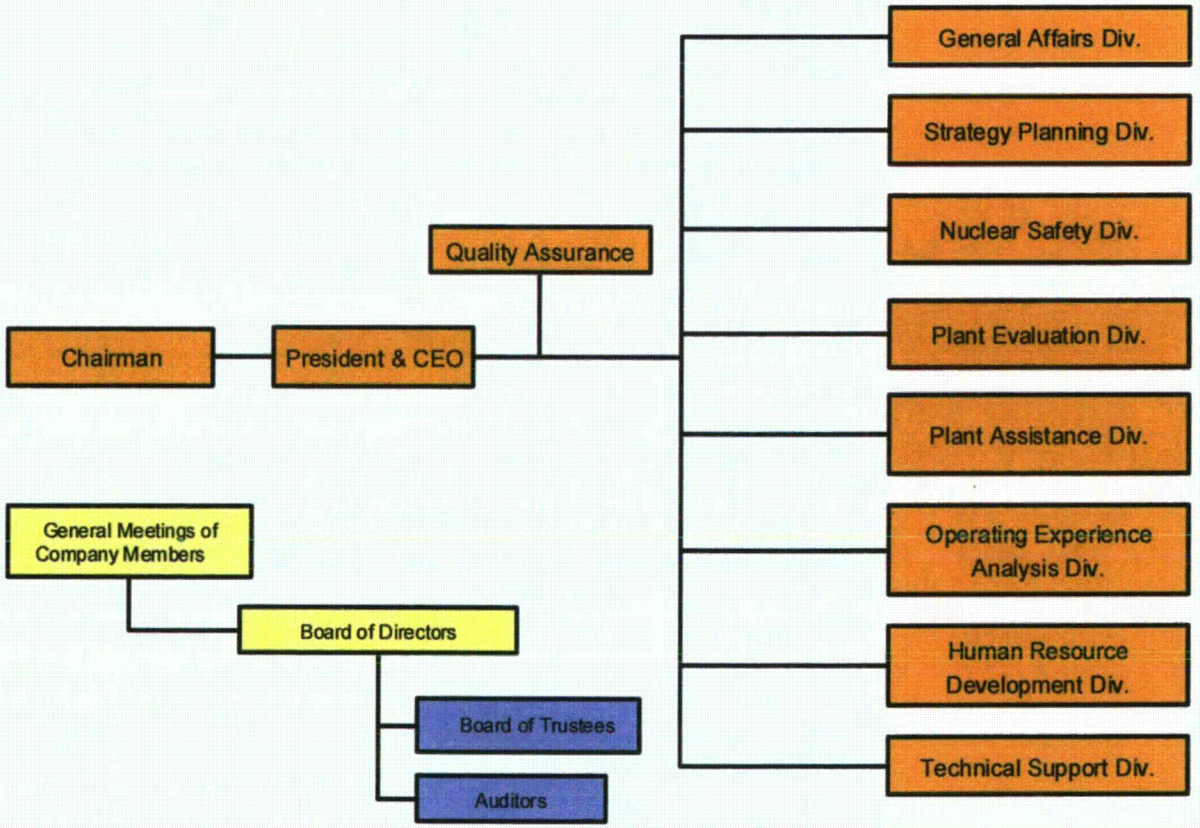
In light of the Fukushima Daiichi Nuclear Power Plant accident of March 2011, in order to raise nuclear power plant safety even h
Japan Nuclear Technology Institute has been dissolved and the Japan Nuclear Safety Institute (JANSI) has been newly establishe
making effective use of the knowledge and expertise which have been developed thus far.

2. The Mission and Activities of JANSI

In order to improve the safety of nuclear power plant, it is necessary for operators themselves to engage in continuing measures t
world's highest level of safety. In addition, safety improvement must not become a self-centered, self-satisfied activity of the ope
different perspectives.
JANSI will create mechanisms and systems for independence in technical evaluation that will not be influenced by the operator's in
evaluations, recommendations, and advice. Through its support of operators' safety improvement activities, JANSI will raise the lev



Organization Chart of JANSI



Attachment-2

Japan Nuclear Safety Institute
Board of Directors

Chairman	Shojiro Matsuura	Representative Director
President & CEO	Takao Fujie	Representative Director
Director	Kiyoshi Naruse	Strategy Planning Division Manager
Director	Akio Fukuda	General Affairs Division Manager
Director	Akihide Kugo	Human Resource Development Division Manager
Director	Shigeki Iwane	(Vice President, Kansai Electric Power Co. Inc.)
Director	Manabu Ouchi	(Chairman of Japan Aircraft Pilot Association)
Director	Tomohiko Ohno	(Executive Vice President, Chubu Electric Power Co. Inc.)
Director	Masaharu Hanyu	(Vice President and Executive Officer, Hitachi Ltd.)
Director	Yoshinori Fukahori	(Executive Vice President, Kyushu Electric Power Co. Inc.)
Director	Shigero Masamori	(Executive Vice President, Mitsubishi Heavy Industries, Ltd.)
Director	Hayaichi Yokoyama	(Senior Vice President, Central Research Institute of Electric Power Industry)

Auditor	Kiyoshi Okamura	(Vice President, Toshiba Corporation)
Auditor	Mutsutaka sunematsu	(Adviser, Nuclear Fuel Industries, Ltd.)

For information regarding our business program for FY2012, access Japan Nuclear Safety Institute homepage http://www.genanshin.jp/

Contact information: Japan Nuclear Safety Institute
Nobuyuki Onishi
Operations Department
Tel: +81-3-5440-3601
Fax: +81-3-5440-3606

Dapas, Marc

From: Tak INAGAKI <inagaki.takeyuki@tepco.co.jp>
Sent: Thursday, April 24, 2014 4:03 AM
To: Johnson, Michael
Cc: Dapas, Marc
Subject: Re: Another Supplemental Answer to the question about PCV ventilation

Dear Mike,

It is always my pleasure to receive a question about the accident from you.

The connection was newly added after the Niigata Chuets-oki Earthquake which hit our Kashiwazaki Kariwa (KK) NPP in 2007.

The main objective of this addition was to enhance fire protection capability because we got a fire on the house transformer of the KK NPP after the earthquake.

Our plant manager found that it could be used for the core injection because the fire protection system was connected to the core spray system by way of the make up water condensate (MUWC) system. This was one of severe accident management measures. The modification was performed in early 2000s. Since the plant manager approved the both modifications, I believe he quickly found the way to inject water to the core using a fire engine.

The construction work of the T/B connection was completed in June 2010, nine months before the accident, and therefore not so many plant staff members knew its precise location.

After receiving an order from the plant manager, members of the operational group the site ERC and self fire brigade went to the Unit 1T/B to find the connection at about 2:10 AM on 12th March. However the could not find the connection because it was behind the opened T/B equipment entrance door (the external door) and the access path to the location was filled with tsunami debris.

The self fire brigade members asked a person in the architectural group who knew the location very well. They went to the location at about 3:30 and found the connection. The first fresh water core injection using a fire engine started at about 4:00 AM.

I hope this answer would be satisfactory for you.

Yours sincerely,

Tak

TEPCO

—— Original Message ——
From: "Johnson, Michael" <Michael.Johnson@nrc.gov>
To: <inagaki.takeyuki@tepco.co.jp>
Cc: "Dapas, Marc" <Marc.Dapas@nrc.gov>
Sent: Thursday, April 24, 2014 1:53 AM
Subject: Re: Another Supplemental Answer to the question about PCV ventilation

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Tak,

One last question :-). Can you remind me of the story regarding the difficulty the personnel had in finding and connecting the fire truck to the T/B fitting?

Please reply to all so Marc Dapas can get this. We are discussing our trip with the staff tomorrow.

Thanks again.

Best Regards,

Mike
From my blackberry.

---- Original Message ----
From: Tak INAGAKI [mailto:inagaki.takeyuki@tepco.co.jp]
Sent: Tuesday, April 22, 2014 07:20 AM
To: Johnson, Michael
Subject: Re: Another Supplemental Answer to the question about PCV ventilation

Dear Mike,

I got the answer from my colleague.

The following web page shows populations of the Area 1~3. Although the page is in Japanese, I hope you can understand the numbers in it.

http://www.meti.go.jp/earthquake/nuclear/pdf/131231a.pdf

Area 1 (green) : about 32,900 people
Area 2 (yellow): about 23,300 people
Area 3 (pink): about 24,700 people

Total about 81,000 people

According to the Reconstruction Agency's web page shown in my previous email, about 154,000 people evacuated during and after the accident.

Therefore about 73,000 (=154,000-8,1000) people have been able to return and about 32,900 (Area 1) people will be able to return soon.

I hope this answer would be satisfactory for you.

Yours sincerely,

Tak

TEPCO

---- Original Message ----
From: "Tak INAGAKI" <inagaki.takeyuki@tepco.co.jp>
To: "Johnson, Michael" <Michael.Johnson@nrc.gov>
Sent: Tuesday, April 22, 2014 4:11 PM
Subject: Re: Another Supplemental Answer to the question about PCV ventilation

> Dear Mike,
>
> It is very nice to hear from you.
>
> Regarding your question, it is not easy to provide a direct answer to it.
>
> As shown in the web page of Reconstruction Agency of Japanese Government
> shown below, the restricted area (in the 20km radius around Fukushima
> Dai-ichi NPP) and Deliberate Evacuation Area (areas beyond the 20km radius
> where there remain concerns that cumulative doses of radiation might reach
> 20mSv within a year) have been rearranged as follows:
>
> https://www.reconstruction.go.jp/english/topics/2013/03/the-status-in-fukushima.html
>
> a.. Areas to which evacuation orders are ready to be lifted (Area 1)
> b.. Areas in which the residents are not permitted to live (Area 2)
> c.. Areas where it is expected that the residents have difficulties in
> returning for a long time (Area 3)
> You can find a map of these areas in the web page.
>
> I have heard that:
>
> - many people who once evacuated from the surrounding area of the above
> three areas, such as from Hirono Town (shown at the bottom of the map),
> have returned to their home,
>
> - certain number of former residents of the Area 1 (green areas) are
> preparing to return.
>
> I am asking my colleague with Fukushima Group in the plant siting
> department the following two questions:
>
> - How many evacuated people have returned toi their home?
> - How many people had lived in the Area 1?
>
> I requested him to provide the answers as soon as possible. Please wait
> for one or two days.
>
> Yours sincerely,
>
> Tak
>
> TEPCO
>
>
>
>
>
>
>
>
> —— Original Message ——
> From: "Johnson, Michael" <Michael.Johnson@nrc.gov>
> To: "Tak INAGAKI" <inagaki.takeyuki@tepco.co.jp>
> Sent: Tuesday, April 22, 2014 12:37 AM
> Subject: RE: Another Supplemental Answer to the question about PCV

> ventilation
>
>
> Greetings Tak!
>
> Would you happen to know how many people of the 160000 folks who were
> initially evacuated have been able to return?
>
> Thanks again for all of your help :-)!
>
> Mike
>
> ----Original Message----
> From: Tak INAGAKI [mailto:inagaki.takeyuki@tepco.co.jp]
> Sent: Sunday, March 30, 2014 6:50 PM
> To: Johnson, Michael; Gibson, Lauren; Taylor, Robert; Skeen, David;
> Reckley, William
> Subject: Re: Another Supplemental Answer to the question about PCV
> ventilation
>
> Dear Mr. Johnson,
> Dear David,
> Dear Mr. Taylor,
> Dear Mr. Reckley,
> Dear David,
>
> Thank you very much for your hospitality during my visit. I was very
> impressed to receive many serious questions about the accident. I
> sincerely hope my presentations would be useful for you and your
> colleagues.
>
> As I told you, I made the same presentations at the TVA headquarters and
> ANO NPP and got very many questions. At ANO, US NRC site inspectors also
> participated and they asked me questions about the Unit 4 SFP and the PCV
> ventilation.
>
> I hope to see you again some time in the future.
>
> Yours sincerely,
>
> Tak INAGAKI
>
> TEPCO
>
>
> ---- Original Message ----
> From: "Gibson, Lauren" <Lauren.Gibson@nrc.gov>
> To: "Tak INAGAKI" <inagaki.takeyuki@tepco.co.jp>
> Cc: "Taylor, Robert" <Robert.Taylor@nrc.gov>; "Skeen, David"
> <David.Skeen@nrc.gov>; "Reckley, William" <William.Reckley@nrc.gov>
> Sent: Thursday, March 27, 2014 10:38 PM
> Subject: RE: Another Supplemental Answer to the question about PCV
> ventilation
>
>
> Dear Tak,

>
> Once again, thank you. I will pass along the information. There is no
> need to apologize--we really value your insights.
>
> Sincerely,
>
> Lauren
>
>
> Lauren K. Gibson
> Project Manager
> Policy and Support Branch
> Japan Lessons Learned Project Directorate
> (301) 415-1056
>
>
>
> ----Original Message----
> From: Tak INAGAKI [mailto:inagaki.takeyuki@tepco.co.jp]
> Sent: Thursday, March 27, 2014 8:46 AM
> To: Gibson, Lauren
> Cc: Taylor, Robert; Skeen, David; Reckley, William
> Subject: Another Supplemental Answer to the question about PCV ventilation
>
> Dear Lauren,
>
> I am sorry for sending too many emails. I need to supplement my previous
> answer to the question about the PCV ventilation. (This could be the
> last...)
>
> The questions was whether the consequence would have been different if we
> had been able to achieve the PCV ventilation for Unit 1 much earlier.
>
> I answered that:
>
> - yes, it might have been different,
> - we have modified the PCV ventilation AOVs of KK units to enable manual
> operation,
> - we lowered the set point of rupture disc,
> - we are revising the SOP.
>
> I think the answer was certainly correct but again not perfect. When we
> recovered the drywell pressure instrumentation and learned the drywell
> pressure was very high, we had not achieved any water injection method or
> RPV depressurization method.
>
> My point is the PCV ventilation is only to release heat from the PCV and
> can not prevent the core damage by it self.
>
> We need to quickly establish the followings almost simultaneously;
>
> 1. water injection methods (both high and low pressures) 2. RPV
> depressurization method (SRV or other way) 3. PCV ventilation
>
> I think the second point is particularly important because we currently
> have only the SRVs to reduce the RPV pressure. Reliability of the SRVs is

> key to avoid the core damage. We are modifying the SRV nitrogen system now
> to enhance their reliability.
>
> Best regards,
>
> Tak
>
>
> On Wed, 26 Mar 2014 09:12:49 -0400
> "Gibson, Lauren" <Lauren.Gibson@nrc.gov> wrote:
>
>> Dear Tak,
>>
>> Thank you for the supplement. If I am able to determine who asked the
>> question, I will pass it along. I will also share this with those in
>> the Japan Lessons-Learned Project Directorate who are working on
>> hydrogen issues.
>>
>> Sincerely,
>>
>> Lauren
>> Lauren K. Gibson
>> Project Manager
>> Policy and Support Branch
>> Japan Lessons Learned Project Directorate
>> (301) 415-1056
>>
>>
>>
>> ----Original Message----
>> From: Tak INAGAKI [mailto:inagaki.takeyuki@tepco.co.jp]
>> Sent: Wednesday, March 26, 2014 9:06 AM
>> To: Gibson, Lauren
>> Cc: Taylor, Robert; Johnson, Michael; Leeds, Eric; Skeen, David;
>> Gibson, Lauren; Reckley, William
>> Subject: Supplemental Answer to the question about relation between
>> recovery of the important instrumentation and explosion
>>
>> Dear Lauren.
>>
>> While I am preparing meeting minutes, I recall one question, though I
>> do not know who asked this, about relation between the recovery of the
>> important instrumentation and the explosion.
>>
>> My answer yesterday was that we could find that the PCV was not
>> seriously damaged after the explosion by checking the drywell pressure.
>>
>> I am afraid my answer was probably not suffcient and would like to
>> supplement the following answer:
>>
>> After the explosion of Unit 1, we were very much afraid of the
>> explosion of Unit 3. To check the possibility of the explosion, we
>> tried to recover CAMS H2 monitor but failed. We could only recover the
>> CAMS gamma ray monitor. Consequently, we could not find out if and
>> when Unit 3 R/B explodes. When it exploded, about 50 persons were working
>> around Unit 3.

>> It was the most fearful moment for me during the accident because I
>> thought I could be a murderer. Our plant manager, Masao Yoshida, told
>> me that he had the same feeling.
>>
>> In this regard, it is crucially important to have hydrogen measurement
>> in the R/B and PCV we can use even under the SBO condition. We have
>> equiped it for KK units.
>>
>> Best regards,
>>
>> Tak
>>
>> TEPCO
>>
>>
>>
>>
>> On Wed, 26 Mar 2014 07:30:56 -0400
>> "Gibson, Lauren" <Lauren.Gibson@nrc.gov> wrote:
>>
>> > Dear Tak,
>> >
>> > Yes, Dr. Apostolakis was the Commissioner present. We were
>> > expecting Commissioner Ostendorff as well, however, something
>> > pressing came up and he was unable to attend.
>> >
>> > I have received a lot of requests from NRC employees of all levels
>> > for your slides and the recording of the presentation. We will be
>> > making it available to all employees. Thank you once again for
>> > sharing your experiences with us.
>> >
>> > Sincerely,
>> >
>> > Lauren
>> >
>> >
>> > Lauren K. Gibson
>> > Project Manager
>> > Policy and Support Branch
>> > Japan Lessons Learned Project Directorate
>> > (301) 415-1056
>> >
>> >
>> >
>> > ——Original Message——
>> > From: Tak INAGAKI [mailto:inagaki.takeyuki@tepco.co.jp]
>> > Sent: Wednesday, March 26, 2014 6:48 AM
>> > To: Gibson, Lauren
>> > Subject: NRC commissioner who participated in the meeting
>> >
>> > Dear Lauren,
>> >
>> > Thank you very much for your support for my presentation.
>> >
>> > I received the following email yesterday from my friend with CENG. I
>> > am very happy to receive such a positive feed-back.

>> >
>> > Now I am preparing meeting minutes. If I remember correctly, the
>> > commissioner who participated in the presentation was Mr. Apostolakis.
>> > Although Mr. Reckley had told me that Mr. Ostendorf would also
>> > participate in, he was not there. Am I right?
>> >
>> > Yours sincerely,
>> >
>> > Tak
>> >
>> > ---------- Original Message ----------
>> > Subject: NRC meeting
>> > Date: Tue, 25 Mar 2014 17:58:10 +0000
>> > From: "Dedrickson, Charles R:(CENG)"
>> > <Charles.Dedrickson@cengllc.com>
>> > To: Tak INAGAKI <inagaki.takeyuki@tepco.co.jp>
>> > Cc:
>> >
>> > Dear INAGAKI-san,
>> >
>> > I am at NRC today meeting with an NRC/NEI joint steering committee.
>> >
>> > Mike Johnson at the NRC, with whom you met yesterday, spoke very
>> > positively about your message delivered. He also was appreciative
>> > for the open discussions that TEPCO has participated in since the
>> > accident.
>> >
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>

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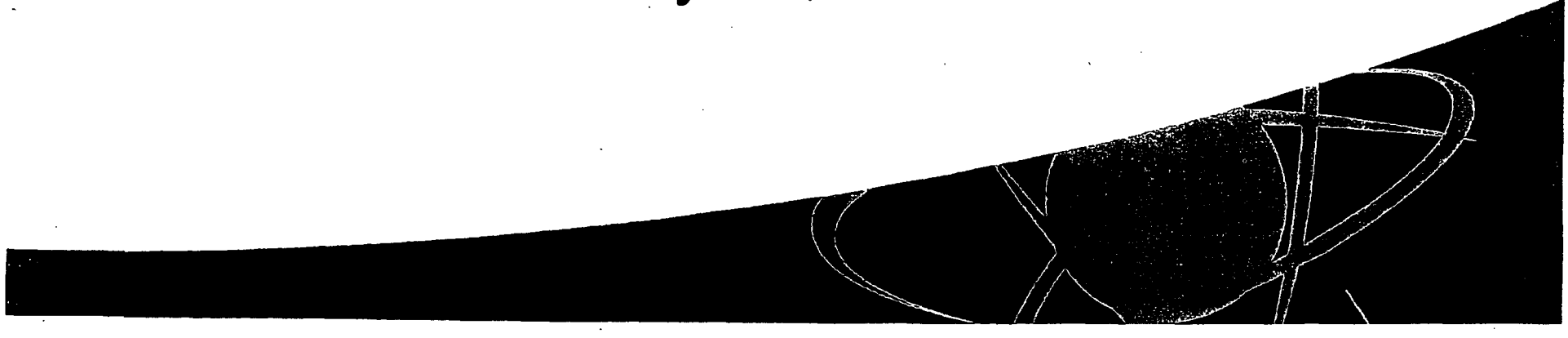
U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Japan/Fukushima Senior Manager Visit Insights

William Dean / Michael Johnson

May 13, 2014

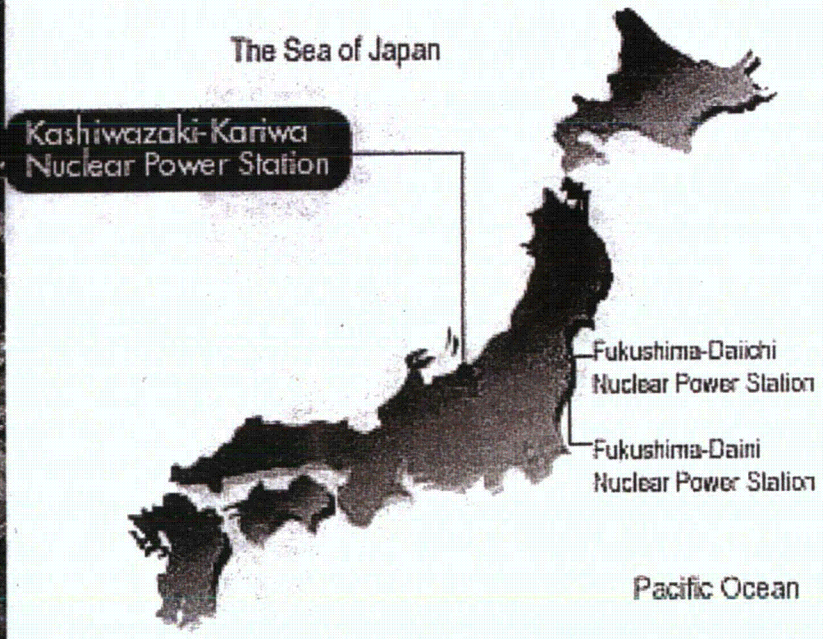



22

U.S.NRC

United States Nuclear Regulatory Commission

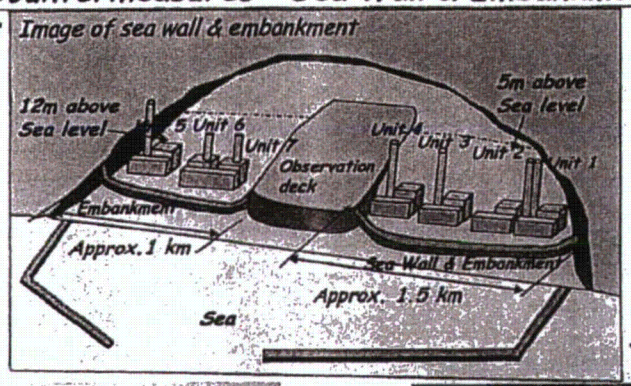
Protecting People and the Environment



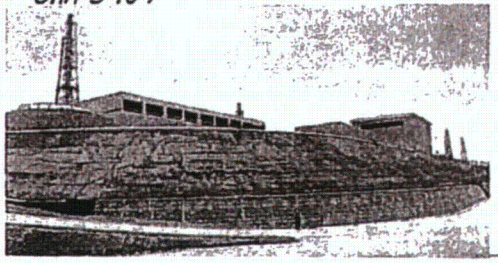
1. Tsunami Countermeasures - Sea Wall & Embankments

Past design basis tsunami height : 3.3m

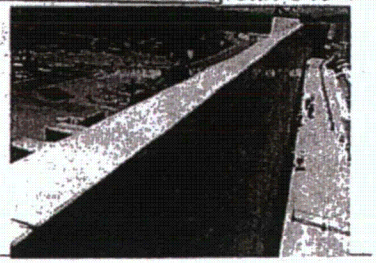
Re-evaluated design basis tsunami height after Fukushima accident : 6.0m



Embankment at Unit 5 to 7



Sea wall at Unit 1 to 4



Kashiwazaki-Kariwa

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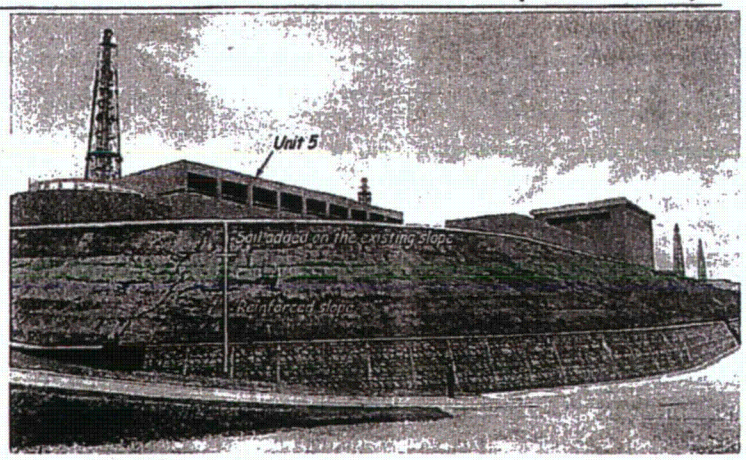
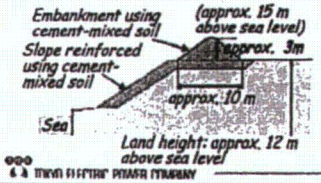
11. Water Reservoir
Impermeable Liners on the Water Reservoir

(October, 2012)

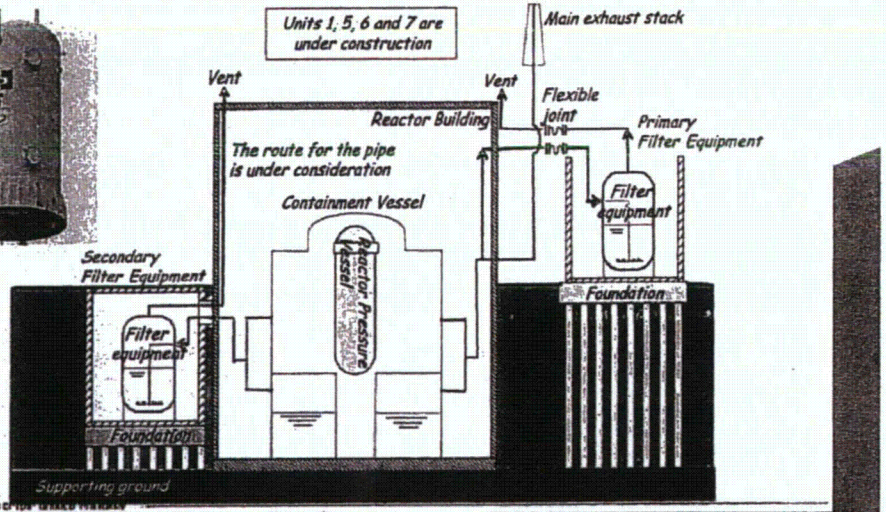
1. Tsunami Countermeasures - Embankment (Units 5 to 7)

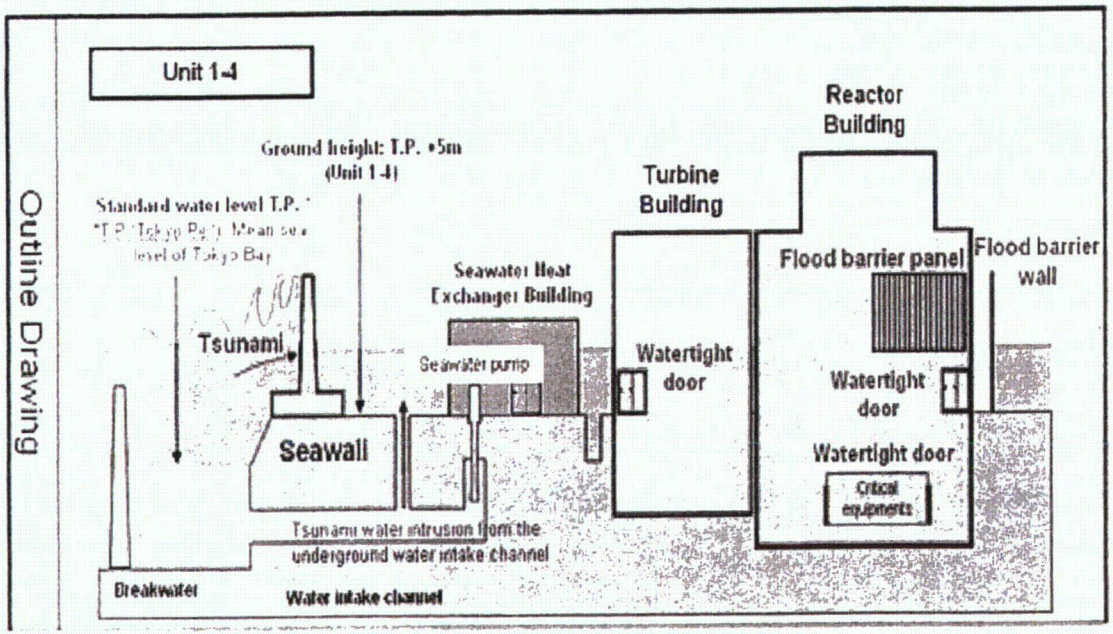




13. Filtered Vent System

- Filtered vent system to be installed to reduce the release of radioactive material after core damage.
- Reduce the release of radioactive material to approx. 1/1,000.





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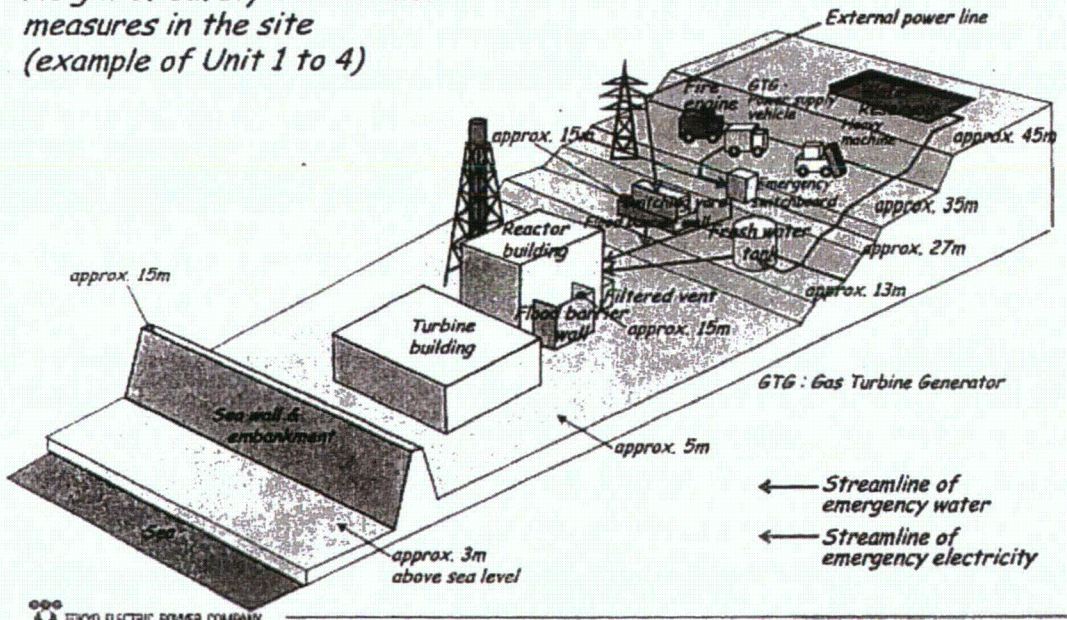
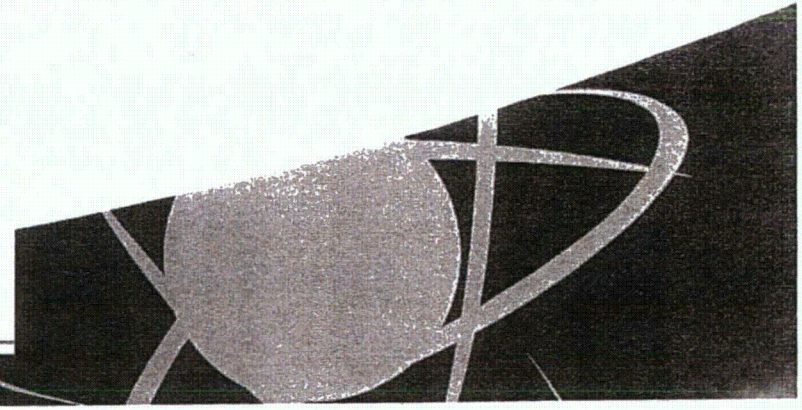
Kashiwazaki-Kariwa Site Visit – 2/18/14

Outline of Safety Enhancement Measures

Height of safety enhancement measures in the site (example of Unit 1 to 4)



TOKYO ELECTRIC POWER COMPANY



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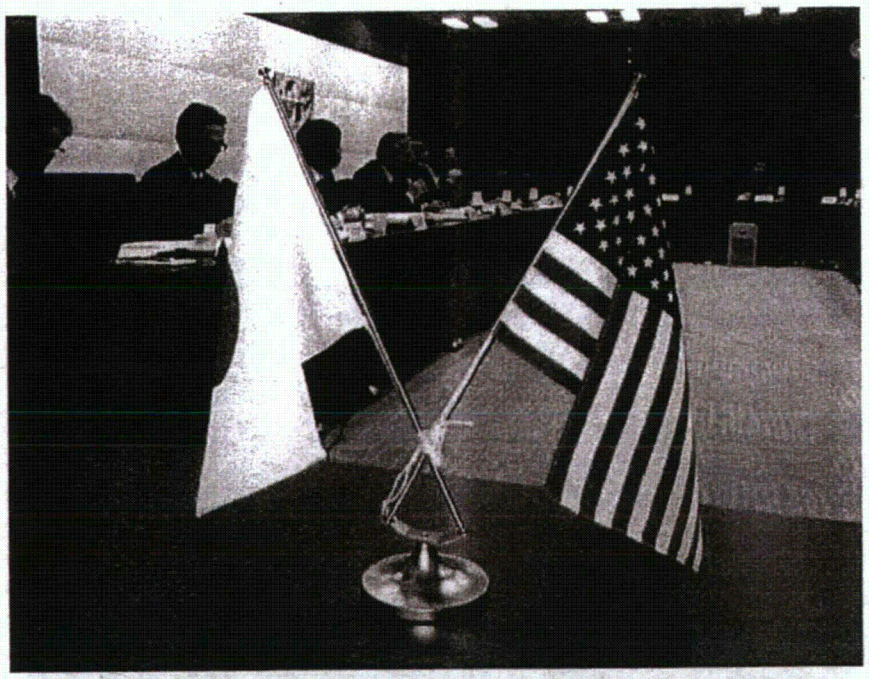
NRC/JANSI Meeting

2/19/14



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NRC/JNRA Meeting
2/19/14

NRC/TEPCO Meeting

2/19/14

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Hwy 6 between Iwaki and Fukushima

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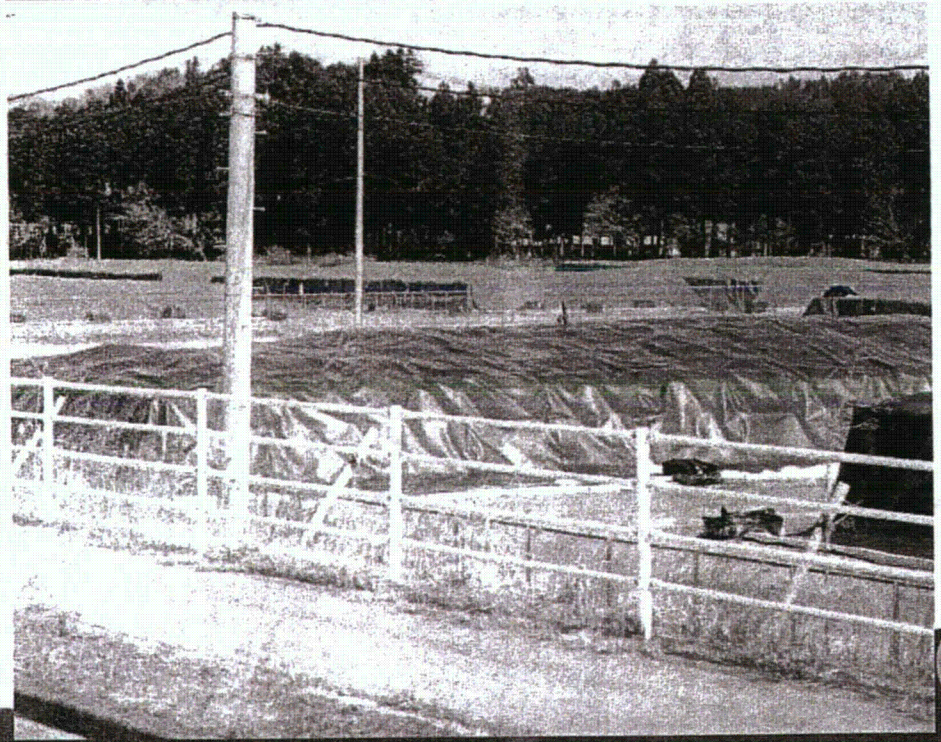

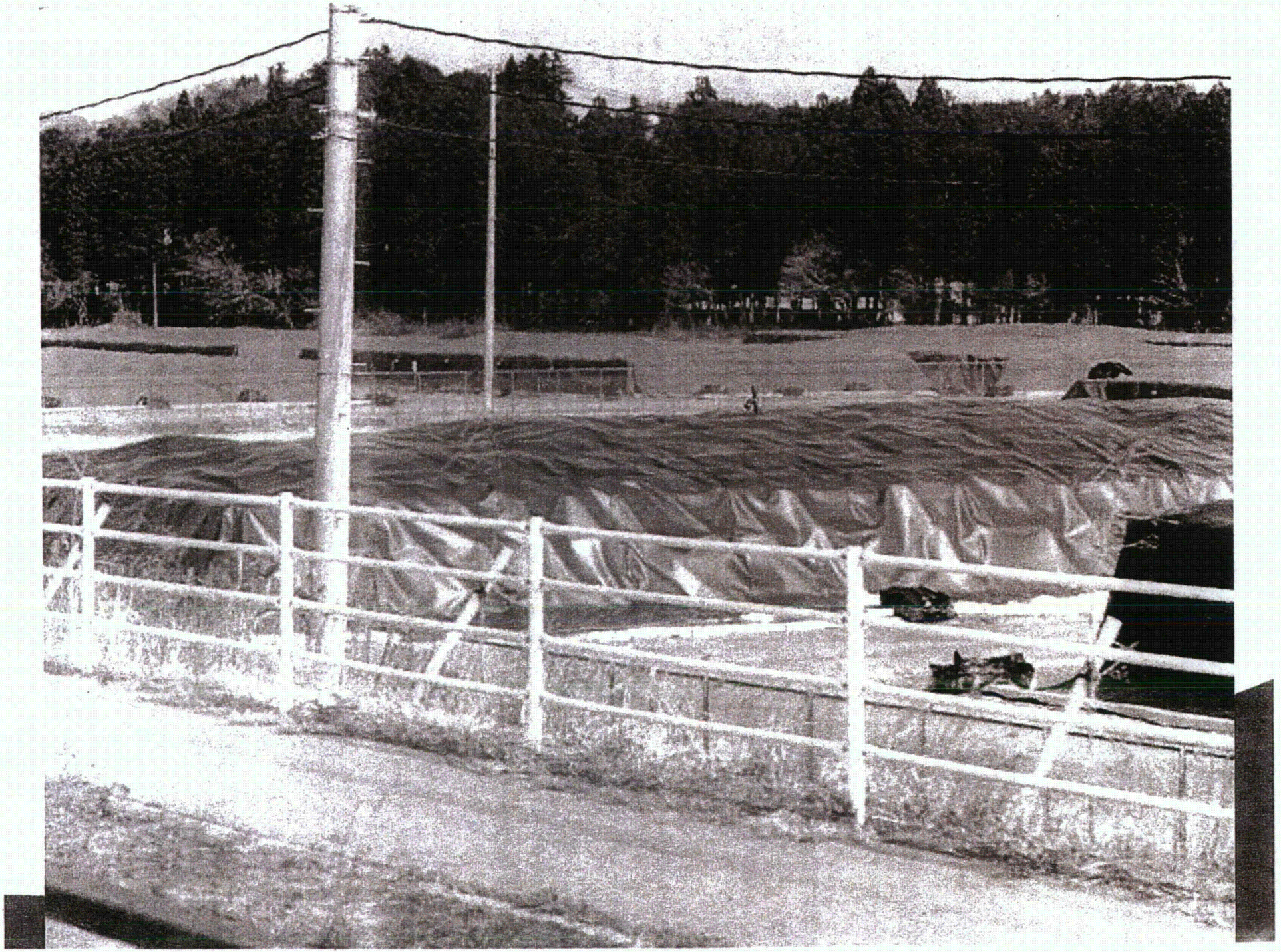

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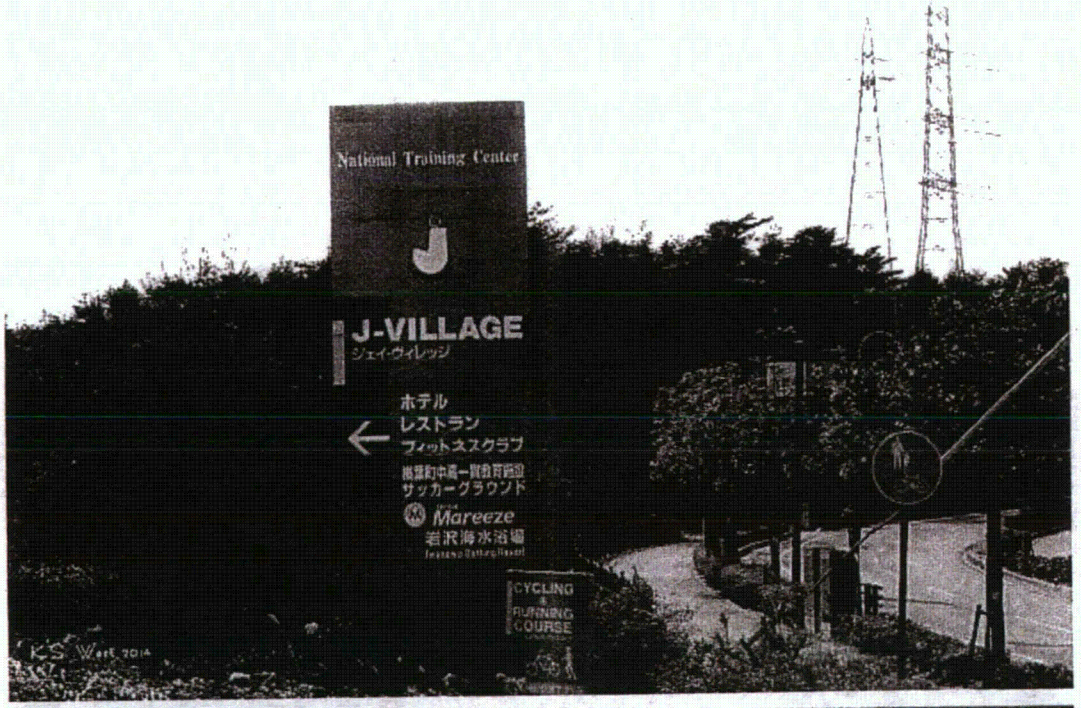

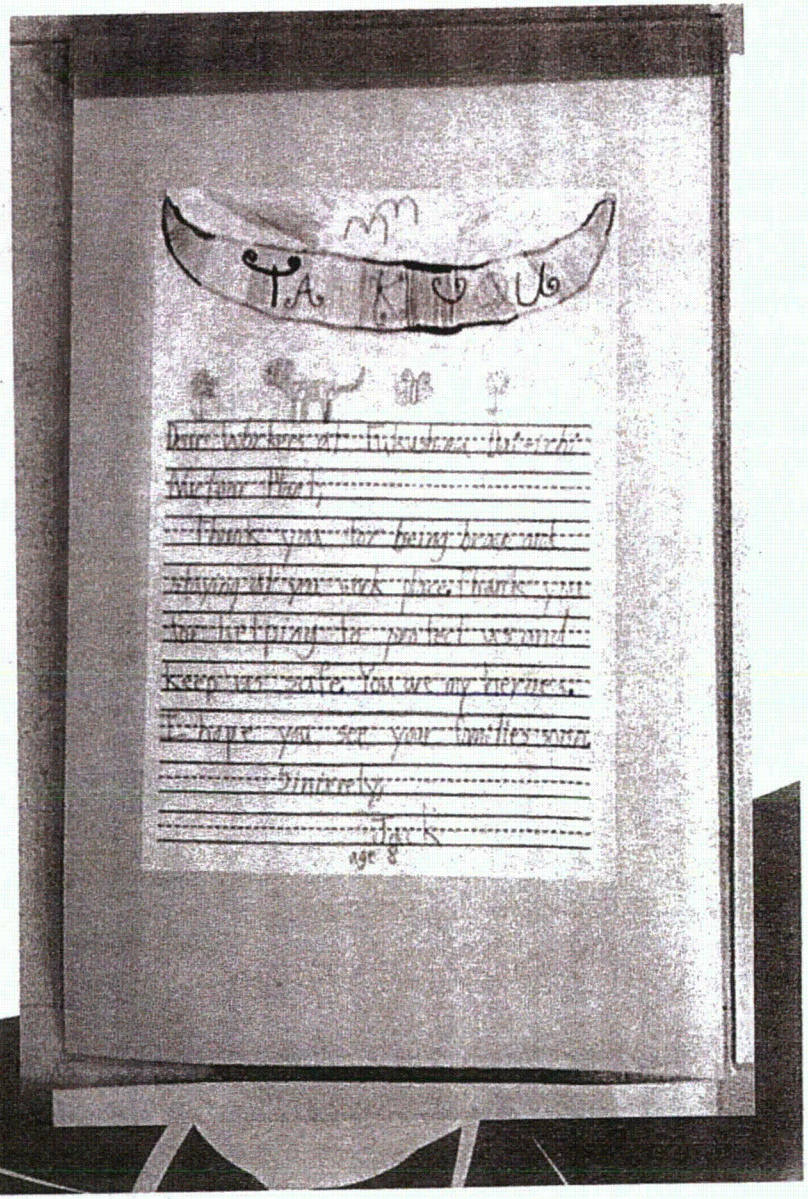

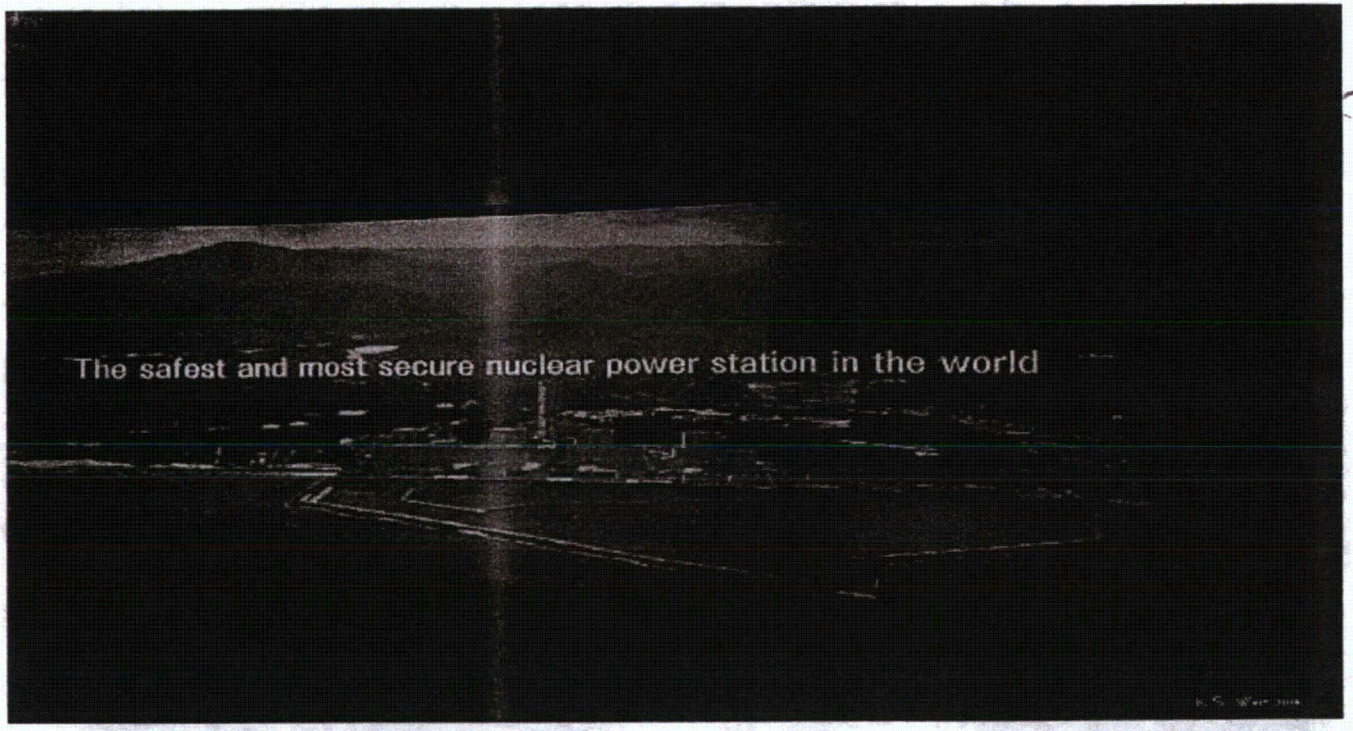

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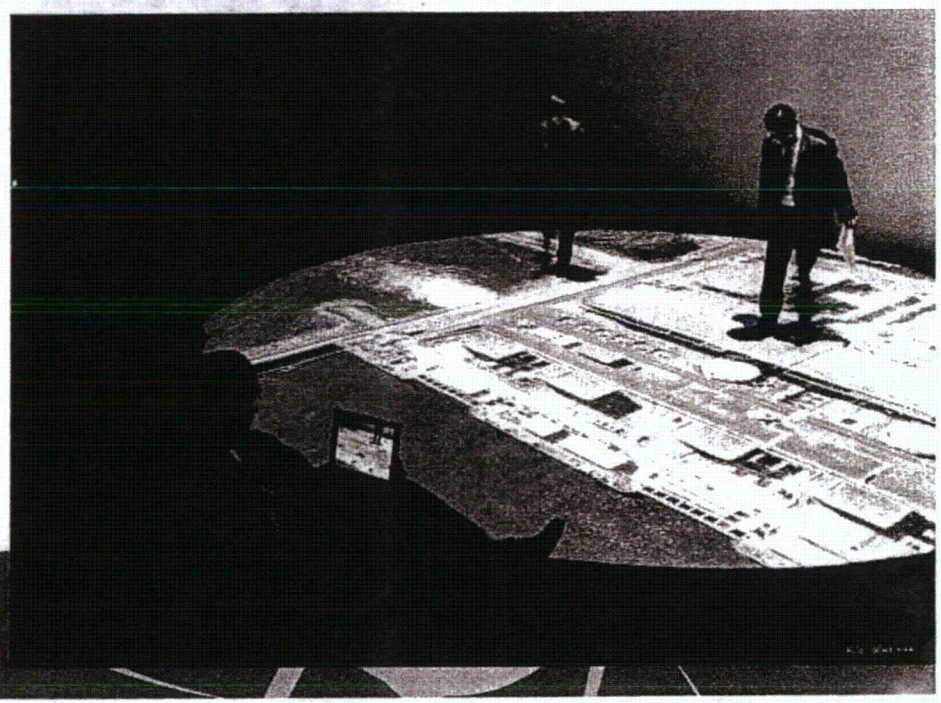

Impact at Fukushima Daini

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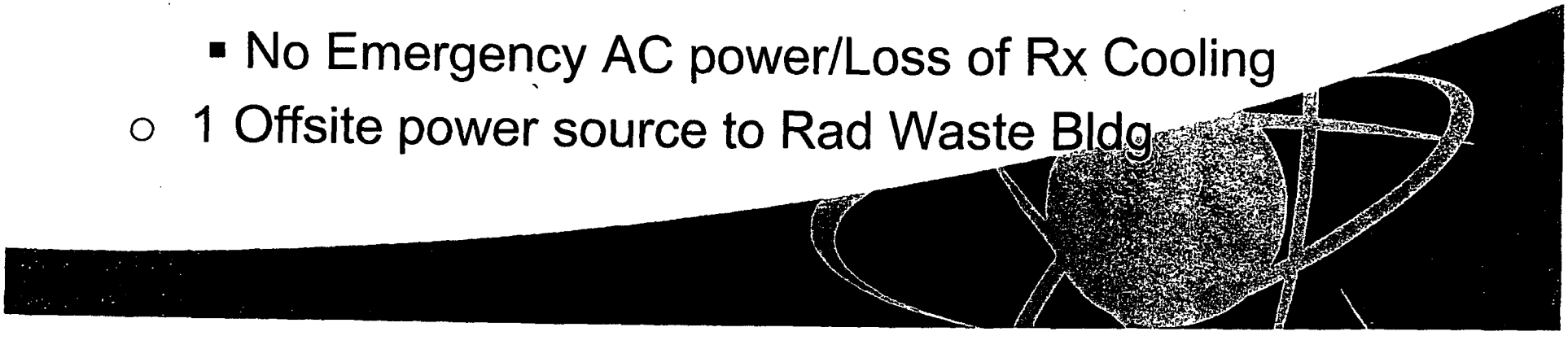
March 11, 2011

- Initial Condition: 4 unit BWR 5 (all Operating)
- 14:46 – Earthquake all units auto tripped due to EQ
  - All units auto trip/no damage to SR SSCs/LOOP
- 15:30 – Three tsunami waves arrive
  - Rx Buildings: U1 flooded
  - Turbine Buildings: Units 1 and 3 flooded
  - Loss of UHS
    - No Emergency AC power/Loss of Rx Cooling
  - 1 Offsite power source to Rad Waste Bldg



Arrival of Tsunami Waves at Fukushima Daini

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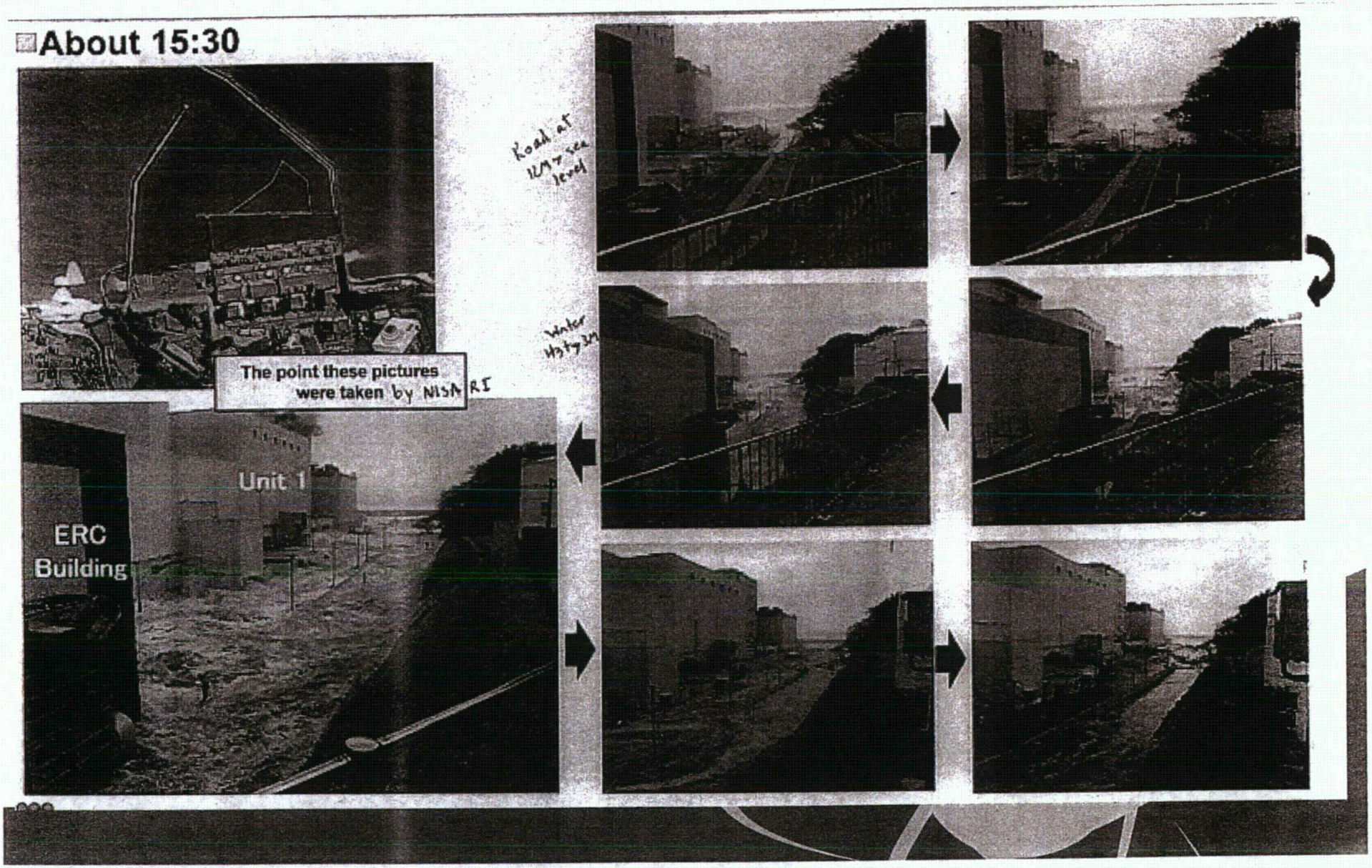

Impact of Tsunami at Fukushima Daini

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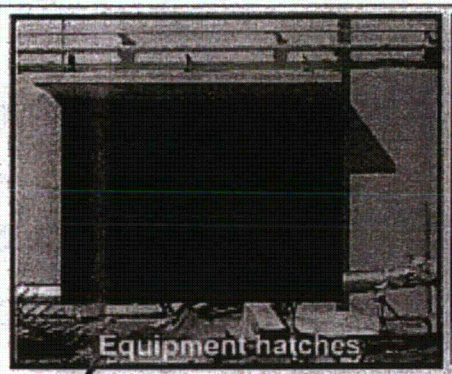
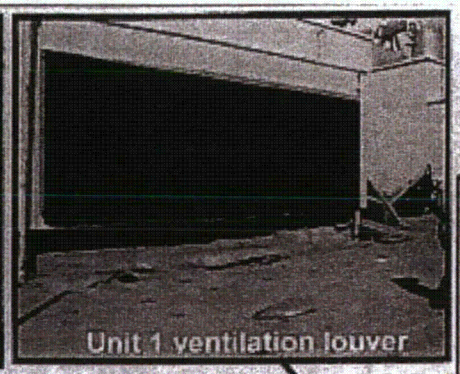
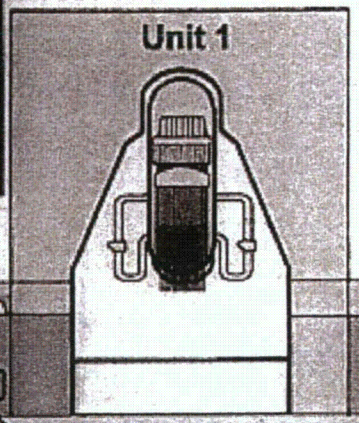
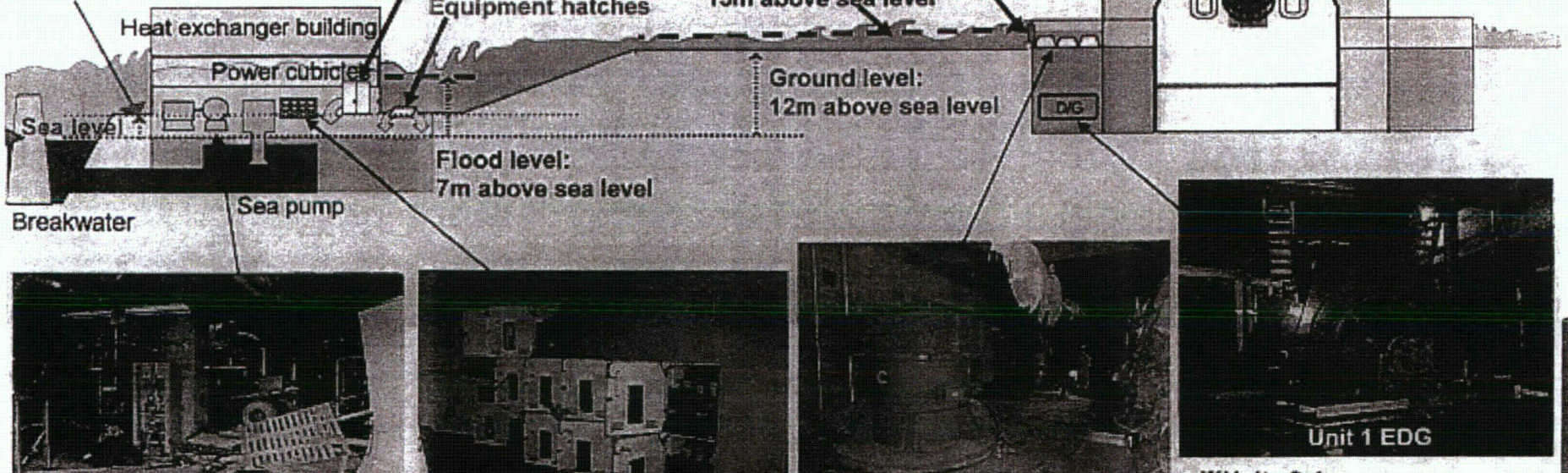
※Equipment hatches of all heat exchanger buildings except the south heat exchanger building of Unit 3 were destroyed by the tsunami.

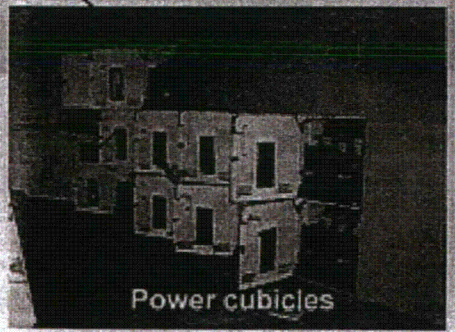


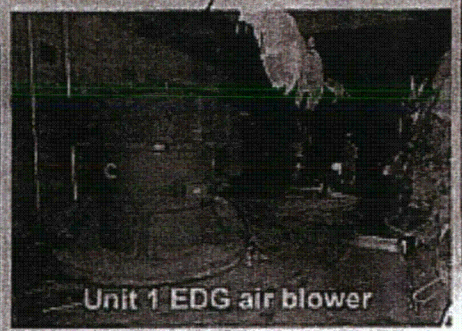


※Unit 1
Flooding to Reactor building through ventilation louver









※Units 2-4
Hardly any flooding to Reactor building


2号機