From: Sheron, Brian
To: HOO Hoc
Cc: Weber, Michael; Virgilio, Martin
Subject: FW: Tokyo March 23 - salt issue and restarting RHR
Date: Thursday, March 24, 2011 7:45:00 AM

Please forward to ET Director. Thx.

From: SCHU [mailto:SCHU@hq.doe.gov]
Sent: Wednesday, March 23, 2011 6:53 PM
To: Versluis, Rob; Kelly, John E (NE); Binkley, Steve; 'Holdren, John P.'
Cc: Adams, Ian; Aoki, Steven; Binkley, Steve; Bob Budnitz; Sheron, Brian; Brinkman, Bill; DAgostino, Thomas; Dick Garwin; Dick Garwin; Finck, Phillip; Grossenbacher, John (INL); Hurlbut, Brandon; John Holdren; Kelly, John E (NE); Koonin, Steven; Lyons, Peter; McFarlane, Harold; Owens, Missy; Per Peterson; Poneman, Daniel; Rolando Szilard; Steve Fetter
Subject: RE: Tokyo March 23 - salt issue and restarting RHR

To all,

Here is my response to Rob's message below.

(b)(5)

Steven Chu

OH/258

Department of Energy

-----Original Message-----
From: Versluis, Rob
Sent: Wednesday, March 23, 2011 10:09 AM
To: Kelly, John E (NE); NITSolutions; NITOPS; SCHU
Cc: DL-NERT-All
Subject: RE: Tokyo March 23 - salt issue and restarting RHR

(b)(5)

Rob

-----Original Message-----
From: Kelly, John E (NE)
Sent: Wednesday, March 23, 2011 8:33 AM
To: NITSolutions; NITOPS; SCHU
Cc: DL-NERT-All
Subject: FW: Tokyo March 23

(b)(5)

-----Original Message-----
From: Peko, Damian
Sent: Wednesday, March 23, 2011 5:40 AM
To: Peko, Damian; Lyons, Peter; Regalbuto, Monica; Johnson, Shane; Kelly, John E (NE); Lange, Robert; McGinnis, Edward; Boudreau, Robert; Golub, Sal; Harlow, Susan; Herczeg, John; Stark, Richard; Miotla, Dennis; Griffith, Andrew; Goldner, Frank; Duncan, Aleshia (State Dept); Connery, Joyce
Subject: Tokyo March 23

Pete et al

Some particularly important issues this time.

(b)(5)

(b)(5)

From: Sheron, Brian
To: Kammerer, Annie
Cc: Case, Michael; Richards, Stuart; Hogan, Rosemary; Uhle, Jennifer
Subject: Question
Date: Thursday, March 24, 2011 8:27:00 AM

I am seeing a spectrum of tsunami wave heights that reportedly hit the Fukushima plant. I saw in one of your briefing packages that was a USGS calculation that showed the peak wave height at about 30 feet. I saw some slides from TEPCO yesterday that said the tsunami wave height at the plant was "more than 10 meters". In today's "Nucleonics Week" on page 11 it says "Tepco discovered by checking the walls of Fukushima 1 ....and the nearby Fukushima 2 .....March 21 that the tsunamis had reached higher than 14 meters (about 46 feet) above sea level...." It then said the design basis for Fukushima 1 &2 was 5.7 and 5.2 meters respectively.

Without any accurate measurements, are we limited to educated guesses and expert judgment?

I think one question we will be asked is how well can we predict a tsunami wave height? I seem to recall you said the USGS calculations (wave height versus time at various locations) were probably pretty good because they had a well validated model. However, it would now appear they significantly under-predicted the wave height.

Am I missing something?

CH/259

From: Weber, Michael
To: Sheron, Brian
Subject: RESPONSE - [Fukushima Daiichi] Status on spent fuel pools (as of March 17th at 11AM).
Date: Thursday, March 24, 2011 8:38:26 AM

Thanks, Brian. This is helpful information.

-----Original Message-----
From: Sheron, Brian
Sent: Thursday, March 24, 2011 8:03 AM
To: HOO Hoc
Cc: Weber, Michael
Subject: FW: [Fukushima Daiichi] Status on spent fuel pools (as of March 17th at 11AM).

Please forward to RST Director.

-----Original Message-----
From: Bisconti, Giulia [mailto:Giulia.Bisconti@nuclear.energy.gov]
Sent: Saturday, March 19, 2011 7:40 PM
To: Schwab, Patrick; Kelly, John E (NE)
Cc: McGinnis, Edward; Gillespie, Mary
Subject: Fw: [Fukushima Daiichi] Status on spent fuel pools (as of March 17th at 11AM).

Fyi

----- Original Message -----
From: Masayuki Yamamoto <yamamoto.masayuki@tepco.co.jp>
To: Masayuki Yamamoto <yamamoto.masayuki@tepco.co.jp>; Bisconti, Giulia; 'Tateiwa, Kenji' <tateiwa.kenji@tepco.co.jp>; Miller, Tom; Gillespie, Mary; McGinnis, Edward; Peko, Damian; Schwab, Patrick; Kelly, John E (NE)
Cc: 松尾 建次 <matsuo.kenji@tepco.co.jp>; Nagano <yuichi.nagano@tepco.co.jp>
Sent: Sat Mar 19 19:27:18 2011
Subject: Re: [Fukushima Daiichi] Status on spent fuel pools (as of March 17th at 11AM).

Please see attached files for your assessment.
"IF (Irradiated Fuel)" in 1F4 Pool Cooling Yeas.pdf indicates fuels to be reloaded after the refueling outage at the time of the earthquake.

Masayuki Yamamoto

Manager, Nuclear Power Programs
Tokyo Electric Power Company
Washington Office
Phone:202-457-0790
E-mail:yamamoto.masayuki@tepco.co.jp

----- Original Message -----
From: Masayuki Yamamoto <mailto:yamamoto.masayuki@tepco.co.jp>
To: Bisconti, Giulia <mailto:Giulia.Bisconti@nuclear.energy.gov> ; 'Tateiwa, Kenji' <mailto:tateiwa.kenji@tepco.co.jp> ; Miller, Tom <mailto:TOM.MILLER@nuclear.energy.gov> ; Gillespie, Mary <mailto:Mary.Gillespie@Nuclear.Energy.gov> ; McGinnis, Edward <mailto:Edward.McGinnis@Nuclear.Energy.Gov> ; Peko, Damian <mailto:Damian.Peko@Nuclear.Energy.gov> ; Schwab, Patrick <mailto:Patrick.Schwab@nuclear.energy.gov>
Cc: 古塚 伸一 <mailto:shinichi.furutsuka@tepco.co.jp> ; 古　隆志 <mailto:furuya.takashi@tepco.co.jp> ; Masanori MOROZIMI <mailto:morozumi.masanori@tepco.co.jp> ; 澤 利史 <mailto:karasawa.toshifumi@tepco.co.jp> ;

CH/260

ikuo.nishimura@tepco.co.jp ; 松本 純 <mailto:matsumoto.j@tepco.co.jp> ;
TAKEDA.KAZUHITO@tepco.co.jp ; koyabu.hitoshi@tepco.co.jp ; otani.tsuyoshi@tepco.co.jp ; 福田 将吾
<mailto:f.shogo@tepco.co.jp> ; fujitani.keiichi@tepco.co.jp ; TEPCO Hiroo Yamamoto
<mailto:yamamoto.hiroo@tepco.co.jp> ; 川 和弘 <mailto:hiro.hasegawa@tepco.co.jp> ; 伊藤 裕太
<mailto:ito.yuta@tepco.co.jp> ; 菊 遼太郎 <mailto:kikuchi.ryotaro@tepco.co.jp> ; 小 健二
<mailto:ogasahara.kenji@tepco.co.jp> ; 井 卓 <mailto:arai.taku@tepco.co.jp> ; 中村 真哉
<mailto:nakamura.shiny@tepco.co.jp> ; 中村 美帆子 <mailto:nakamura.mihoko@tepco.co.jp> ; 村
正和 <mailto:masakazu.kimura@tepco.co.jp> ; 鈴 康 <mailto:suzuki.mitsuyasu@tepco.co.jp> ; 古
川 健太郎 <mailto:FURUKAWA.Kentarou@tepco.co.jp> ; 曽野 明久 <mailto:Sono.Akihisa@tepco.co.jp>
; 岡 リッチ <mailto:rich.oka@tepco.co.jp> ; 小島 英夫 <mailto:kojima.hideo@tepco.co.jp> ; 田 克也
<mailto:Harada.Katsuya@tepco.co.jp> ; 秋本 展秀 <mailto:akimoto.nobuhide@tepco.co.jp> ; 引 嘉
彦 <mailto:jibiki.y@tepco.co.jp> ; 上野 徹 <mailto:ueno.toru@tepco.co.jp> ; 市川 隆
<mailto:ichikawa.yoshitaka@tepco.co.jp> ; 己 <mailto:naoki.tsutsumi@tepco.co.jp> ; 西村 冬彦
<mailto:nishimura.fuyuhiko@tepco.co.jp> ; 矢島 聡 <mailto:satoshi.yajima@tepco.co.jp> ; 川野 泰
<mailto:y.kawano@tepco.co.jp> ; 宮崎 輝 <mailto:miyazaki.teru@tepco.co.jp> ; 丸山 浩二
<mailto:maruyama.kouji@tepco.co.jp> ; 酒井 敦正 <mailto:sakai.atsumasa@tepco.co.jp> ; 幸坂 樹
<mailto:kosaka.naoki@tepco.co.jp> ; 為井 学 <mailto:tamei.manabu@tepco.co.jp> ; 仰 佐和子
<mailto:ohgi.sawako@tepco.co.jp> ; 神成 浩次 <mailto:kannari.koji@tepco.co.jp> ; 萩尾 治
<mailto:HAGIO.E@tepco.co.jp> ; 井 義一 <mailto:yoshikazu.nagai@tepco.co.jp> ; 阪本 康
<mailto:sakamoto.toshiyasu@tepco.co.jp> ; 井 <mailto:minamii.takashi@tepco.co.jp> ; 中山 晋介
<mailto:n.shinsuke@tepco.co.jp> ; 松田 健 <mailto:matsuda.ken@tepco.co.jp> ; 伊藤 公宏
<mailto:ito.kimihiro@tepco.co.jp> ; 安橋 正隆 <mailto:ambashi.masataka@tepco.co.jp> ; 西岡 宏晃
<mailto:nishioka.hiroaki@tepco.co.jp> ; 松下 輔 <mailto:Daisuke.Matsushita@tepco.co.jp> ; 小西 信
二 <mailto:konishi.shinji@tepco.co.jp> ; 渡邊 裕一 <mailto:watanabe.yuuichi@tepco.co.jp> ; 久保 信
明 <mailto:OKUBO.N@tepco.co.jp> ; Masato Muto <mailto:muto.mst@tepco.co.jp> ; 川上
<mailto:kawakami.sayaka@tepco.co.jp> ; 畠山 徹也 <mailto:hatakeyama.tetsuya@tepco.co.jp> ;
ishii.katsuhiro@tepco.co.jp ; endo.jun@tepco.co.jp ; shinichi.yoshida@tepco.co.jp ;
watanabe.yoshinori@tepco.co.jp ; matsuo.kenji@tepco.co.jp ; yuichi.nagano@tepco.co.jp ; 中嶋 まどか
<mailto:nakashima.madoka@tepco.co.jp> ; 田口 祥一 <mailto:s.taguchi@tepco.co.jp> ; Tomomi Akita
TEPCO <mailto:akita.tomomi@tepco.co.jp> ; 岩田 健吾 <mailto:iwata.kengo@tepco.co.jp> ; 馬場 彰
<mailto:baba.akira@tepco.co.jp> ; 今泉 章 <mailto:yoshi.imaizumi@tepco.co.jp> ; 嶋
<mailto:oshima.jun@tepco.co.jp> ; 北島 多 子 <mailto:kitajima.takako@tepco.co.jp> ; 久玉 郎
<mailto:Kudama.Toshiro@tepco.co.jp>
Sent: Saturday, March 19, 2011 5:48 PM
Subject: Re: [Fukushima Daiichi] Status on spent fuel pools (as of March 17th at 11AM).

Dear Giulia,

I have requested information on the fuel layout in the pool
and my colleagues in corporate office started gathering data.
Necessary data will be available soon.

Regards,
Masayuki Yamamoto

Manager, Nuclear Power Programs
Tokyo Electric Power Company
Washington Office
Phone:202-457-0790
E-mail:yamamoto.masayuki@tepco.co.jp

----- Original Message -----
From: Bisconti, Giulia <mailto:Giulia.Bisconti@nuclear.energy.gov>
To: 'Tateiwa, Kenji' <mailto:tateiwa.kenji@tepco.co.jp> ; Miller, Tom
<mailto:TOM.MILLER@nuclear.energy.gov> ; Gillespie, Mary
<mailto:Mary.Gillespie@Nuclear.Energy.gov> ; McGinnis, Edward
<mailto:Edward.McGinnis@Nuclear.Energy.Gov> ; Peko, Damian
<mailto:Damian.Peko@Nuclear.Energy.gov> ; Schwab, Patrick

<mailto:Patrick.Schwab@nuclear.energy.gov>
Cc: 古塚 伸一 <mailto:shinichi.furutsuka@tepco.co.jp> ; 古　隆志 <mailto:furuya.takashi@tepco.co.jp> ; Masanori MOROZIMI <mailto:morozumi.masanori@tepco.co.jp> ; 澤 利史 <mailto:karasawa.toshifumi@tepco.co.jp> ; ikuo.nishimura@tepco.co.jp ; 松本 純 <mailto:matsumoto.j@tepco.co.jp> ; TAKEDA.KAZUHITO@tepco.co.jp ; koyabu.hitoshi@tepco.co.jp ; otani.tsuyoshi@tepco.co.jp ; 福田 将吾 <mailto:f.shogo@tepco.co.jp> ; fujitani.keiichi@tepco.co.jp ; TEPCO Hiroo Yamamoto <mailto:yamamoto.hiroo@tepco.co.jp> ; 川 和弘 <mailto:hiro.hasegawa@tepco.co.jp> ; 伊藤 裕太 <mailto:ito.yuta@tepco.co.jp> ; 菊　遼太郎 <mailto:kikuchi.ryotaro@tepco.co.jp> ; 小　健二 <mailto:ogasahara.kenji@tepco.co.jp> ; 井 卓 <mailto:arai.taku@tepco.co.jp> ; 中村 真哉 <mailto:nakamura.shiny@tepco.co.jp> ; 中村 美帆子 <mailto:nakamura.mihoko@tepco.co.jp> ; 村 正和 <mailto:masakazu.kimura@tepco.co.jp> ; 鈴　康 <mailto:suzuki.mitsuyasu@tepco.co.jp> ; 古川 健太郎 <mailto:FURUKAWA.Kentarou@tepco.co.jp> ; 曽野 明久 <mailto:Sono.Akihisa@tepco.co.jp> ; 岡 リッチ <mailto:rich.oka@tepco.co.jp> ; 小島 英夫 <mailto:kojima.hideo@tepco.co.jp> ; 田 克也 <mailto:Harada.Katsuya@tepco.co.jp> ; 秋本 展秀 <mailto:akimoto.nobuhide@tepco.co.jp> ; 引 嘉彦 <mailto:jibiki.y@tepco.co.jp> ; 上野 徹 <mailto:ueno.toru@tepco.co.jp> ; 市川　隆 <mailto:ichikawa.yoshitaka@tepco.co.jp> ; 己 <mailto:naoki.tsutsumi@tepco.co.jp> ; 西村 冬彦 <mailto:nishimura.fuyuhiko@tepco.co.jp> ; 矢島 聡 <mailto:satoshi.yajima@tepco.co.jp> ; 川野 泰 <mailto:y.kawano@tepco.co.jp> ; 宮崎 輝 <mailto:miyazaki.teru@tepco.co.jp> ; 丸山 浩二 <mailto:maruyama.kouji@tepco.co.jp> ; 酒井 敦正 <mailto:sakai.atsumasa@tepco.co.jp> ; 幸坂　樹 <mailto:kosaka.naoki@tepco.co.jp> ; 為井 学 <mailto:tamei.manabu@tepco.co.jp> ; 仰　佐和子 <mailto:ohgi.sawako@tepco.co.jp> ; 神成 浩次 <mailto:kannari.koji@tepco.co.jp> ; 萩尾　治 <mailto:HAGIO.E@tepco.co.jp> ; 井 義一 <mailto:yoshikazu.nagai@tepco.co.jp> ; 阪本　康 <mailto:sakamoto.toshiyasu@tepco.co.jp> ; 井　<mailto:minamii.takashi@tepco.co.jp> ; 中山 晋介 <mailto:n.shinsuke@tepco.co.jp> ; 松田 健 <mailto:matsuda.ken@tepco.co.jp> ; 伊藤 公宏 <mailto:ito.kimihiro@tepco.co.jp> ; 安橋 正隆 <mailto:ambashi.masataka@tepco.co.jp> ; 西岡 宏晃 <mailto:nishioka.hiroaki@tepco.co.jp> ; 松下　輔 <mailto:Daisuke.Matsushita@tepco.co.jp> ; 小西 信二 <mailto:konishi.shinji@tepco.co.jp> ; 渡邊 裕一 <mailto:watanabe.yuuichi@tepco.co.jp> ; 久保 信明 <mailto:OKUBO.N@tepco.co.jp> ; Masato Muto <mailto:muto.mst@tepco.co.jp> ; 川上 <mailto:kawakami.sayaka@tepco.co.jp> ; 畠山 徹也 <mailto:hatakeyama.tetsuya@tepco.co.jp> ; ishii.katsuhiro@tepco.co.jp ; endo.jun@tepco.co.jp ; shinichi.yoshida@tepco.co.jp ; watanabe.yoshinori@tepco.co.jp ; matsuo.kenji@tepco.co.jp ; TEPCO-Washington YAMAMOTO Masayuki <mailto:yamamoto.masayuki@tepco.co.jp> ; yuichi.nagano@tepco.co.jp ; 中嶋 まどか <mailto:nakashima.madoka@tepco.co.jp> ; 田口 祥一 <mailto:s.taguchi@tepco.co.jp> ; Tomomi Akita TEPCO <mailto:akita.tomomi@tepco.co.jp> ; 岩田 健吾 <mailto:iwata.kengo@tepco.co.jp> ; 馬場 彰 <mailto:baba.akira@tepco.co.jp> ; 今泉　章 <mailto:yoshi.imaizumi@tepco.co.jp> ; 嶋 <mailto:oshima.jun@tepco.co.jp> ; 北島 多　子 <mailto:kitajima.takako@tepco.co.jp> ; 久玉　郎 <mailto:Kudama.Toshiro@tepco.co.jp>

Sent: Saturday, March 19, 2011 4:52 PM

Subject: RE: [Fukushima Daiichi] Status on spent fuel pools (as of March 17th at 11AM).

Dear Kenji:

Can you kindly help answer this question for our experts? The specific arrangement of the spent fuel in the Unit 4 pool will affect our estimates of the peak temperature in the pool. We appreciate your precious time.

Giulia

From: Schwab, Patrick

Sent: Friday, March 18, 2011 6:41 PM

To: Peko, Damian

Cc: Schwab, Patrick

Subject: Fukushima spent fuel pools

Damian,

I am working on the DOE Office of Nuclear Energy's response team, under John Kelly. Do you have information from TEPCO on how they arranged the spent fuel in the pools before the earthquake? In particular, did they store all the hotter fuel elements close to each other? Or did they spread them out, with older, cooler fuel assemblies stored in between the hotter fuel assemblies? We are especially interested in the Unit 4 pool, of course.

Thank you for your help.

Pat

Patrick R. Schwab, Ph.D.

Office of Nuclear Energy

Department of Energy

301-903-8186

Room E-479 Germantown Bldg.

patrick.schwab@nuclear.energy.gov

From: Sheron, Brian
To: Droggitis, Spiros
Cc: Riley (OCA), Timothy
Subject: RE: 0600 EDT 3242011 USNRC Japan Plant Condition Update
Date: Thursday, March 24, 2011 9:26:00 AM

OK.

From: Droggitis, Spiros
Sent: Thursday, March 24, 2011 9:18 AM
To: Sheron, Brian
Cc: Riley (OCA), Timothy
Subject: FW: 0600 EDT 3242011 USNRC Japan Plant Condition Update

Brian: This status was sent to the Hill contacts this morning, so maybe you should just focus on what has changed this afternoon rather than the detailed status. Thanks, Spiros

From: LIA07 Hoc
Sent: Thursday, March 24, 2011 6:29 AM
To: LIA12 Hoc; Droggitis, Spiros
Cc: LIA07 Hoc
Subject: 0600 EDT 3242011 USNRC Japan Plant Condition Update

Please find attached the 0600 3/24/11 NRC Japan Plant Condition Update.

Please let me know if you have any questions or concerns.

Thank you,

-Jim

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

CH/26/1

From: Lee, Richard
To: Sheron, Brian
Cc: Gibson, Kathy
Subject: Highlight from 03/23 DOE Science Council Meeting
Date: Thursday, March 24, 2011 10:06:48 AM
Attachments: Gamma shielding.pptx

Brian:

Attached is VGs from yesterday conference call.

John Kelly discussed the VGs.

(1) Effect of salt water on coolability – TEPCO, GE, DOE assessments are similar, advice to transition to fresh water as soon as possible. Concerns with sea water (with radioactive materials in it) effects on RHR pumps.
(2) Measurement of containment water level – looking for way (instrumentation) to determine water level in the drywell. NRC asked whether acoustic method has been considered. John Kelly to send a list of instrumentations that been considered. (further discussion today)
(3) Shielding for control room – consideration to install temporary shielding for CR operator
(4) Spent Fuel Pool – Fukushima Unit 4 – The Pg. 24 VG shows the spent fuel is fully than what GE told SNL. John Kelly said the DOE information came from TEPCO. In the TEPCO provided document, one can zoom into and can see the burnup of the fuel as well as fresh fuel loading in the pool. [For NRC, we need to reconcile TEPCO vs GE provided information with respect to the status of the fuel]
(5) If RHR is not available, considering to flood the lower compartments surrounding the torus, to cool the torus.
(6) Per Peterson discussed the short time window now, of about 6 to 8 weeks, during which it will remain possible to use whole-body counting and other methods to measure any I-131 that members of the public may have ingested. One participant expressed the view that measurement of these small dose is of no use.
(7)
(8) (b)(5)

Next step: More conference call!!

Richard

OH/262

The effectiveness of gamma-ray shielding is frequently described in terms of the half value layer (HVL) or the tenth value layer (TVL) . These are the thicknesses of an absorber that will reduce the gamma radiation to half, and one tenth of its intensity respectively. Fig. 7.6 shows the half-value layers for some common materials as a function of gamma-ray energy.

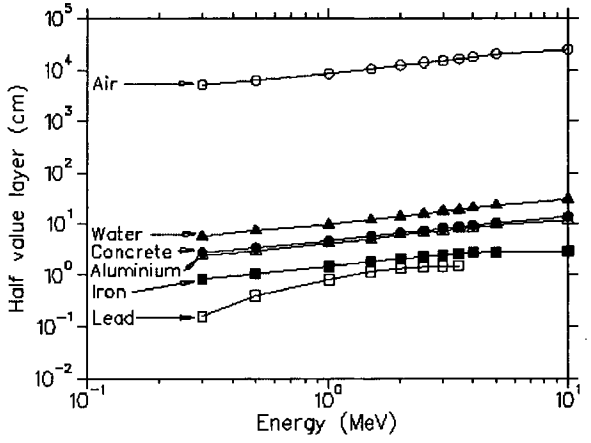

Figure 7.6: Half value layers for some materials as a function of gamma-ray energy.

The most effective gamma shields are materials which have a high density and high atomic number , such as lead, tungsten, and uranium among others. Generally speaking these materials are expensive, so, in situations where space is not a constraint and where structural strength is required, concrete is used even though it is a less effective shielding material. Lead shields are frequently used where space is limited or where only a small area of absorber is required. Table 7.1 shows the dose attenuation of some common materials.

Shield material	Narrow beam mfp ($g\ cm^{-2}$)		Tenth value layer (cm)	
	0.5 *MeV*	0.8 *MeV*	0.5 *MeV*	0.8 *MeV*
Lead	6.2	11.3	1.4	2.6
Copper	12.0	15.1	4.0	5.0
Iron	11.9	14.9	4.8	5.9
Aluminum	11.8	14.2	14.	16.
Concrete	11.4	14.1	15.	18.
Earth	11.4	14.1	19.	23.
Water	10.3	12.7	35.	40.
Air	11.5	14.3	290. m	340. m

Table 7.1: Attenuation for 0.5 and 0.8 MeV gamma rays. Narrow beam mean free paths and tenth value layers .

From: Sheron, Brian
To: HOO Hoc
Subject: FW: Highlight from 03/23 DOE Science Council Meeting
Date: Thursday, March 24, 2011 10:43:00 AM
Attachments: Gamma shielding.pptx

Please forward to ET and PMT Directors. Thx.

From: Lee, Richard
Sent: Thursday, March 24, 2011 10:07 AM
To: Sheron, Brian
Cc: Gibson, Kathy
Subject: Highlight from 03/23 DOE Science Council Meeting

Brian:

Attached is VGs from yesterday conference call.

John Kelly discussed the VGs.

(1) Effect of salt water on coolability – TEPCO, GE, DOE assessments are similar, advice to transition to fresh water as soon as possible. Concerns with sea water (with radioactive materials in it) effects on RHR pumps.
(2) Measurement of containment water level – looking for way (instrumentation) to determine water level in the drywell. NRC asked whether acoustic method has been considered. John Kelly to send a list of instrumentations that been considered. (further discussion today)
(3) Shielding for control room – consideration to install temporary shielding for CR operator
(4) Spent Fuel Pool – Fukushima Unit 4 – The Pg. 24 VG shows the spent fuel is fully than what GE told SNL. John Kelly said the DOE information came from TEPCO. In the TEPCO provided document, one can zoom into and can see the burnup of the fuel as well as fresh fuel loading in the pool. [For NRC, we need to reconcile TEPCO vs GE provided information with respect to the status of the fuel]
(5) If RHR is not available, considering to flood the lower compartments surrounding the torus, to cool the torus.
(6) Per Peterson discussed the short time window now, of about 6 to 8 weeks, during which it will remain possible to use whole-body counting and other methods to measure any I-131 that members of the public may have ingested. One participant expressed the view that measurement of these small dose is of no use

(b)(5)

Next step: More conference call!!

CH/263

Richard

From: Richards, Stuart
To: Sheron, Brian
Cc: Case, Michael; Rivera-Lugo, Richard
Subject: Request for Approval of Foreign Travel (Trip #189 on Graphite Cracking)
Date: Thursday, March 24, 2011 10:43:28 AM
Importance: High

Brian

(b)(5)

Thanks
Stu

CH/264

From: Sheron, Brian
To: Gibson, Kathy
Subject: FW: GRS request for MELCOR input deck for Mark 1
Date: Wednesday, March 16, 2011 10:45:00 AM

See below. Can we send the Germans the SOARCA results for Peach Bottom?

From: Diane.JACKSON@oecd.org [mailto:Diane.JACKSON@oecd.org]
Sent: Wednesday, March 16, 2011 10:44 AM
To: Sheron, Brian; Uhle, Jennifer
Cc: frank-peter.weiss@grs.de; Axel.BREEST@oecd.org
Subject: RE: GRS request for MELCOR input deck for Mark 1

Dear Brian –

Thank you for the quick response. Yes, Dr. Weiss would very much appreciate the SOARCA results for Peach Bottom.

Best regards,

Diane Jackson, Nuclear Safety Specialist
Nuclear Safety Division, OECD Nuclear Energy Agency (NEA)
Tel.: +33 (0)1 45 24 10 55, Diane.Jackson@oecd.org

From: Sheron, Brian [mailto:Brian.Sheron@nrc.gov]
Sent: Wednesday, March 16, 2011 15:21
To: JACKSON Diane, NEA/SURN; Borchardt, Bill; Uhle, Jennifer
Cc: REIG Javier, NEA/SURN; DUNN LEE Janice, NEA
Subject: RE: GRS request for MELCOR input deck for Mark 1

Diane, Kathy Gibson said that we are checking with the Peach Bottom plant to see if we can release the Peach Bottom MELCOR deck, since it is proprietary.

However, we have already completed consequence analyses for Peach Bottom as part of SOARCA. Would GRS be interested in the SOARCA
Results, since the severe accident analyses are already done?

CH/265

From: Sheron, Brian
To: Gibson, Kathy
Subject: RE: BWR SFP report - success path
Date: Thursday, March 24, 2011 11:10:00 AM

Super, thanks.

From: Gibson, Kathy
Sent: Thursday, March 24, 2011 10:56 AM
To: Sheron, Brian
Subject: BWR SFP report - success path

Brian,
After consulting with OGC and OIS, Richard determined that we can release the report as is to NEI since you (the office director) determined that they have a need to know.

Scott is contacting NEI (Alex Marion – he knows him) to determine how best to transfer the document and to ensure they know they (and anybody they give it to that has a need to know) cannot release it publicly.

We will let you know when NEI has received the document.

k

Kathy Halvey Gibson
Director
Division of Systems Analysis

Kathy.Gibson@nrc.gov
(301) 251-7499 Work
(b)(6) Cell

ltr/266

From: Sheron, Brian
To: Binkley, Steve
Subject: RE: Test of Nuclear Science Team email distribution
Date: Thursday, March 24, 2011 11:38:00 AM

-----Original Message-----
From: Binkley, Steve [mailto:Steve.Binkley@science.doe.gov]
Sent: Thursday, March 24, 2011 11:23 AM
To: Adams, Ian; Aoki, Steven; 'RJBudnitz@lbl.gov'; Sheron, Brian; Brinkman, Bill; DAgostino, Thomas; (b)(6) rlg2@us.ibm.com'; 'phillip.finck@inl.gov'; 'john.grossenbacher@inl.gov'; Hurlbut, Brandon; (b)(6) Kelly, John E (NE); Koonin, Steven; Lyons, Peter; 'harold.mcfarlane@inl.gov'; Owens, Missy; 'peterson@nuc.berkeley.edu'; Poneman, Daniel; 'ronaldo.szilard@inl.gov'; (b)(6) SCHU
Subject: Test of Nuclear Science Team email distribution

This is a test of the Nuclear Science distribution list. Please hit reply to this email and indicate if the email address used is the best one for you.

Also, you can conveniently use this email to send materials to all members by using reply to all.

Steve Binkley

CH/267

From: Sheron, Brian
To: Case, Michael
Subject: FW: Background 3rd team to Japan .docx
Date: Thursday, March 24, 2011 11:43:00 AM
Attachments: Kathy Halvey Gibson.vcf

(b)(5)

From: Gibson, Kathy
Sent: Thursday, March 24, 2011 11:40 AM
To: Sheron, Brian
Cc: Uhle, Jennifer
Subject: RE: Background 3rd team to Japan .docx

Well let me first say that at the beginning of all this, I asked all my staff to provide information on whether they were willing to work in the IRC and shift preferences, whether they were willing to go to Japan, and what their area(s) of expertise are. I have a spreadsheet with this information.

(b)(5)

Kathy Halvey Gibson
Director
Division of Systems Analysis

Kathy.Gibson@nrc.gov
(301) 251-7499 Work
(b)(6) Cell

From: Sheron, Brian
Sent: Thursday, March 24, 2011 11:29 AM
To: Gibson, Kathy
Cc: Uhle, Jennifer
Subject: FW: Background 3rd team to Japan .docx

See below.

CH/268

(b)(5)

From: Salus, Amy
Sent: Thursday, March 24, 2011 11:14 AM
To: Ruland, William; Holahan, Gary; Miller, Charles; Haney, Catherine; Sheron, Brian; Ordaz, Vonna; Dean, Bill; McCree, Victor; Satorius, Mark; Howell, Art; Collins, Elmo
Subject: Background 3rd team to Japan .docx

Attachment Kathy Halvey Gibson_2.vcf (5196 Bytes) cannot be converted to PDF format.

From: Richards, Stuart
To: Sheron, Brian
Cc: Case, Michael
Subject: RE: Request for Approval of Foreign Travel (Trip #189 on Graphite Cracking)
Date: Thursday, March 24, 2011 12:33:38 PM

Brian

Yes, DOE personnel (Dr. Tim Burchell of ORNL and Dr. Wil Windes of INL) have been invited. However, DOE is not presently conducting research related to understanding graphite fracture; rather, they are in a mode to gather material strength and other property characterizations after limited irradiation.

Our interest is not to solve issues, but rather to understand what the issues are with graphite, in order that we have the knowledge and regulatory guidance to do our safety review and ask the right questions. Attendance at the meeting by DOE will not help us in this regard. Additionally, it will benefit us if research at the international level addresses some of the issues that are likely to come up during our safety reviews.

Some of the regulatory topics that will be covered at the meeting include inservice inspections related to graphite cracking and the sufficiency of ASME Code design margins related to graphite. Graphite fracture in a reactor may directly affect the integrity of fuel and control rod channels, and there is the potential for blockage due to spalling from localized fracturing, so this area is safety significant for a graphite moderated design.

Stu

From: Sheron, Brian
Sent: Thursday, March 24, 2011 11:10 AM
To: Richards, Stuart
Subject: RE: Request for Approval of Foreign Travel (Trip #189 on Graphite Cracking)

And what research is DOE doing on this issue? Was DOE invited? If not, why not?

From: Richards, Stuart
Sent: Thursday, March 24, 2011 10:43 AM
To: Sheron, Brian
Cc: Case, Michael; Rivera-Lugo, Richard
Subject: Request for Approval of Foreign Travel (Trip #189 on Graphite Cracking)
Importance: High

Brian

This request is in regard to a proposed trip for Srini to London for a meeting on graphite issues.

When Mike and I last discussed the trip with you, you asked for more information on the organization of the meeting.

The meeting is scheduled for April 11 – 13 and is organized by the UK Nuclear

CH/269

Installations Inspectorate (HSE) and EdF Energy, the operator of British AGRs .

The purpose of the meeting is to gather selected experts from around the world (a dozen or so), to establish an understanding on the scope of the problem of graphite fracture in high temperature gas cooled reactors. Srini is our expert on graphite.

The value of the meeting to the NRC is that we will draw on the extensive graphite knowledge and experience of other countries to inform our graphite work. Gaining knowledge in this area from others should save us a significant amount of money and time. The meeting will also allow us to be part of the discussion on what future research needs to be done, some of which may be carried out by other countries, potentially saving us the resources to do it ourselves. The outcome of this meeting will also aid NRC's future research planning, and will contribute to the technical basis for staff positions, interim staff guidance development, and regulatory guide development.

It is unlikely that we could gain this information via e-mails and telephone calls. Attendance at the meeting is consistent with our research plan in this area. NRO has advocated drawing on international partners for information on graphite.

We think the potential benefits of this trip to the NRC are significant and recommend approval.

Thanks
Stu

From: Bowman, Gregory
To: Coe, Doug
Cc: Gibson, Kathy; Sheron, Brian; Uhle, Jennifer; Coyne, Kevin; Hudson, Daniel
Subject: Feedback from Agenda Planning Meeting - Level 3 PRA Paper
Date: Thursday, March 24, 2011 1:06:39 PM
Importance: High

I just received the Chairman's feedback on the Level III PRA meeting. Here's what he provided, which will need to be rolled into a revised scheduling note:

(1) Delete everything associated with SOARCA.

(2) Add a discussion topic on severe accidents to the NRC panel. The Chairman apparently didn't provide any more detail on what he's looking for from this, but it shouldn't involve a discussion of SOARCA (although maybe one of the staff working on SOARCA would be the right person to present). We'll need to revise the scheduling note to incorporate this topic, but we might have to spend some time discussing what he wants us to actually discuss.

(3) The Chairman wants us to add an external panel. He suggested EPRI or ASME, but feel free to substitute any other organizations that would be better. We'd probably need two groups to be represented, although one might be okay. We'll need names of the organizations now, but the presenter names can be left as TBD. If it turns out that we need to switch organizations later, that shouldn't be a big problem.

(4) The meeting got moved back to July 28. The paper will still be due on June 30 to OEDO and July 7 to the Commission.

We need to get a revised scheduling note to SECY as soon as possible, but before COB tomorrow. If you need help with it or have any questions, please give me a call. If there's confusion, I can set up a call with Jim A., since he was at the meeting with the Chairman.

Greg

From: Coe, Doug
Sent: Wednesday, March 23, 2011 5:49 PM
To: Bowman, Gregory
Cc: Gibson, Kathy; Scott, Michael; Sheron, Brian; Uhle, Jennifer; Coyne, Kevin; Hudson, Daniel; Stutzke, Martin
Subject: RE: Agenda Planning Meeting - Level 3 PRA Paper

Greg –
Just so you know, we are waiting to hear that we have a green light on this approach before proceeding with changing the current Commission meeting scheduling note and the ACRS subcommittee meeting arrangements.
Please confirm with us, when you can, that we should move forward on this path.
Thanks so much,
Doug

From: Coe, Doug

CH/270

Sent: Tuesday, March 22, 2011 5:56 PM
To: Bowman, Gregory
Cc: Gibson, Kathy; Scott, Michael; Sheron, Brian; Uhle, Jennifer; Coyne, Kevin; Hudson, Daniel; Stutzke, Martin
Subject: RE: Agenda Planning Meeting - Level 3 PRA Paper

Greg,

RES can support providing a Level III PRA SECY paper to the Commission by June 20 (in support of a Commission meeting on July 5 or later). This would entail a due date to OEDO of June 13.

However, our original plan of a paper with joint Level III/SOARCA recommendations will need to be modified to include ONLY the Level III PRA options/recommendations.

Note that we were planning to meet with the ACRS subcommittees in May and the ACRS full Committee in June (June 8-10) and would not be able to incorporate any ACRS letter recommendations into our paper before sending it to OEDO on June 13. However, the Committee had already offered to provide its letter in June, so the staff and Commission will still have the benefit of ACRS views at a Commission meeting in July.

Since this approach constitutes a change from the previous joint PRA/SOARCA SECY paper strategy, please let us know if Mike Weber would like to be briefed.

We are happy to help with any communication you need to make to the Chairman's office.

Thanks,
Doug

From: Bowman, Gregory
Sent: Tuesday, March 22, 2011 10:05 AM
To: Sheron, Brian; Uhle, Jennifer; Coe, Doug; Coyne, Kevin
Cc: Gibson, Kathy; Scott, Michael
Subject: Agenda Planning Meeting - Level 3 PRA Paper
Importance: High

I'm not sure if you saw this on the Chairman's agenda that Mike sent out over the weekend, but the Chairman is looking to move the Level 3 PRA meeting up to early July. That would mean the paper would need to come to the Commission in mid-June (several weeks earlier than currently scheduled).

Can you let me know if that's even doable? I know there was some coordination between the Level 3 paper and SOARCA (if I remember right, you were trying to publish the draft SOARCA paper for public comment before the Commission meeting, but I might have that wrong), and that might add some additional complications.

If either you can't move up the Level 3 paper or moving it up is going to cause significant consequences (e.g., you won't be able to discuss SOARCA), please let me know as soon

as possible. If that's the case, we'll need to communicate those concerns to the Chairman's office. I'll take care of that, but I'll need some help in coming up with language.

From: Weber, Michael
Sent: Sunday, March 20, 2011 6:52 PM
To: Sheron, Brian; Uhle, Jennifer; Haney, Catherine; Kinneman, John; Miller, Charles; Moore, Scott; Zimmerman, Roy; McCrary, Cheryl
Cc: Brock, Kathryn; Frazier, Alan; Bowman, Gregory
Subject: FYI - Agenda Planning Meeting

Early awareness of potential proposed changes to the Commission calendar...stay tuned

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From: Andersen, James
To: Borchardt, Bill; Virgilio, Martin; Weber, Michael; Ash, Darren; Muessle, Mary; Landau, Mindy; Leeds, Eric
Cc: Bavol, Rochelle; Laufer, Richard; Vietti-Cook, Annette
Sent: Sun Mar 20 18:18:07 2011
Subject: Agenda Planning Meeting

Over the weekend, I have been called into a number of Agenda Planning discussions with the Chairman's office and finally today with the Chairman. I believe the attached is close to what the Chairman plans to propose during the 11:00am meeting. The Chairman understands this is aggressive and may push the staff to far. A point I tried to make a couple times in a nice manner. I can discuss more during the 8:00am meeting if needed. Since I created this document, I don't know how close this will be to the actual document the Chairman's office creates for the Chairman's use.

I have copied SECY to give them a heads up.

Jim A.

From:	Chin, Allison
To:	Burns, Stephen; Dyer, Jim; Doane, Margaret; Weber, Michael; Ash, Darren; Greene, Kathryn; Boyce, Thomas (OIS); Wiggins, Jim; Johnson, Michael; Leeds, Eric; Haney, Catherine; Miller, Charles; Sheron, Brian; Dean, Bill; McCree, Victor; Satorius, Mark; Collins, Elmo
Cc:	Cohen, Miriam; Kelley, Corenthis; Gallagher, Johanna; Tallarico, Alison; Johns, Nancy
Subject:	Extension for Sumbitting LPP Rankings - New Date: April 25, 2011
Date:	Thursday, March 24, 2011 1:14:59 PM

To ERB Members:

To accommodate the current demands on everyone's time and schedules, the due date to submit your LPP rankings has been extended to Monday, April 25. An expanded ERB meeting will be scheduled for early May to review the ranking results and finalize selections.

Thanks,

ALLISON CHIN, HR SPECIALIST
OPERATIONS BRANCH A, OHR
[PHONE] **301-415-2944**
[FAX] **301-415-3818**
[MAIL STOP] **O3-E17A**
U.S. Nuclear Regulatory Commission

4/27/11

From:	Sheron, Brian
To:	ET05 Hoc; Lee, Richard
Cc:	OST02 HOC; FOIA Response.hoc Resource
Subject:	RE:
Date:	Thursday, March 24, 2011 1:18:00 PM

Got it, thanks.

From: ET05 Hoc
Sent: Thursday, March 24, 2011 11:49 AM
To: Sheron, Brian; Lee, Richard
Cc: OST02 HOC; FOIA Response.hoc Resource
Subject:

Please find attached the current version of the RST assessment. It is currently being updated. This is to support Brian Sheron's participation in 1500 Congressional Call and RES staff's participation in DOE call at 1700.

CH/272

From:	Sheron, Brian
To:	Gibson, Kathy; Bush-Goddard, Stephanie; Lewis, Doris
Cc:	Uhle, Jennifer
Subject:	FW: GEA Vote for SECY-11-0027 - Approved w/Comments - (ABNORMAL CONCURRENCES))
Date:	Thursday, March 24, 2011 1:40:00 PM
Attachments:	GEA-cmt-SP11-0027.pdf image003.png

FYI.

From: Flory, Shirley **On Behalf Of** RidsResOd Resource
Sent: Thursday, March 24, 2011 1:21 PM
To: Case, Michael; Coe, Doug; Coyne, Kevin; Gibson, Kathy; Richards, Stuart; Sangimino, Donna-Marie; Scott, Michael; Sheron, Brian; Uhle, Jennifer; Valentin, Andrea
Subject: FW: GEA Vote for SECY-11-0027 - Approved w/Comments - (ABNORMAL CONCURRENCES))

From: RidsEdoDraftSrmVote Resource
Sent: Thursday, March 24, 2011 1:05 PM
To: RidsFsmeOd Resource; RidsNmssOd Resource; RidsNrrOd Resource; RidsNsirOd Resource; RidsNroOd Resource; RidsOeMailCenter Resource; RidsRgn1MailCenter Resource; RidsRgn2MailCenter Resource; RidsRgn3MailCenter Resource; RidsRgn4MailCenter Resource; RidsResOd Resource; Ash, Darren; Borchardt, Bill; EDO_Staff_Assistants; Mamish, Nader; RidsEdoDraftSrmVote Resource; Virgilio, Martin; Weber, Michael
Subject: GEA Vote for SECY-11-0027 - Approved w/Comments - (ABNORMAL CONCURRENCES))

From: Laufer, Richard
Sent: Thursday, March 24, 2011 12:40 PM
To: Tomon, John; Akstulewicz, Brenda; Bavol, Rochelle; Belmore, Nancy; Brenner, Eliot; Poole, Brooke; Burns, Stephen; Hart, Ken; Hayden, Elizabeth; Joosten, Sandy; Laufer, Richard; Leeds, Eric; Mamish, Nader; Mayberry, Theresa; Muessle, Mary; Powell, Amy; Pulley, Deborah; Quesenberry, Jeannette; RidsEdoDraftSrmVote Resource; RidsOgcMailCenter Resource; Schmidt, Rebecca; Shea, Pamela; Vietti-Cook, Annette
Subject: FW: Commissioner Apostolakis' vote re SECY-11-0027 (ABNORMAL CONCURRENCES))

SECY-11-0027 – REPORT TO CONGRESS ON ABNORMAL OCCURRENCES FISCAL YEAR 2010

Approved with comments.

Rich

From: Blake, Kathleen
Sent: Thursday, March 24, 2011 12:27 PM
To: Wright, Darlene; Baggett, Steven; Batkin, Joshua; Bozin, Sunny; 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; Harves, Carolyn; 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; Snodderly, Michael; Sosa, Belkys; Speiser, Herald; Svinicki, Kristine; Temp, WCO; Temp, WDM; Thoma, John; Warren, Roberta; Zorn, Jason; Apostolakis, George; Temp, GEA; Tadesse, Rebecca; Castleman, Patrick; Montes, David; Dhir, Neha; Adler, James; Jimenez, Patricia; Muessle, Mary; Nieh, Ho; Ostendorff, William;

Warnick, Greg; Sexton, Kimberly; Pearson, Laura
Cc: Lewis, Antoinette
Subject: Commissioner Apostolakis' vote re SECY-11-0027 (ABNORMAL CONCURRENCES))

Commissioner Apostolakis' vote is attached.

(b)(5)

(b)(5)

SECY-11-0027 – REPORT TO CONGRESS ON ABNORMAL OCCURRENCES FISCAL YEAR 2010

From: Sheron, Brian
To: Gibson, Kathy; Bush-Goddard, Stephanie; Lewis, Doris
Cc: Uhle, Jennifer
Subject: FW: RESENDING Commissioner Apostolakis" vote re SECY-11-0027 (ABNORMAL OCCURRENCES)
Date: Thursday, March 24, 2011 1:40:00 PM
Attachments: GEA-cmt-SP11-0027.pdf
image001.png

From: Flory, Shirley **On Behalf Of** RidsResOd Resource
Sent: Thursday, March 24, 2011 1:22 PM
To: Case, Michael; Coe, Doug; Coyne, Kevin; Gibson, Kathy; Richards, Stuart; Sangimino, Donna-Marie; Scott, Michael; Sheron, Brian; Uhle, Jennifer; Valentin, Andrea
Subject: FW: RESENDING Commissioner Apostolakis' vote re SECY-11-0027 (ABNORMAL OCCURRENCES)

From: RidsEdoDraftSrmVote Resource
Sent: Thursday, March 24, 2011 1:20 PM
To: RidsFsmeOd Resource; RidsNmssOd Resource; RidsNrrOd Resource; RidsNsirOd Resource; RidsNroOd Resource; RidsOeMailCenter Resource; RidsRgn1MailCenter Resource; RidsRgn2MailCenter Resource; RidsRgn3MailCenter Resource; RidsRgn4MailCenter Resource; RidsResOd Resource; Ash, Darren; Borchardt, Bill; EDO_Staff_Assistants; Mamish, Nader; RidsEdoDraftSrmVote Resource; Virgilio, Martin; Weber, Michael
Subject: FW: RESENDING Commissioner Apostolakis' vote re SECY-11-0027 (ABNORMAL OCCURRENCES)

From: Laufer, Richard
Sent: Thursday, March 24, 2011 1:16 PM
To: Tomon, John; Akstulewicz, Brenda; Bavol, Rochelle; Belmore, Nancy; Brenner, Eliot; Poole, Brooke; Burns, Stephen; Hart, Ken; Hayden, Elizabeth; Joosten, Sandy; Laufer, Richard; Leeds, Eric; Mamish, Nader; Mayberry, Theresa; Muessle, Mary; Powell, Amy; Pulley, Deborah; Quesenberry, Jeannette; RidsEdoDraftSrmVote Resource; RidsOgcMailCenter Resource; Schmidt, Rebecca; Shea, Pamela; Vietti-Cook, Annette
Subject: FW: RESENDING Commissioner Apostolakis' vote re SECY-11-0027 (ABNORMAL OCCURRENCES)

SECY-11-0027 – REPORT TO CONGRESS ON ABNORMAL OCCURRENCES FISCAL YEAR 2010

Approved with comments.

Rich

From: Blake, Kathleen
Sent: Thursday, March 24, 2011 1:13 PM
To: Blake, Kathleen; Wright, Darlene; Baggett, Steven; Batkin, Joshua; Bozin, Sunny; 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; Harves, Carolyn; 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;

Ch/274

Snodderly, Michael; Sosa, Belkys; Speiser, Herald; Svinicki, Kristine; Temp, WCO; Temp, WDM; Thoma, John; Warren, Roberta; Zorn, Jason; Apostolakis, George; Temp, GEA; Tadesse, Rebecca; Castleman, Patrick; Montes, David; Dhir, Neha; Adler, James; Jimenez, Patricia; Muessle, Mary; Nieh, Ho; Ostendorff, William; Warnick, Greg; Sexton, Kimberly; Pearson, Laura
Cc: Lewis, Antoinette
Subject: RESENDING Commissioner Apostolakis' vote re SECY-11-0027 (ABNORMAL OCCURRENCES)

Resending to correct typo in subject line

RE: Commissioner Apostolakis' vote re SECY-11-0027 (ABNORMAL ~~CONCURRENCES~~ OCCURRENCES) is attached.

(b)(5)

(b)(5)

From: Peltz, James

To: Adams, Ian; Aoki, Steven; Binkley, Steve; Brinkman, Bill; Budnitz, Bob; DAgostino, Thomas; Finck, Phillip; Garwin, Dick (EOP); Garwin, Dick (IBM); Grossenbacher, John (INL); Hurlbut, Brandon; John Holdren; Kelly, John E (NE); Koonin, Steven; Lyons, Peter; McFarlane, Harold; Miller, Neile; Mustin, Tracy; NITSolutions; Owens, Missy; Peterson, Per; Poneman, Daniel; SCHU; Sheron, Brian; Steve Fetter; Szilard, Ronald

Subject: Protected Doc

Date: Thursday, March 24, 2011 1:42:09 PM

The code for the doc is: (b)(6)

James Peltz

O: (202) 586-7564

C: (b)(6)

CH/275

From: Sheron, Brian
To: Marshall, Michael
Subject: FW: Feedback from Agenda Planning Meeting - Level 3 PRA Paper
Date: Thursday, March 24, 2011 1:45:00 PM

Mike, see item #2 in Greg's e-mail below. Can you give us any insight on what the Chairman wants us to present regarding severe accidents?

From: Coe, Doug
Sent: Thursday, March 24, 2011 1:26 PM
To: Bowman, Gregory
Cc: Gibson, Kathy; Sheron, Brian; Uhle, Jennifer; Coyne, Kevin; Hudson, Daniel
Subject: RE: Feedback from Agenda Planning Meeting - Level 3 PRA Paper

Got it – Not sure if the Chairman wants the external panel to focus on severe accident research or the Level III PRA initiative or both. Any insight?

From: Bowman, Gregory
Sent: Thursday, March 24, 2011 1:07 PM
To: Coe, Doug
Cc: Gibson, Kathy; Sheron, Brian; Uhle, Jennifer; Coyne, Kevin; Hudson, Daniel
Subject: Feedback from Agenda Planning Meeting - Level 3 PRA Paper
Importance: High

I just received the Chairman's feedback on the Level III PRA meeting. Here's what he provided, which will need to be rolled into a revised scheduling note:

(1) Delete everything associated with SOARCA.

(2) Add a discussion topic on severe accidents to the NRC panel. The Chairman apparently didn't provide any more detail on what he's looking for from this, but it shouldn't involve a discussion of SOARCA (although maybe one of the staff working on SOARCA would be the right person to present). We'll need to revise the scheduling note to incorporate this topic, but we might have to spend some time discussing what he wants us to actually discuss.

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(4) The meeting got moved back to July 28. The paper will still be due on June 30 to OEDO and July 7 to the Commission.

We need to get a revised scheduling note to SECY as soon as possible, but before COB tomorrow. If you need help with it or have any questions, please give me a call. If there's confusion, I can set up a call with Jim A., since he was at the meeting with the Chairman.

Greg

CH/276

From: Coe, Doug
Sent: Wednesday, March 23, 2011 5:49 PM
To: Bowman, Gregory
Cc: Gibson, Kathy; Scott, Michael; Sheron, Brian; Uhle, Jennifer; Coyne, Kevin; Hudson, Daniel; Stutzke, Martin
Subject: RE: Agenda Planning Meeting - Level 3 PRA Paper

Greg –
Just so you know, we are waiting to hear that we have a green light on this approach before proceeding with changing the current Commission meeting scheduling note and the ACRS subcommittee meeting arrangements.
Please confirm with us, when you can, that we should move forward on this path.
Thanks so much,
Doug

From: Coe, Doug
Sent: Tuesday, March 22, 2011 5:56 PM
To: Bowman, Gregory
Cc: Gibson, Kathy; Scott, Michael; Sheron, Brian; Uhle, Jennifer; Coyne, Kevin; Hudson, Daniel; Stutzke, Martin
Subject: RE: Agenda Planning Meeting - Level 3 PRA Paper

Greg,

RES can support providing a Level III PRA SECY paper to the Commission by June 20 (in support of a Commission meeting on July 5 or later). This would entail a due date to OEDO of June 13.

However, our original plan of a paper with joint Level III/SOARCA recommendations will need to be modified to include ONLY the Level III PRA options/recommendations.

Note that we were planning to meet with the ACRS subcommittees in May and the ACRS full Committee in June (June 8-10) and would not be able to incorporate any ACRS letter recommendations into our paper before sending it to OEDO on June 13. However, the Committee had already offered to provide its letter in June, so the staff and Commission will still have the benefit of ACRS views at a Commission meeting in July.

Since this approach constitutes a change from the previous joint PRA/SOARCA SECY paper strategy, please let us know if Mike Weber would like to be briefed.

We are happy to help with any communication you need to make to the Chairman's office.

Thanks,
Doug

From: Bowman, Gregory

Sent: Tuesday, March 22, 2011 10:05 AM
To: Sheron, Brian; Uhle, Jennifer; Coe, Doug; Coyne, Kevin
Cc: Gibson, Kathy; Scott, Michael
Subject: Agenda Planning Meeting - Level 3 PRA Paper
Importance: High

I'm not sure if you saw this on the Chairman's agenda that Mike sent out over the weekend, but the Chairman is looking to move the Level 3 PRA meeting up to early July. That would mean the paper would need to come to the Commission in mid-June (several weeks earlier than currently scheduled).

Can you let me know if that's even doable? I know there was some coordination between the Level 3 paper and SOARCA (if I remember right, you were trying to publish the draft SOARCA paper for public comment before the Commission meeting, but I might have that wrong), and that might add some additional complications.

If either you can't move up the Level 3 paper or moving it up is going to cause significant consequences (e.g., you won't be able to discuss SOARCA), please let me know as soon as possible. If that's the case, we'll need to communicate those concerns to the Chairman's office. I'll take care of that, but I'll need some help in coming up with language.

From: Weber, Michael
Sent: Sunday, March 20, 2011 6:52 PM
To: Sheron, Brian; Uhle, Jennifer; Haney, Catherine; Kinneman, John; Miller, Charles; Moore, Scott; Zimmerman, Roy; McCrary, Cheryl
Cc: Brock, Kathryn; Frazier, Alan; Bowman, Gregory
Subject: FYI - Agenda Planning Meeting

Early awareness of potential proposed changes to the Commission calendar...stay tuned

---

From: Andersen, James
To: Borchardt, Bill; Virgilio, Martin; Weber, Michael; Ash, Darren; Muessle, Mary; Landau, Mindy; Leeds, Eric
Cc: Bavol, Rochelle; Laufer, Richard; Vietti-Cook, Annette
Sent: Sun Mar 20 18:18:07 2011
Subject: Agenda Planning Meeting

Over the weekend, I have been called into a number of Agenda Planning discussions with the Chairman's office and finally today with the Chairman. I believe the attached is close to what the Chairman plans to propose during the 11:00am meeting. The Chairman understands this is aggressive and may push the staff to far. A point I tried to make a couple times in a nice manner. I can discuss more during the 8:00am meeting if needed. Since I created this document, I don't know how close this will be to the actual document the Chairman's office creates for the Chairman's use.

I have copied SECY to give them a heads up.

Jim A.

From: Sheron, Brian
To: Elkins, Scott; Gibson, Kathy
Subject: RE: BWR Zirc Fire Experiment Final Report
Date: Thursday, March 24, 2011 1:45:00 PM

Thanks.

From: Elkins, Scott
Sent: Thursday, March 24, 2011 1:27 PM
To: Gibson, Kathy
Cc: Sheron, Brian
Subject: FW: BWR Zirc Fire Experiment Final Report

Kathy,
NEI has the BWR Zirc fire final report now.
Scott

From: Zigh, Ghani
Sent: Thursday, March 24, 2011 1:24 PM
To: mrn@nei.org
Cc: Lee, Richard; Elkins, Scott; Navarro, Carlos; Santiago, Patricia; Lindgren, Eric; sdurbin@sandia.gov
Subject: BWR Zirc Fire Experiment Final Report

Dear Marcus,
I attached with this e-mail the BWR Zirc fire final report as you requested from the USNRC. Also, Sam Durbin (sdurbin@sandia.gov) and Eric Lindgren (erlindg@sandia.gov) from Sandia lab will be the ideal persons to contact regarding this work.

Thanks

Ghani Zigh

CH/2777

From:	Case, Michael
To:	Coyne, Kevin; Correia, Richard; Gibson, Kathy; Richards, Stuart; Case, Michael
Cc:	Rini, Brett; Sheron, Brian; Uhle, Jennifer
Subject:	Nominees for 3rd Team to Japan
Date:	Thursday, March 24, 2011 1:46:39 PM
Attachments:	Background 3rd team to Japan .docx

The Agency is trying to put together another team to go to Japan leaving on or about April 2nd and returning April 16th. They are seeking individuals willing to go with skills in the following areas:

Severe Accident Management Knowledge
B.5.b Knowledge
Accident Recovery Knowledge
Political Savvy

Additional background info is on the attached sheet. **Please forward your nominees to Brian/Jennifer/Brett by 0800 Monday** (due at noon to Michele Evans). DSA currently has one nominee that will be forwarded shortly. Background info on nominated candidates should include the person's skills in relation to those identified areas above, any OD endorsement, and passport status.

CH/278

March 24, 2011

Background Information for Third Team to Japan

Overall:

We are planning to replace the current site team with a six person team that would include four members with a collective, good understanding of severe accident management, B5b and accident recovery, and two members with the management and political savvy to deal with the ambassador and Japanese regulators, military and cabinet. (One of these will be an Executive SES level to replace Dan Dorman)

Next phase would be to replace that 6 person team with a two person team. (Composition TBD)

Specific Request of OD/RAs:

1. Identify staff with all or some of following skill sets who are willing to travel to Japan on or about April 2. The staff would return on about April 16.

    a. Severe Accident management knowledge
    b. B5b knowledge
    c. Accident Recovery knowledge
    d. Political Savvy

    Please provide nominees to Michele Evans **by noon on Monday, March 28**. Brief summary of staff's background as it applies to the above skill sets and any endorsement by OD/RA will be greatly appreciated.

2. Not immediately needed would be nominees for the 4th team of two who may depart USA on or before April 13. Composition is TBD.

Please Note: Identification of the Next Executive to send to replace Dan Dorman, is being made by DEDOs, and is not part of this request.

From: Gibson, Kathy
To: Sheron, Brian; Uhle, Jennifer
Subject: FW: John Boice- CNN: Japan Reactor Accident - Radiation Risks in Perspective
Date: Thursday, March 24, 2011 1:46:59 PM
Attachments: Kathy Halvey Gibson.vcf

A potential speaker when we do a Japan seminar!

Kathy Halvey Gibson
Director
Division of Systems Analysis

Kathy.Gibson@nrc.gov
(301) 251-7499 Work
(b)(6) Cell

U.S. Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
Protecting People and the Environment

From: Brock, Terry
Sent: Thursday, March 24, 2011 1:37 PM
To: Gibson, Kathy
Subject: John Boice- CNN: Japan Reactor Accident - Radiation Risks in Perspective

Excellent John Boice interview below on Japanese current events. Hat-tip to Vered on finding this.

Terry

CNN Video Link:
http://www.cnn.com/video/data/2.0/video/world/2011/03/23/sotu.boice.0320.cnn.cnn.html

CH/279

From: Sheron, Brian
To: Valentin, Andrea; Kardaras, Tom; Grancorvitz, Teresa
Subject: FW: OCFO/OEDO Periodic Budget Meeting
Date: Thursday, March 24, 2011 1:53:00 PM
Attachments: CFO EDO March 2011final.pdf

Anything on these I should be aware of?

From: Golder, Jennifer
Sent: Thursday, March 24, 2011 1:38 PM
To: Powell, Amy; Campbell, Andy; Vietti-Cook, Annette; Howell, Art; Gusack, Barbara; Sheron, Brian; Poole, Brooke; Boger, Bruce; Haney, Catherine; Miller, Charles; McCrary, Cheryl; Casto, Chuck; Kelley, Corenthis; Carpenter, Cynthia; Pederson, Cynthia; Dorman, Dan; Krupnick, David; Lew, David; Hackett, Edwin; Brenner, Eliot; Collins, Elmo; Leeds, Eric; Tracy, Glenn; Grobe, Jack; Schaeffer, James; Uhle, Jennifer; Wiggins, Jim; Reyes, Luis; Doane, Margaret; Satorius, Mark; Johnson, Michael; Evans, Michele; Cohen, Miriam; Mamish, Nader; Howard, Patrick; Schmidt, Rebecca; Hawkens, Roy; Zimmerman, Roy; Moore, Scott; Stewart, Sharon; Burns, Stephen; Boyce, Thomas (OIS); Victor McCree (Victor.McCree@nrc.cov); Borchardt, Bill; Dean, Bill
Cc: Brown, Milton; Williams-Johnson, Patrice; Dyer, Jim
Subject: OCFO/OEDO Periodic Budget Meeting

Good Afternoon,

Attached below are the slides from the monthly OCFO/OEDO periodic budget meeting. The meeting was originally scheduled for last Friday and was canceled along with the EDO staff meeting. Mr. Milton Brown will briefly touch on information in these slides during tomorrow's OEDO staff meeting.

Thank you

Jennifer Golder

Budget Director

Office of the Chief Financial Officer

United States Nuclear Regulatory Commission

CH/280

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From: Muessle, Mary
To: Sheron, Brian; Weber, Michael
Cc: Andersen, James
Subject: RE: RESPONSE - Commission briefing on Radiation Health Consequences
Date: Thursday, March 24, 2011 2:13:01 PM
Attachments: 110414 Status on Japan-Health Effects Scheduling Note.docx

I am attaching the scheduling note with the topics the Chairman approved today. He also wanted to add Dose Modeling and to have a discussion on how we deal with iodine uptake. We did inform him that the presenters may change. If possible, we are also looking for some 1-2 external panelists with general knowledge such as someone from the Health Physics Society.

Mary Muessle
Assistant for Operations - Acting
Office of the Executive Director for Operations
U.S. Nuclear Regulatory Commission
301-415-1703 office
301-415-2700 fax

From: Sheron, Brian
Sent: Thursday, March 24, 2011 2:00 PM
To: Weber, Michael
Cc: Muessle, Mary; Andersen, James
Subject: RE: RESPONSE - Commission briefing on Radiation Health Consequences

OK, but I don't understand because RES has no role in the meeting.

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To: Sheron, Brian
Cc: Muessle, Mary; Andersen, James
Subject: RESPONSE - Commission briefing on Radiation Health Consequences

RES maintains the lead responsibility for the briefing with Rob as the briefer. Most of the technical knowledge and support in the radiation health effects area is coming from RES, consequently RES has the lead for the briefing. Rob is the briefer based on his knowledge of the agency's response. It is a great opportunity to practice interdependence.

Thanks

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Sent: Thursday, March 24, 2011 1:39 PM
To: Weber, Michael
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Mike, We had originally proposed that 3 SLs conduct the bulk of the briefing (Charlie Tinker, Cindy Jones, and Trish Milligan). Greg Bowman told us that you decided that just Rob Lewis would be at the table for this Commission meeting and do the briefing. Hence, we told Rob that FSME should have the lead for the briefing, since RES has no role in the

CH/281

meeting, other than we will have some folks available to answer questions about source term.

From: Gibson, Kathy
Sent: Thursday, March 24, 2011 1:19 PM
To: Lewis, Robert
Subject: RE: commission briefing on japan

Rob,
My understanding is now that you are doing the briefing, FSME has the lead. Attached is the scheduling note that we provided for your use.

Best,
Kathy

Kathy Halvey Gibson
Director
Division of Systems Analysis

Kathy.Gibson@nrc.gov
(301) 251-7499 Work
(b)(6) Cell

U.S. Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
Protecting People and the Environment

From: Lewis, Robert
Sent: Thursday, March 24, 2011 12:23 PM
To: Gibson, Kathy
Subject: commission briefing on japan

Kathy

My understanding is that I am to do the subject commission briefing with RES' support. Is that your current understanding?

Other than a heads up email from Michele Evans and a short discussion with Charlie Miller and Mike Weber, I have no meaningful awareness of any existing plans to schedule, prepare, obtain alignment, and conduct the meeting. Can you help me to get plugged in, and include Don Cool, and Vince Holahan?

Thanks
Rob

Draft 3/23/11 Need approval from the Commission.

SCHEDULING NOTE

Title: **BRIEFING ON STATUS OF NRC RESPONSE TO EVENTS IN JAPAN AND BRIEFING ON RADIOLOGICAL CONSEQUENCES AND POTENTIAL HEALTH EFFECTS (Public)**

Purpose: Provide the Commission an update of the Japan nuclear event with additional focus on radiological consequences and potential health effects and an opportunity to hear a representative sample of external stakeholder viewpoints.

Scheduled: **April 14, 2011**
9:00am

Duration: Approx. 3 hours

Location: Commissioner's Hearing Room, 1st fl. OWFN

Participants:	**Presentation**
NRC Staff	**40 mins.***
Marty Virgilio, Deputy Executive Director for Reactor and Preparedness Programs Topic: Opening Remarks and Status on the Japanese Event	10 mins.*
Charlie Tinkler, Senior Level Advisor, RES Topic: Source Term Determination	10 mins.*
Cynthia Jones, Technical Advisor, NSIR Topic: Dose Projections	10 mins.*
Patricia Milligan, Senior Level Advisor, NSIR Topic: Protective Actions and Health Effects	10 mins.*
Commission Q & A	**50 mins.**
BREAK	**5 mins.**

Stakeholder Panel	**30 mins.***
David Bowman, Department of Energy Topic: Department of Energy Assets (Aerial Monitoring System, National Atmospheric Release Advisory Center, etc.)	10 mins.*
Sarah Decair, Environmental Protection Agency Topic: Environment Protection Agency Protective Action Guidelines	10 mins.*
TBD, Food and Drug Administration Topic: Food and Drug Administration Derived Intervention Levels for Radionuclides in Food	10 mins.*
Commission Q & A	**50 mins.**
Discussion – Wrap-up	**5 mins.**

*For presentation only and does not include time for Commission Q & A's

Documents:
- TBD
Staff background material due to SECY: March 31, 2011.
Slides due to SECY: April 7, 2011.

From: Sheron, Brian
To: Shane, Raeann
Subject: FW: Answers to questions from Congressional Call
Date: Friday, March 25, 2011 2:13:00 PM
Attachments: Answers to 4 questions from Brian Sheron from Congressional Call.docx
TI Objectives.docx

Here is a cleaner version.

From: LIA02 Hoc
Sent: Friday, March 25, 2011 1:56 PM
To: Sheron, Brian
Cc: McGinty, Tim; Nelson, Robert; LIA06 Hoc; LIA03 Hoc; LIA08 Hoc; Smith, Brooke; Foggie, Kirk
Subject: Answers to questions from Congressional Call

Brian,

The responses to the questions are attached. The first file contains the answers and the second file contains a TI referenced in the answer to question 4.

Steve

CH/282

1.) Two workers were reported to have been hospitalized due to radiation exposure. Have there been any more workers hospitalized, and do we know how they were exposed?

2.) Three workers were reported to have received radiation burns to their feet by spending too much time walking in contaminated water. Do we have any more information on this?

The following information taken from the IAEA website and answers these two questions:

As per the IAEA, three workers at the Fukushima Daiichi nuclear power plant were exposed on 24 March to elevated levels of radiation. The IAEA has received additional information on the incident from the Japanese authorities.

The three were contracted workers laying cables in the turbine building of the Unit 3 reactor. Two of them were found to have radioactivity on their feet and legs.

These were washed in the attempt to remove radioactivity, but since there was a possibility of Beta-ray burning of the skin, the two were taken to the Fukushima University Hospital for examination and then transferred to Japan's National Institute of Radiological Sciences for further examination. They are expected to be monitored for around four days.

It is thought that the workers ignored their dosimeters' alarm believing it to be to be false and continued working with their feet in contaminated water.

The Nuclear and Industrial Safety Agency (NISA) of Japan instructed TEPCO to review the radiation control system immediately in order to avoid similar incidents in the future.

As of 24 March, 19:30 Japan time, the number of workers at the Fukushima Daiichi nuclear power plant found to have received more than 100 millisieverts of radiation dose totalled 17 including the three contract workers. The remaining fourteen are TEPCO's employees.

3.) It was reported that the Iodine levels in the Tokyo drinking water went down below allowable limits. Do we know what this is attributable to? Was it due to a shift in wind direction? Did the releases from the plant go down"?

No quantitative cause analysis exists, but decay of iodine itself or reduction in rainfall with iodine, or their combination can be a plausible reason.

4.) What action is the NRC taking regarding licensee plans to walk down their plants to confirm systems, procedures, etc., are in place to deal with natural phenomena? Are the resident inspectors going to accompany the licenses during the walkdowns?

The TI (issued March 23, 2011) has inspectors verify that the licensees have performed walkdowns. This can done in various ways. For example the inspector could walkdown the system with the licensee or perform an independent walkdown and compare those results with the licensee's results (or a combination of both). In some cases the inspector may choose to just review the licensee's documentation of findings from the walkdown.

For more information on the TI a one page set of talking points is attached.

Overview of TI 2515/183, "FOLLOWUP TO THE FUKUSHIMA DAIICHI NUCLEAR STATION FUEL DAMAGE EVENT"
March 23, 2011

TI Objectives

- The objective of this TI is a high-level, independent assessment, of the adequacy of actions taken by licensees in response to the Fukushima Daiichi nuclear station fuel damage event.
- The inspection results from this TI will be used to evaluate the industry's readiness for a similar event and to aid in determining whether additional regulatory actions warranted.

TI Focus Areas

1. Assess the licensee's capability to mitigate conditions that result from beyond design basis events (e.g., B.5.b and 10 CFR 50.54(hh)).
2. Assess the licensee's capability to mitigate station blackout (SBO) conditions, as required by 10 CFR 50.63.
3. Assess the licensee's capability to mitigate internal and external flooding events required by station design.
4. Assess the thoroughness of the licensee's walkdowns and inspections of important equipment needed to mitigate fire and flood events to identify the potential that the equipment's function could be lost during seismic events possible for the site.

TI Inspection Methods

- Use existing inspection procedures and TIs for guidance
- Where applicable, inspectors should credit the baseline inspection program for samples reviewed during this TI assessment.
- Resources: 40 hours per site.

Other Issues

- The TI was issued on March 23, 2011. Each site will complete the inspection by April 29, 2011 and issue a stand-alone report by May 13, 2011
- An inspection report template is being prepared (and should be available mid-next week) to assist in documentation.
- The short inspection and documentation timeline could have a significant impact on regional resources.

From: Weber, Michael
To: Sheron, Brian
Subject: RESPONSE - Commission briefing on Radiation Health Consequences
Date: Thursday, March 24, 2011 2:14:06 PM

Sure you do. You pull together the briefing slides and background information and prepare to answer the more detailed technical responses to questions from the Commission.

From: Sheron, Brian
Sent: Thursday, March 24, 2011 2:00 PM
To: Weber, Michael
Cc: Muessle, Mary; Andersen, James
Subject: RE: RESPONSE - Commission briefing on Radiation Health Consequences

OK, but I don't understand because RES has no role in the meeting.

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Sent: Thursday, March 24, 2011 1:45 PM
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Cc: Muessle, Mary; Andersen, James
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Thanks

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To: Weber, Michael
Subject: FW: commission briefing on japan

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From: Gibson, Kathy
Sent: Thursday, March 24, 2011 1:19 PM
To: Lewis, Robert
Subject: RE: commission briefing on japan

Rob,
My understanding is now that you are doing the briefing, FSME has the lead. Attached is the scheduling note that we provided for your use.

CH/283

Best,
Kathy

Kathy Halvey Gibson
Director
Division of Systems Analysis

Kathy.Gibson@nrc.gov
(301) 251-7499 Work
(b)(6) Cell

From: Lewis, Robert
Sent: Thursday, March 24, 2011 12:23 PM
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Subject: commission briefing on japan

Kathy

My understanding is that I am to do the subject commission briefing with RES' support. Is that your current understanding?

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Thanks
Rob

From: Grancorvitz, Teresa
To: Sheron, Brian; Valentin, Andrea; Kardaras, Tom
Subject: RE: OCFO/OEDO Periodic Budget Meeting
Date: Thursday, March 24, 2011 2:14:19 PM

(b)(5)

I believe Brett is looking in the PM certification status for RES.

Please let me know if you need any further information or additional details.

Thanks,

Teresa

From: Sheron, Brian
Sent: Thursday, March 24, 2011 1:54 PM
To: Valentin, Andrea; Kardaras, Tom; Grancorvitz, Teresa
Subject: FW: OCFO/OEDO Periodic Budget Meeting

Anything on these I should be aware of?

From: Golder, Jennifer
Sent: Thursday, March 24, 2011 1:38 PM
To: Powell, Amy; Campbell, Andy; Vietti-Cook, Annette; Howell, Art; Gusack, Barbara; Sheron, Brian; Poole, Brooke; Boger, Bruce; Haney, Catherine; Miller, Charles; McCrary, Cheryl; Casto, Chuck; Kelley, Corenthis; Carpenter, Cynthia; Pederson, Cynthia; Dorman, Dan; Krupnick, David; Lew, David; Hackett, Edwin; Brenner, Eliot; Collins, Elmo; Leeds, Eric; Tracy, Glenn; Grobe, Jack; Schaeffer, James; Uhle, Jennifer; Wiggins, Jim; Reyes, Luis; Doane, Margaret; Satorius, Mark; Johnson, Michael; Evans, Michele; Cohen, Miriam; Mamish, Nader; Howard, Patrick; Schmidt, Rebecca; Hawkens, Roy; Zimmerman, Roy; Moore, Scott; Stewart, Sharon; Burns, Stephen; Boyce, Thomas (OIS); Victor McCree (Victor.McCree@nrc.cov); Borchardt, Bill; Dean, Bill
Cc: Brown, Milton; Williams-Johnson, Patrice; Dyer, Jim
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Thank you

Jennifer Golder

CH/284

Budget Director

Office of the Chief Financial Officer

United States Nuclear Regulatory Commission

<< File: CFO EDO March 2011final.pdf >>

From: Sheron, Brian
To: Gibson, Kathy; Bush-Goddard, Stephanie
Cc: Uhle, Jennifer
Subject: FW: RESPONSE - Commission briefing on Radiation Health Consequences
Date: Thursday, March 24, 2011 2:15:00 PM
Attachments: 110414 Status on Japan-Health Effects Scheduling Note.docx

---

See below. Can you find some external panelists?

From: Muessle, Mary
Sent: Thursday, March 24, 2011 2:13 PM
To: Sheron, Brian; Weber, Michael
Cc: Andersen, James
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I am attaching the scheduling note with the topics the Chairman approved today. He also wanted to add Dose Modeling and to have a discussion on how we deal with iodine uptake. We did inform him that the presenters may change. If possible, we are also looking for some 1-2 external panelists with general knowledge such as someone from the Health Physics Society.

Mary Muessle
Assistant for Operations - Acting
Office of the Executive Director for Operations
U.S. Nuclear Regulatory Commission
301-415-1703 office
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CH/285

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*For presentation only and does not include time for Commission Q & A's

Documents:
- TBD
Staff background material due to SECY: March 31, 2011.
Slides due to SECY: April 7, 2011.

From: Rini, Brett
To: Sheron, Brian; Uhle, Jennifer
Subject: FW: FYI: FOIA Requests for Japan Crisis Material
Date: Thursday, March 24, 2011 2:31:32 PM

Brian/Jennifer,

I'm not sure if this is the TA's responsibility or not, but I can review any documents you have relevant to the FOIA request.

The request is to provide ALL documentation (emails, attachments to emails, faxes, memos, letters, and all other types of written communication) characterized as internal communication (NRC staff to NRC staff only) pertaining to the Japanese events from March 11, 2011. As detailed below, this request covers a time frame from **March 11, 2011 through March 16, 2011**, when the request was issued.

Let me know what kind of help you need.

Thanks,

Brett

From: Kardaras, Tom
Sent: Wednesday, March 23, 2011 3:52 PM
To: RES Distribution
Subject: FYI: FOIA Requests for Japan Crisis Material

RES staff should make every reasonable effort to comply with FOIA requests for Japan Crisis Material. The agency has already taken steps to alert requestors of the likelihood for longer than usual response times from the Agency. Additionally, it is not necessary to include communications related to administrative items such as work hour changes, exchanges involving passing public information or news reports on the earthquake, even though such communication may not have occurred absent the event in Japan. If you have further questions regarding this matter please contact Jazel Parks, the RES FOIA coordinator on 301.251.7690 or via email at jazel.parks@nrc.gov.

Regards,
Tom Kardaras, Deputy Director (Acting)
Program Management, Policy Development and Analysis Staff
Office of Nuclear Regulatory Research
(o) 301-251-7667

CH/286

From: Peigler, Wanda [mailto:WPeigler@doeal.gov]
Sent: Thursday, March 24, 2011 2:39 PM
To: Pearson, Camelia D.
Cc: Deserisy,Lloyd Donald
Subject: FW: EXPEDITE: New FOIA Request: FOIA 11-00303-H (CAPPIELLO)
Importance: High

This is an expedited request that is due by March 31, 2011. I am preparing the official request, but sending this to you prior, so you can get this out to the SMEs. Thanks.

From: Hamblen, Christina H.
Sent: Thursday, March 24, 2011 12:20 PM
To: Vigil, Geraldine J.; Harkness, Debbie; Peigler, Wanda; Wyatt, Steven L (YSO); Slack, Terri (Y12)
Subject: EXPEDITE: New FOIA Request: FOIA 11-00303-H (CAPPIELLO)
Importance: High

ALL,

EXPEDITED PROCESSING DUE DATE: March 31, 2011

Important: This FOIA is being coordinated by HQ DOE. Expedited processing was granted to the requester. Therefore, please move this FOIA to the top of your list and get it back to us as soon as possible. **DO NOT DELAY.**

Here is DOE's guidance for this request:
The interim response to this request is being review by GC/Susan Beard. There will be a consolidated response via DOE-HQ, the timeframe for the search is March 11-March 16. **1.** Index the records (categorically) as oppose to each individual document. **2.** The documents along with a signed certification sheet (attached) by an authorizing/denying official and a justification memo is to be sent/emailed to this office (SC FOIA Office). **3.** The documents should have been review by your office and any information should be bracketed and the FOIA exemption place next to the bracket. **4.** The justification memo should discuss the rational for withholding the information and how it relates to the exemption(s) being used. **5.** The memo should contain any other pertinent information about the documents that we should be aware of.

3 requests were aggregated into 1:
1. Requesting copies of all internal communications within the U.S. Department of Energy, including those to and from Energy Secretary Steven Chu, his chief of staff, and his counsel, pertaining to the Japanese nuclear incidents cause by the March 11 earthquake and tsunami. This includes problems at the following three facilities: Fukushima Dai-ichi, Fukushima Daini, and Onagawa.
The communications should include emails, faxes, and written correspondence between Energy Secretary Chu, his office and his staff, the Public Affairs Office, DOE national laboratories, and the 34 DOE personnel on the ground in Japan assisting in the response to the disaster.
NOTE: The requester later added the following individuals to the requests: Daniel Poneman; Thomas D'Agostino; Dr. Peter Lyons; Steven Aoki; Adm. Joseph Krol; and, Adm. Kirkland Donald
2. Requesting copies of all internal communications within the U.S. Department of Energy, including those to and from Energy Secretary Steven Chu, his chief of staff, and his counsel,

CH 3857

pertaining to the Japanese nuclear incidents cause by the March 11 earthquake and tsunami. This includes problems at the following three facilities: Fukushima Dai-ichi, Fukushima Daini, and Onagawa.
The communications should include emails, faxes, and written correspondence between DOE and Japanese officials, including: Energy Secretary Chu, his staff and counsel, the 34 employees deployed to Japan and those working for national laboratories helping to assess and monitor the events.
NOTE: The requester later added the following individuals to the requests: Daniel Poneman; Thomas D'Agostino; Dr. Peter Lyons; Steven Aoki; Adm. Joseph Krol; and, Adm. Kirkland Donald
3. Requesting copies of all internal communications within the U.S. Department of Energy, including those to and from Energy Secretary Steven Chu, his chief of staff, and his counsel, pertaining to the Japanese nuclear incidents cause by the March 11 earthquake and tsunami. This includes problems at the following three facilities: Fukushima Dai-ichi, Fukushima Daini, and Onagawa.
The communications should include emails, faxes, and written correspondence between Energy Secretary Chu, his staff and counsel, and all other DOE employees to and from the NRC and to and from GE Energy, Hitachi-GE Nuclear Energy, and its designated representatives. Our request should include communications between DOE national laboratories and NRC and GE pertaining to the nuclear incident, as well as the 34 DOE personnel working in Japan.
NOTE: The requester later added the following individuals to the requests: Daniel Poneman; Thomas D'Agostino; Dr. Peter Lyons; Steven Aoki; Adm. Joseph Krol; and, Adm. Kirkland Donald

Chris

Christina Hamblen
Information Programs Specialist
Office of Public Affairs
National Nuclear Security Administration
Service Center
Phone: (505) 845- 4765
Fax: (505) 284-7205

From: Sheron, Brian
To: HOO Hoc
Cc: Lee, Richard; Bush-Goddard, Stephanie; Gibson, Kathy
Subject: FW: OSTP analysis and layperson"s summary of standards applicable to I-131 in drinking water
Date: Thursday, March 24, 2011 2:39:00 PM
Attachments: OSTP Drinking Water Analysis_3-23-11_JH-BP_final.docx
OSTP on drinking water_lay version_3-23-2011_JH-BPedit_final.docx

---

Please forward to ET and PMT Directors. Thx.

-----Original Message-----
From: Holdren, John P. (b)(6)
Sent: Thursday, March 24, 2011 2:27 PM
To: Binkley, Steve; Adams, Ian; Aoki, Steven; 'RJBudnitz@lbl.gov'; Sheron, Brian; Brinkman, Bill; DAgostino, Thomas; Garwin, Dick; 'rlg2@us.ibm.com'; 'phillip.finck@inl.gov'; 'john.grossenbacher@inl.gov'; Hurlbut, Brandon; Kelly, John E (NE); Koonin, Steven; Lyons, Peter; 'harold.mcfarlane@inl.gov'; Owens, Missy; 'peterson@nuc.berkeley.edu'; Poneman, Daniel; 'ronaldo.szilard@inl.gov'; Fetter, Steve; SCHU
Subject: OSTP analysis and layperson's summary of standards applicable to I-131 in drinking water

Colleagues --

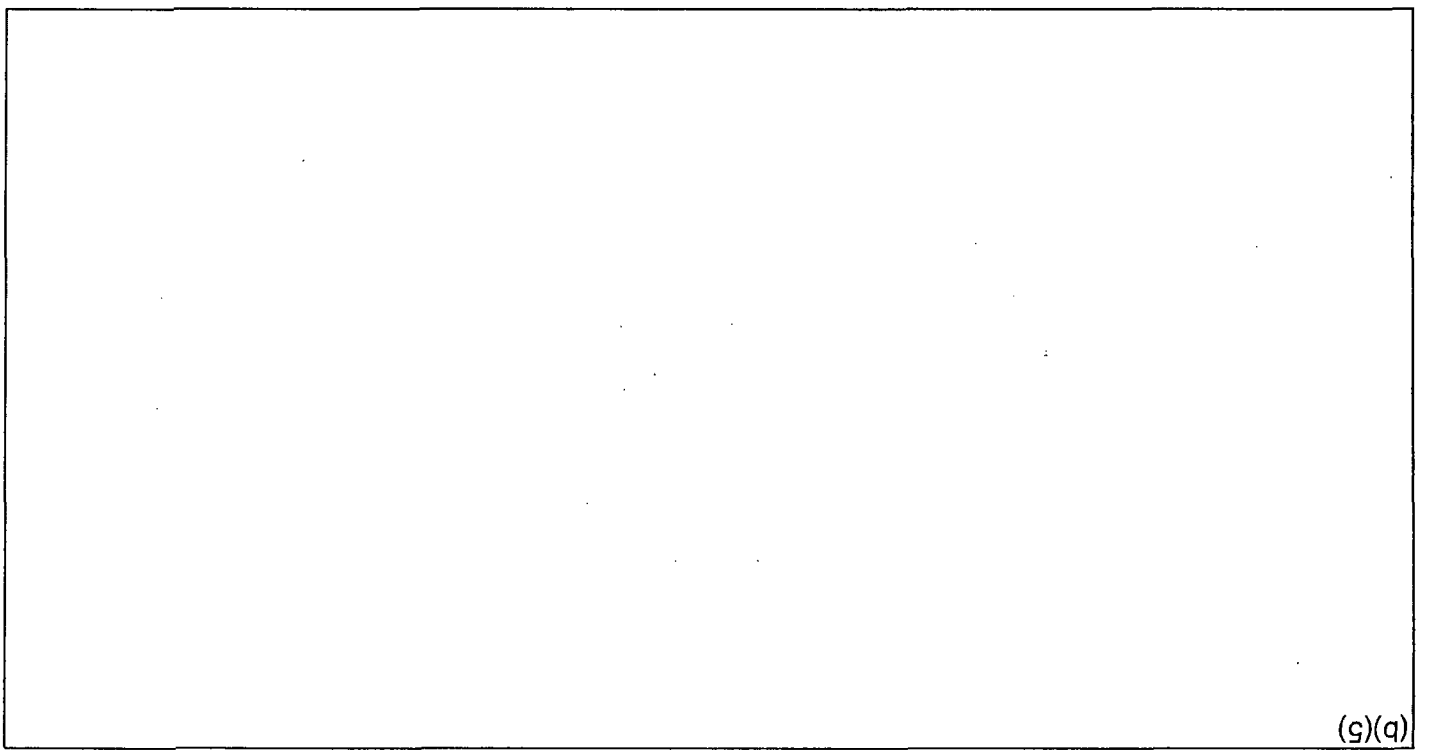
(b)(5)

My best,
John

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 (b)(6)
(b)(6) assistant Karrie Pitze (b)(6)

CH/288

(b)(5)


(b)(5)

(b)(5)

(b)(5)

From: Sheron, Brian
To: HOO Hoc
Subject: FW: Poop sheet on radiation standards and Protective Action Guides
Date: Thursday, March 24, 2011 2:45:00 PM
Attachments: Radregs_rev4.doc

Please forward to ET and PMT directors. Thx.

-----Original Message-----
From: Holdren, John P. (b)(6)
Sent: Thursday, March 24, 2011 2:40 PM
To: Binkley, Steve; Adams, Ian; Aoki, Steven; 'RJBudnitz@lbl.gov'; Sheron, Brian; Brinkman, Bill; DAgostino, Thomas; Garwin, Dick; 'rlg2@us.ibm.com'; 'phillip.finck@inl.gov'; 'john.grossenbacher@inl.gov'; Hurlbut, Brandon; Kelly, John E (NE); Koonin, Steven; Lyons, Peter; 'harold.mcfarlane@inl.gov'; Owens, Missy; 'peterson@nuc.berkeley.edu'; Poneman, Daniel; 'ronaldo.szilard@inl.gov'; Fetter, Steve; SCHU
Subject: Poop sheet on radiation standards and Protective Action Guides

Colleagues --

(b)(5)

My best,
John

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)
(b)(6) Assistant Karrie Pitzer (b)(6)

CH/289

Exposure to Ionizing Radiation: Regulations, Guidelines, Comparisons (J. Holdren 3-21-11)

Units: 1 rem = 1000 millirem (mrem) = 0.01 sievert (Sv) = 10 millisieverts (mSv)

All doses are whole-body or whole-body-equivalent unless stated otherwise.

Nuclear Regulatory Commission Routine-Exposure Regulations (10CFR20)

5 rem/yr (0.05 Sv/yr):	allowable dose rate for a worker in a nuclear occupation
25 mrem/yr (0.25 mSv/yr):	allowable dose rate to individual members of the public from totality of nuclear fuel-cycle operations
25 mrem/yr (0.25 mSv/yr):	allowable dose rate for unrestricted use of land (to include dose from drinking groundwater)
10 mrem/yr (0.1 mSv/yr):	allowable dose rate from emissions of radionuclides from a single nuclear facility
4 mrem/yr (0.04 mSv/yr):	allowable dose rate from radionuclides in drinking water
2 mrem/hr (0.02 mSv/hr):	allowable hourly dose rate in an unrestricted area from external sources

EPA Emergency Dose Guidelines

25 rem (0.25 Sv)	1-time dose limit for a worker to save lives
5 rem (0.05 Sv)	1-time dose limit for a worker in an emergency (non-life-saving)

EPA Protective Action Guides (PAGs)

15 rem (0.15 Sv) in 4 days	PAG for dose to adult thyroid (KI administration)
5 rem (0.05 Sv) in 4 days	PAG for dose to infant thyroid (KI administration)
1 rem (0.01 Sv) in 4 days	PAG for evacuation or sheltering of members of public
2 rem (0.02 Sv) in 1 year	PAG for relocation of general population

FDA Protective Action Guides (PAGs) (doses are dose commitments from ingestion of food)

5 rem (0.05 Sv)	PAG for dose commitment to an individual tissue or organ from a year of ingestion of the contaminated food
500 mrem (5 mSv)	PAG for dose commitment to the whole body from a year of ingestion of the contaminated food

Implications of Whole-Body Doses

25 rem quickly delivered	produces a lifetime extra probability of cancer death of about 2.5% (or 0.025); the a priori probability of death from cancer (total of all causes) is 0.20-0.25, so this addition would increase a 0.25 a priori probability of dying of cancer to 0.275 (raise a 25% chance to 27.5%); another way of saying it is that this dose raises the pre-existing chance of dying of chance by about 10 percent (0.025/0.25 = 10%).
1 rem quickly delivered	produces a lifetime extra probability of cancer death of about 0.1%; (or 0.001); this addition would increase a 0.25 a priori probability of dying of cancer to 0.251 (raise a 25% chance to 25.1.5%); another way of saying it is that this dose raises the pre-existing chance of dying of chance by about 0.4 percent (0.001/0.25 = 0.4%).
1 rem slowly delivered	produces a lifetime extra probability of cancer death of about 0.05%; this addition would increase a 0.25 a priori probability of dying of cancer to 0.2505 (raise a 25% chance to 25.05%); another way of saying it is that this dose raises the pre-existing chance of dying of cancer by about 0.2 percent (0.0005/0.25 = 0.2%).

Comparisons

300 mrem (3.0 mSv)	annual dose of whole-body radiation received by the average American from natural sources (includes whole-body equivalent of radon lung dose)
240 mrem (2.4 mSv)	annual dose of whole-body radiation received by the average member of the global population from natural sources ((includes whole-body equivalent of radon lung dose)
25 millirem (0.25 mSv)	mammogram
10 millirem (0.10 mSv)	chest X-ray
1 millirem (0.01 mSv)	dental X-ray
0.4-0.8 mrem (0.004-0.008 mSv)	1 hour of flight time in a jet airliner at cruising altitude (value within range depends on altitude, latitude, and other factors)
0.025 mrem (0.00025 mSv)	maximum for one pass through a TSA airport scanner

From: Sheron, Brian
To: HOO Hoc
Cc: Weber, Michael; Virgilio, Martin
Subject: FW:
Date: Thursday, March 24, 2011 3:03:00 PM
Attachments: Salt Accumulation Answers.pdf
High Res Image.pdf

Please forward to ET,RST, and PMT Directors. Some interesting photos.

-----Original Message-----
From: Peltz, James [mailto:James.Peltz@Nuclear.Energy.gov] On Behalf Of Kelly, John E (NE)
Sent: Thursday, March 24, 2011 2:52 PM
To: Adams, Ian; Aoki, Steven; Binkley, Steve; Brinkman, Bill; Budnitz, Bob; DAgostino, Thomas; Finck, Phillip; Garwin, Dick (EOP); Garwin, Dick (IBM); Grossenbacher, John (INL); Hurlbut, Brandon; John Holdren; Kelly, John E (NE); Koonin, Steven; Lyons, Peter; McFarlane, Harold; Miller, Neile; Mustin, Tracy; NITSolutions; Owens, Missy; Peterson, Per; Poneman, Daniel; SCHU; Sheron, Brian; Steve Fetter; Szilard, Ronalo
Subject:

Contents are OUO

-----Original Message-----
From: Peltz, James
Sent: Thursday, March 24, 2011 1:40 PM
To: Adams, Ian; Aoki, Steven; Binkley, Steve; Brinkman, Bill; Budnitz, Bob; DAgostino, Thomas; Finck, Phillip; Garwin, Dick (EOP); Garwin, Dick (IBM); Grossenbacher, John (INL); Hurlbut, Brandon; John Holdren; Kelly, John E (NE); Koonin, Steven; Lyons, Peter; McFarlane, Harold; Miller, Neile; Mustin, Tracy; NITSolutions; Owens, Missy; Peterson, Per; Poneman, Daniel; SCHU; Sheron, Brian; Steve Fetter; Szilard, Ronalo
Subject:

All-

John Kelly asked me to pass along this information. I will pass the p-word to the photos in another email as they are OUO.

The Salt Accumulation Attachment, based on a GEH analysis , addresses questions 1. and 3. (below). Attempts to answer Q2 are ongoing.

1. Control blades melt before fuel rods - where is the boron? Does it affect the re-criticality calcs (Kelly)?

2. What is the water level in containment? If no direct measurements, can it be inferred? (S-1)

3. Does the salt interact with the core melt? Where is the salt precipitated? (Binder)

CH/290

James Peltz

O: (202) 586-7564

C: (b)(6)

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(b)(4)

From: Sheron, Brian
To: Bush-Goddard, Stephanie; Bonaccorso, Amy; Gibson, Kathy; Uhle, Jennifer
Cc: Donaldson, Leslie
Subject: RE: John Boice- CNN: Japan Reactor Accident - Radiation Risks in Perspective
Date: Thursday, March 24, 2011 3:06:00 PM

If you guys want to do it instead of John, that's fine with me. I presume you have information specific to Chernobyl?

From: Bush-Goddard, Stephanie
Sent: Thursday, March 24, 2011 2:57 PM
To: Bush-Goddard, Stephanie; Sheron, Brian; Bonaccorso, Amy; Gibson, Kathy; Uhle, Jennifer
Cc: Donaldson, Leslie
Subject: RE: John Boice- CNN: Japan Reactor Accident - Radiation Risks in Perspective

I was want to add that the Health Effects Branch is also **very capable** of presenting Radiological Consequences and Health Effects at the 25 anniversary of Chernobyl.

-Stephanie

From: Bush-Goddard, Stephanie
Sent: Thursday, March 24, 2011 2:50 PM
To: Sheron, Brian; Bonaccorso, Amy; Gibson, Kathy; Uhle, Jennifer
Cc: Donaldson, Leslie
Subject: RE: John Boice- CNN: Japan Reactor Accident - Radiation Risks in Perspective

I'm on the phone now.

From: Sheron, Brian
Sent: Thursday, March 24, 2011 2:50 PM
To: Bonaccorso, Amy; Gibson, Kathy; Uhle, Jennifer
Cc: Bush-Goddard, Stephanie; Donaldson, Leslie
Subject: RE: John Boice- CNN: Japan Reactor Accident - Radiation Risks in Perspective

Stephanie, can you call John and see if he is available. (b)(5)
(b)(5) Let Amy know if he can participate and then we can make the necessary adjustments to the agenda.

From: Bonaccorso, Amy
Sent: Thursday, March 24, 2011 2:45 PM
To: Sheron, Brian; Gibson, Kathy; Uhle, Jennifer
Cc: Bush-Goddard, Stephanie; Donaldson, Leslie
Subject: RE: John Boice- CNN: Japan Reactor Accident - Radiation Risks in Perspective

Folks:

(b)(5)

CH/291

(b)(5)

Thanks,

Amy

From: Sheron, Brian
Sent: Thursday, March 24, 2011 2:37 PM
To: Gibson, Kathy; Uhle, Jennifer
Cc: Bonaccorso, Amy
Subject: RE: John Boice- CNN: Japan Reactor Accident - Radiation Risks in Perspective

(b)(5)

From: Gibson, Kathy
Sent: Thursday, March 24, 2011 2:24 PM
To: Sheron, Brian; Uhle, Jennifer
Subject: Re: John Boice- CNN: Japan Reactor Accident - Radiation Risks in Perspective

(b)(5)

From: Sheron, Brian
To: Gibson, Kathy; Uhle, Jennifer
Sent: Thu Mar 24 14:04:20 2011
Subject: RE: John Boice- CNN: Japan Reactor Accident - Radiation Risks in Perspective

(b)(5)

From: Gibson, Kathy
Sent: Thursday, March 24, 2011 1:47 PM
To: Sheron, Brian; Uhle, Jennifer
Subject: FW: John Boice- CNN: Japan Reactor Accident - Radiation Risks in Perspective

(b)(5)

Kathy Halvey Gibson
Director
Division of Systems Analysis

Kathy.Gibson@nrc.gov
(301) 251-7499 Work
(b)(6) Cell

From: Brock, Terry
Sent: Thursday, March 24, 2011 1:37 PM
To: Gibson, Kathy
Subject: John Boice- CNN: Japan Reactor Accident - Radiation Risks in Perspective

Excellent John Boice interview below on Japanese current events. Hat-tip to Vered on finding this.

Terry

CNN Video Link:
http://www.cnn.com/video/data/2.0/video/world/2011/03/23/sotu.boice.0320.cnn.cnn.html

From:	Kelly, John E (NE)
To:	Adams, Ian; Aoki, Steven; Binkley, Steve; Brinkman, Bill; Budnitz, Bob; DAgostino, Thomas; Finck, Phillip; Garwin, Dick (EOP); Garwin, Dick (IBM); Grossenbacher, John (INL); Hurlbut, Brandon; John Holdren; Kelly, John E (NE); Koonin, Steven; Lyons, Peter; McFarlane, Harold; Miller, Neile; Mustin, Tracy; NITSolutions; Owens, Missy; Peterson, Per; Poneman, Daniel; SCHU; Sheron, Brian; Steve Fetter; Szilard, Ronalo
Cc:	Lee, Richard
Subject:	FW: Final Documents - Radiation Cameras
Date:	Thursday, March 24, 2011 3:51:06 PM
Attachments:	Thermo Scientific - Rad Camera.pdf Thermo Fisher Scientific - Rad Camera.pdf Spec Sheet 8710D1MX1.pdf MegaRAD-camera.pdf http www.ahlberg-electronics.pdf GammaCam.pdf AquaRAD Brochure.pdf AquaRAD Underwater Camera.pdf Ahlberg - Rad Camera.pdf Ahlberg - Rad Camera - N620.pdf Ahlberg - Rad Camera - N180.pdf Radiation Camera Assistance (23 March 2011).docx Cost for DOE Rad Camera Support (23 March 2011).docx Potential Measurement Deployment Ideas from the DOE Labs.docx

attached is information related to sensors and instruments. The document to read is the one entitled "Potential Measurement Deployment Ideas from the DOE Labs". The others are related to rad hardened cameras.

From: McFarlane, Harold
Sent: Thursday, March 24, 2011 1:55 PM
To: Kelly, John E (NE)
Cc: Binder, Jeff; Derek C Wadsworth
Subject: Fw: Final Documents - Radiation Cameras

John,
As requested with larger font.
hfm

Harold F McFarlane
Deputy Associate Laboratory Director
Idaho National Laboratory
PO Box 1625, Idaho Falls, ID 83415-3855 USA
ID office: +1-208-526-3256 mobile: (b)(6)
fax: +1-208-526-2930 email: harold.mcfarlane@inl.gov
Technical Director, Generation-IV International Forum
US Dept. of Energy; Office of Nuclear Energy
DOE office: +1-202-586-9175
DOE email: harold.mcfarlane@nuclear.energy.gov

----- Forwarded by Harold Finley McFarlane/MCFAHF/CC01/INEEL/US on 03/24/2011 11:51 AM -----

Derek C Wadsworth/WCD/CC01/INEEL/US

03/24/2011 11:29 AM

To Harold Finley McFarlane/MCFAHF/CC01/INEEL/US@INEL, Douglas E Burns/DEB4/CC01/INEEL/US@INEL

cc Victor G Walker/WALKVG/CC01/INEEL/US@INEL, Cal Christensen/CAL2/CC01/INEEL/US@INEL

Subject Fw: Final Documents - Radiation Cameras

As requested.

CH/292

DEREK WADSWORTH
ROBOTIC & HUMAN SYSTEMS
IDAHO NATIONAL LABORATORY
OFFICE: (208) 526-8514
MOBILE (b)(6)
derek.wadsworth@inl.gov

----- Forwarded by Derek C Wadsworth/WCD/CC01/INEEL/US on 03/24/11 11:29 AM -----

"Harris, Kathryn S (CONTR)" <Kathryn.Harris@nnsa.doe.gov>

03/23/11 09:24 PM

To "Deeney, Chris" <Chris.Deeney@nnsa.doe.gov>
cc "'Derek C Wadsworth'" <Derek.Wadsworth@inl.gov>
Subject Final Documents - Radiation Cameras

Hi Chris,

Sorry this is so late but it is ready for review and to send forward. There are three sets of attachments:

- "Radiation Camera Assistance (23 March 2011).docx" is to send to the Government of Japan with all the options available

(b)(5)

- The PDFs are "cut sheets" of the equipment. All of these can be shared with Japan. None show the identical cameras we have sitting in on our shelves though; they are industry standards of the type of cameras we offer in the paper. Tomorrow Derek can pull together the exact photo and specs of the specific items we've offered if that's helpful.

Please let us know if you have any questions. Sorry again this is so late; it was a lot of work for Derek to determine precisely how many and what type of equipment was available, but I think we pulled together a very useful document.

Kathryn

Search Refinements

- Products (4)
- Resources (4)

Search Results

Display Preferences

- **Products (4)**
- **Resources (4)**

Collapse

1. CIDI8710D1M-UV Intensified Radiation Hardened Camera (1)

Thermo Scientific* CIDI8710D1M-UV is a gated, intensified, CID-based camera consisting of a CID8710D1M radiation-hardened solid state RS-170 camera, fiberoptically coupled to high performance GENII-UV image intensifier tube from DEP.

Part Numbers:
CIDI8710D1MUV

Collapse

2. CID8825D Color Radiation Hardened Camera (1)

Thermo Scientific* CID8825D radiation-hardened color camera features new Low-Noise, Preamplifier Per Pixel Radiation Hardened Charge Injection Device (CID) imager technology for use in radiation environments.

Part Numbers:
CID8825D

Collapse

3. CID8710D1M Radiation Hardened Solid-State Camera (RS-170) (1)

Thermo Scientific* CID8710D1M solid-state, monochrome, CID-based video camera features minimum radiation tolerance of at least 1 x 10^6 rads total dose gamma (1 MegaRAD) total dose.

Part Numbers:
CID8710D1M

Collapse

4. CID8712D1M Radiation Hardened Solid-State Camera (CCIR) (1)

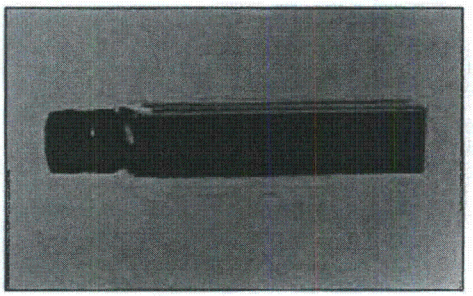
Thermo Scientific* CID8710D1M solid-state, monochrome, CID-based video camera features minimum radiation tolerance of at least 1 x 10^6 rads total dose gamma (1 MegaRAD) total dose.

Part Numbers:
CID8712D1MCCIR

from photonics.com: 07/20/2007
http://www.photonics.com/Article.aspx?AID=30287

ColorRAD Radiation-Hardened Camera

The ColorRAD is Thermo Fisher Scientific's latest addition to its Cidtec radiation-hardened product lines. The CID (charge injection device)-based camera provides sharp, crisp video images in radiation environments with color imaging up to 3 x 10(6) rads total dose.



The ColorRAD line complements the MegaRAD series of monochrome radiation-hardened cameras, which operate to at least 1 x 10(6) rads total dose.

ColorRAD features include excellent signal-to-noise in high-radiation flux rates, antiblooming performance inherent to CIDs and wide spectral response.

The cameras operate in total radiation dose exposure over 100 times greater than what conventional CCD cameras can tolerate. This radiation hardness makes the ColorRAD and the MegaRAD series well suited for nuclear medicine, reactor surveillance, vessel inspection, waste monitoring, accelerator experiments, hot cells, safety (ALARA) programs and other imaging applications common to the nuclear power generation, decommissioning, waste disposal, and high-energy physics markets.

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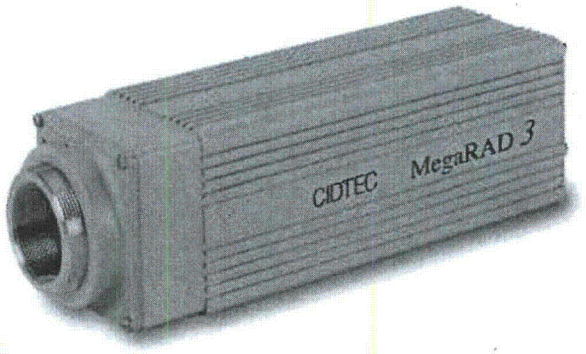
from photonics.com: 07/20/2007
http://www.photonics.com/Article.aspx?AID=30287

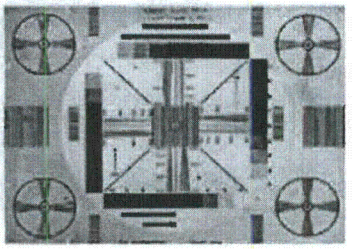
CID8710D1MX1

RADIATION HARD SOLID STATE MONOCHROME CAMERA



Features:

- CID (Charge Injection Device)
- 1 x 10^6 Rad Total Dose (gamma)
- Excellent Image at 7 x 10^5 rads/hr
- High-Resolution
- Small Size
- Replaceable Remote Head
- No Geometric Distortion
- Selectable 2X, and .5 video gain boost



Applications:

- Inspection and measurement
- Process monitoring
- Laser beam profiling
- Robotic handling

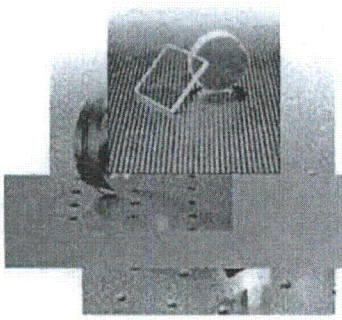
The Model CID8710D1MX1 solid-state monochrome video camera features a 2:1 Interlace scanned 768(H) x 612(V) radiation hardened CID array with 11.5 micron square pixels in a compact remote head connected to a camera control unit via flexible cable supplied to length. A versatile camera head-mounting feature simplifies installation in small spaces, and the standard "C" mount lens adapter provides back-focus adjustments. In addition the CID8710D1MX1 features Radiation tolerance to at least 1 x 10(6) rads total dose gamma, superior Anti-Blooming performance inherent to all CIDs, command stop motion to capture and read asynchronous high-speed events in center frame, and frame integration for time lapse exposure.

The CID8710D1MX1 camera requires an external power source supplying +11.5 to +17VDC.

The CID structure is inherently radiation resistant, and with specific modifications to the CID process, has been made radiation hardened. The CID8710D1MX1 camera is tolerant to gamma, neutron, high energy electrons, and proton radiation, and since pixel charge readout is within the CID pixel, there is limited potential of single event disruptions common with other imaging technologies.

The imager is also inherently Anti-Blooming and tolerant to highly specular lighting overloads. Optical overloads are highly contained within each pixel or the immediately surrounding pixels so charge is not shared with adjacent rows or columns.

The spectral response is from 400nm to 1100nm, and coatings are available for X-ray, deep UV, and IR. CID imagers have a contiguous uniform pixel structure where the total sensor is active with virtually no opaque areas which facilitate interpixel interpolation for subpixel edge definition. Cameras are available in CCIR or Progressive Scan formats upon request.



Spectra-Physics
Lasers & Photonics

Liverpool, NY • Toll Free (800) 888-8761• www.spectra-physics.com
Telephone (315) 451-9410 • info@cidtec.com

Specifications

Imager

Imager Format	
Total Pixels	786H x 612V
Displayed Pixels	768H x 475V (RS-170 mode) 768H x 575V (CCIR mode)
Pixel Size	11.5 micron x 11.5 micron
Full Well Capacity	300,000 electrons
Active Area	11 mm diagonal
Optical Format	2/3"

Electrical

Scanning Format	RS-170, 30FPS, Interlace
Resolution	>500 TVL (horizontal)
S/N Ratio	47db typical - Measured Peak Signal/RMS Noise 10KHz - 4.2MHz
Sensitivity	Full Output at 1.0fc Faceplate 0db Gain, Illumination (T=2850K)
Composite Video	1V p-p, terminated into 75 ohms
Black Level	+50mV (Auto Black Clamp)
White Level	+700mV
Sync Level	-300mV
Geometric Distortion	0%
Input Power	18 Watts (max.)
Input Voltage	
Camera	+15VDC Nominal (14.5 to 15.5)
Line Adaptor	220 or 115 VAC +/- 10%, 50/60 Hz
Input Current	Camera (@15V) 1.2A avg.
Spectral Response	See Response Curve
Gain	X2, X.5 (Internally Switch Selectable)

Interface Signals

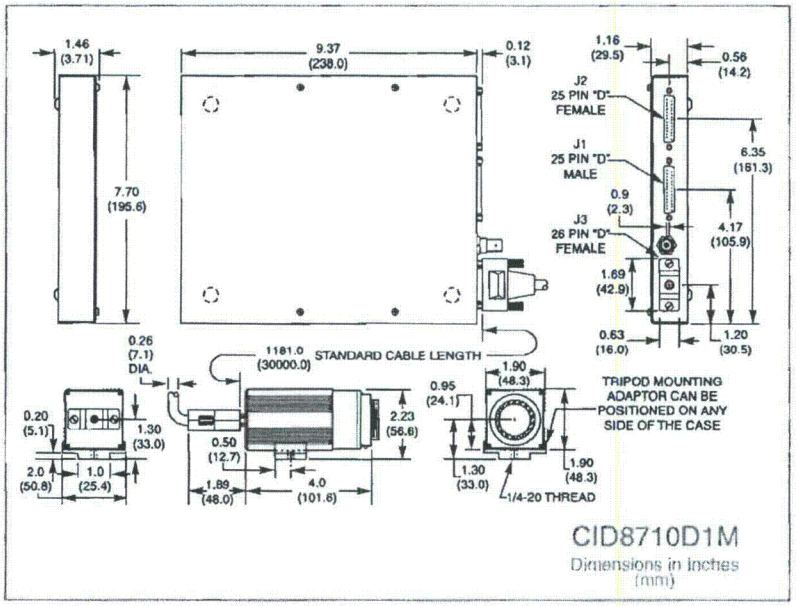
Outputs	(J1)	Video, End of Frame, End of Line, H&V Drive Composite Sync, and Blanking,
	(J2)	Video, ALC, 14.318MHz ER Clock
	(BNC)	Composite Video
Inputs	(J1)	+15VDC, Composite Sync/H Drive
	(J2)	V Drive, Inject Inhibit, Frame Reset

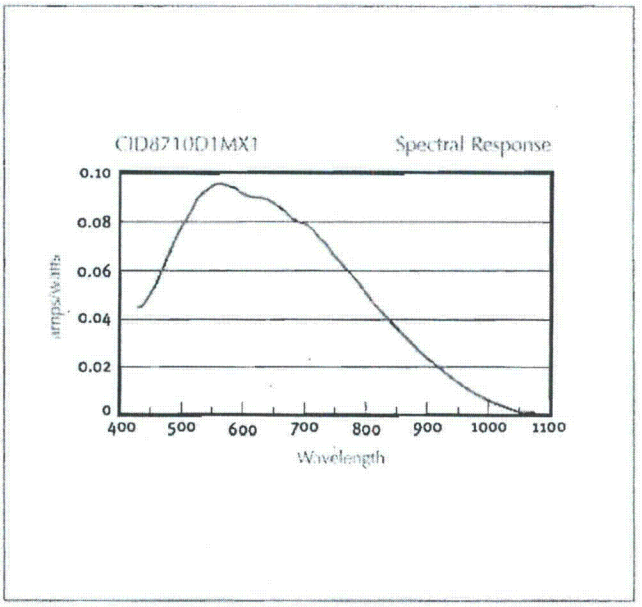
Mechanical

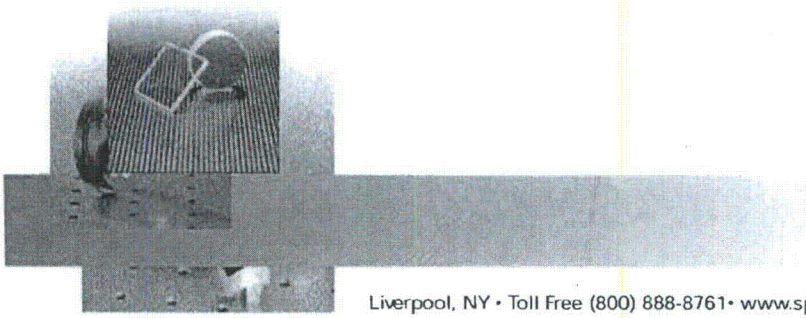
Weight	CCU	0.93 kg. (33 oz.)
	Head	0.27 kg. (9.7 oz.)
Dimensions		See Outline Drawing
Cable Length		30 meters (other lengths optional)
Lens Mount		Standard "C" Mount (1.0" - 32 Thread)
Camera Mount		1/4" - 20 Thread
Connectors	(J1)	25 Pin D (male)
	(J2)	25 Pin D (female)
	(J3)	26 Pin D (female)
	(BNC)	standard

Environmental

Temperature Range	
Operating	0C to 30C Case
Storage	-25C to 85C
Humidity	0 - 95%, non-condensing
Shock	50G (1/2 Sinewave at 10ms duration)







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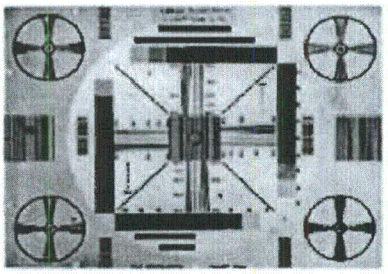
RADIATION HARD SOLID STATE MONOCHROME CAMERA

CID 8710 with extended housing. See next page for standard dimensions

The Model CID8710D1MX1 solid-state monochrome video camera features a 2:1 Interlace scanned 768(H) x 612(V) radiation hardened CID array with 11 .5 micron square pixels in a compact remote head connected to a camera control unit via flexible cable supplied to length. A versatile camera head-mounting feature simplifies installation in small spaces, and the standard "C" mount lens adapter provides back-focus adjustments. In addition the CID871 0D1 MX1 features Radiation tolerance to at least 1 x 10^6 rads total dose gamma, superior Anti-Blooming performance inherent to all CIDs, command stop motion to capture and read asynchronous high-speed events in center frame, and frame integration for time lapse exposure.

Features:

- CID (Charge Injection Device)
- 1 x 10_6 Rad Total Dose (gamma)
- Excellent Image at 7 x 10_5 rads/hr
- High-Resolution
- Small Size
- Replaceable Remote Head
- No Geometric Distortion
- Selectable 2X, and .5 video gain boost



The CID8710D1MX1 camera requires an external power source supplying +11 .5 to +1 7VDC.

The CID structure is inherently radiation resistant, and with specific modifications to the CID process, has been made radiation hardened. The CID8710D1MX1 camera is tolerant to gamma, neutron, high energy electrons, and proton radiation, and since pixel charge readout is within the CID pixel, there is limited potential of single event disruptions common with other imaging technologies.

The imager is also inherently Anti-Blooming and tolerant to highly specular lighting overloads. Optical overloads are highly contained within each pixel or the immediately surrounding pixels so charge is not shared with adjacent rows or columns.

The spectral response is from 400nm to 1 100nm, and coatings are available for X-ray, deep UV, and IR. CID imagers have a contiguous uniform pixel structure where the total sensor is active with virtually no opaque areas which facilitate interpixel interpolation for subpixel edge definition. Cameras are available in CCIR or Progressive Scan formats upon request.

Applications:

- Inspection and measurement
- Process monitoring
- Laser beam profiling
- Robotic handling

symphotic TII corporation

"Take a Closer Look"

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Unit K
Camarillo, CA 93012
(805) 484-6639
www.symphotic.com

Cdn Sales: (250)361-9115
US Sales: (805)798-0277
email: chris@roperresources.com
www.roperressources.com

CID 8710 D1MX1. CCIR Version also available.

Specifications

Imager

Imager Format	
Total Pixels	786H x 612V
Displayed Pixels	768H x 475V (RS-1 70 mode) 768H x 575V (CCIR mode)
Pixel Size	11.5 micron x 11.5 micron
Full Well Capacity	300,000 electrons
Active Area	11 mm diagonal
Optical Format	2/3"

Electrical

Scanning Format	RS-1 70, 30FPS, Interlace
Resolution	>500 TVL (horizontal)
S/N Ratio	47db typical - Measured Peak Signal/RMS Noise 10KHz - 4.2MHz
Sensitivity	Full Output at 1 .0fc Faceplate 0db Gain, Illumination (T=2850K)
Composite Video	1V p-p, terminated into 75 ohms
Black Level	+50mV (Auto Black Clamp)
White Level	+700mV
Sync Level	-300mV
Geometric Distortion	0%
Input Power	18 Watts (max.)
In put Voltage	
Camera	+15VDC Nominal (14.5 to 15.5)
Line Adaptor	220 or 115 VAC +/- 10%, 50/60 Hz
Input Current	Camera (@1 5V) 1 .2A avg.
Spectral Response	See Response Curve
Gain	X2, X.5 (Internally Switch Selectable)

Interface Signals

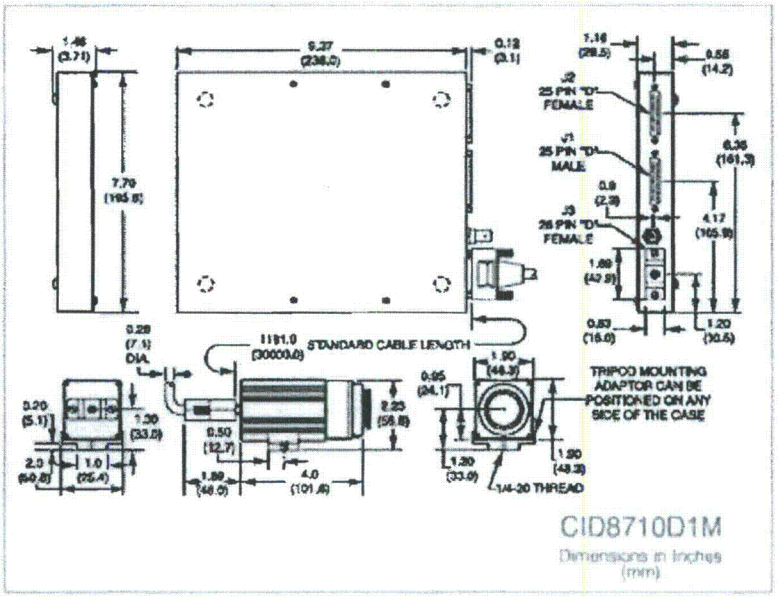
Outputs	(J1)	Video, End of Frame, End of Line, H&V Drive Composite Sync, and Blanking,
	(J2)	Video, ALC, 14.318MHz ER Clock
	(BNC)	Composite Video
Inputs	(J1)	+1 5VDC, Composite Sync/H Drive
	(J2)	V Drive, Inject Inhibit, Frame Reset

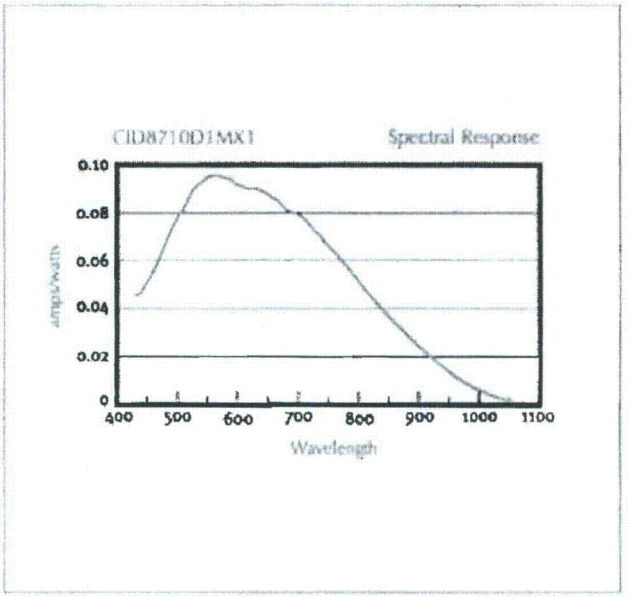
Mechanical

Weight	CCU	0.93 kg. (33 oz.)
	Head	0.27 kg. (9.7 oz.)
Dimensions		See Outline Drawing
Cable Length		30 meters (other lengths optional)
Lens Mount		Standard "C" Mount (1 .0" - 32 Thread)
Camera Mount		1/4" - 20 Thread
Connectors	(J1)	25 Pin D (male)
	(J2)	25 Pin D (female)
	(J3)	26 Pin D (female)
	(BNC)	standard

Environmental

Temperature Range	
Operating	0C to 30C Case
Storage	-25C to 85C
Humidity	0 - 95%, non-condensing
Shock	50G (1/2 Sinewave at 10ms duration)





Product finder — Radiation — Reactor type — Application — search

AHLBERG ELECTRONICS

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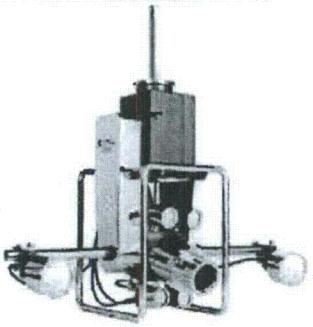


Latest In Nuclear Visual Inspection and Surveillance Technology

Ahlberg Electronics AB is a Swedish high-tech company that designs and manufactures advanced color camera systems and inspection equipment for the nuclear industry.

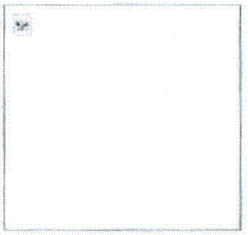
We supply high quality radiation tolerant underwater-products with the latest technology that are ideal for many nuclear and industrial applications.

See our products

BWR Refueling Machine Camera

N180-TZ is a high radiation tolerant camera designed for permanent mounting on a refueling machine mast. It features the Ahlberg Color MegaRad camera with specially designed electronics and shielding for high radiation environments.

Find out more



4-Face Fuel Inspection
PWR Fuel inspection system during regular offload without affecting the critical path

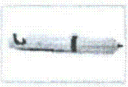
Read more
See large movie

Color MegaRad
Radiation tolerant high resolution color camera

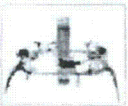
Read more
See large movie

NEWS

N180-TZ
N180-TZ is a high radiation tolerant color camera designed for permanent mounting on a BWR refueling machine mast.



N620-PTZ
Small-size Radiation Tolerant IVVI Color MegaRad Camera



Nuclear Plant Journal
Article about the 4-Face Fuel Inspection System in the Nuclear Plant Journal

"Our products are used in more than 20% of all nuclear power plants world wide

USA office
6404 Amsterdam Way Suite 100
Wilmington, NC 28405

Ahlbergs Electronics AB
Swedish office
Gösvägen 22
761 41 Norrtälje, SE

Contact us
Phone: +46 176 20 55 00
Telefax: +46 176 22 37 15
Email: Ahlberg Electronics

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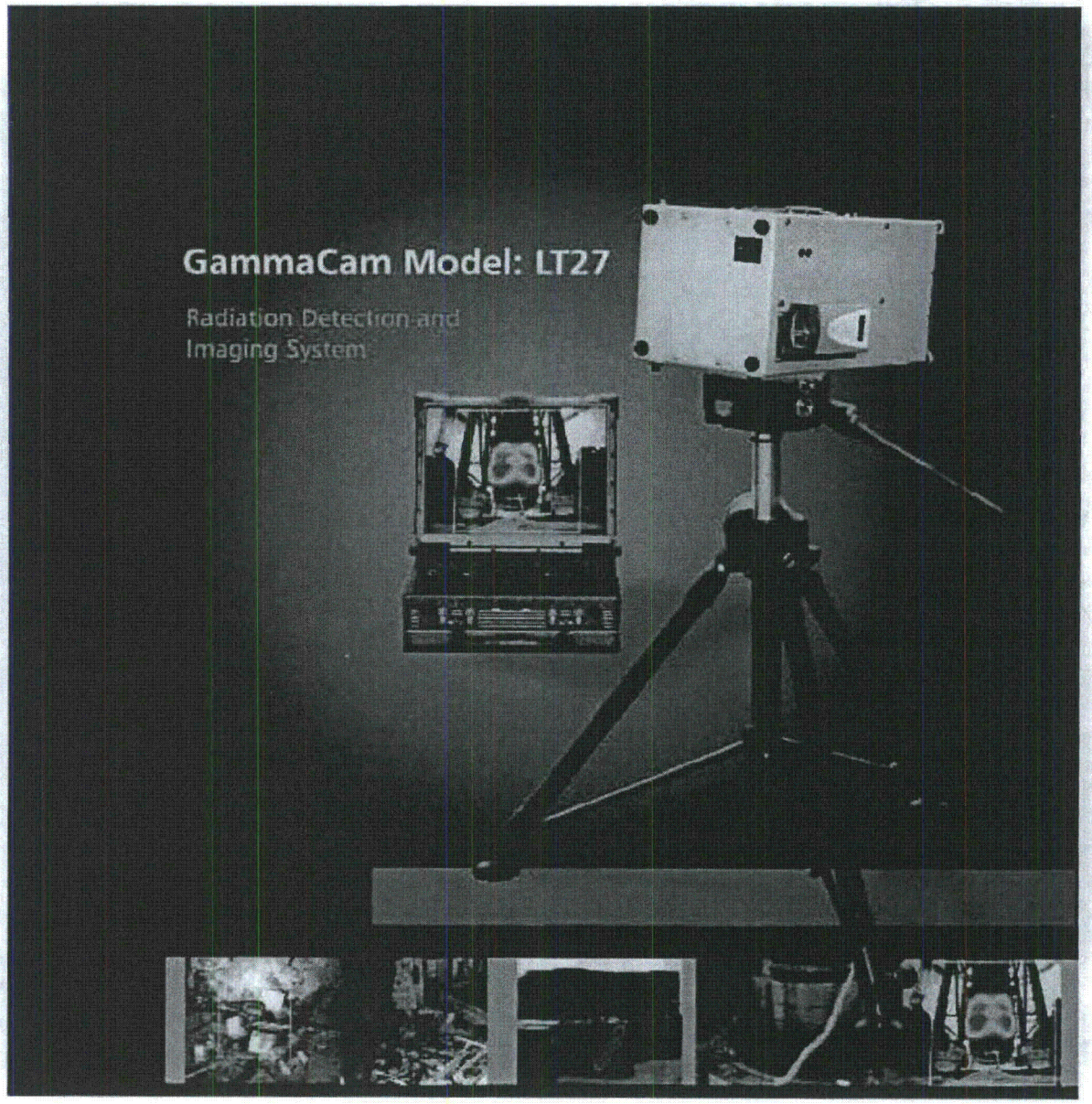

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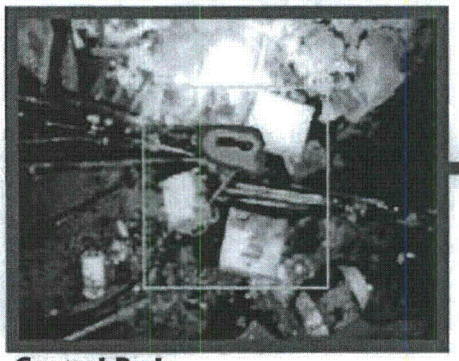
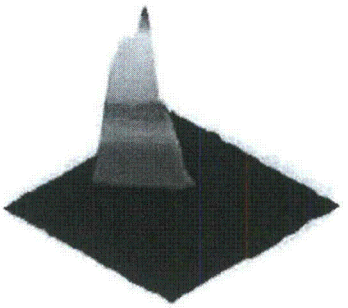
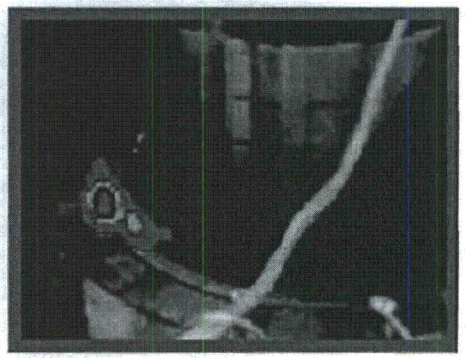


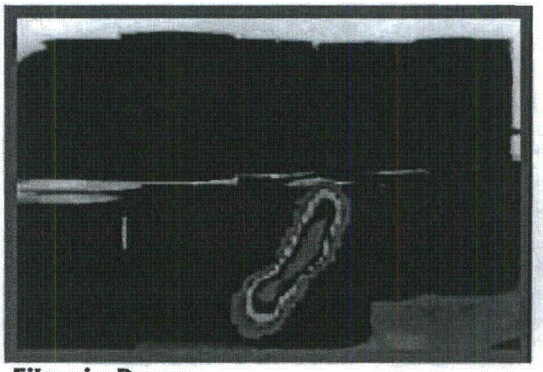
Control Rods
Exposure Time: 0.25 sec.

3-D Relief of Gamma Ray Intensity

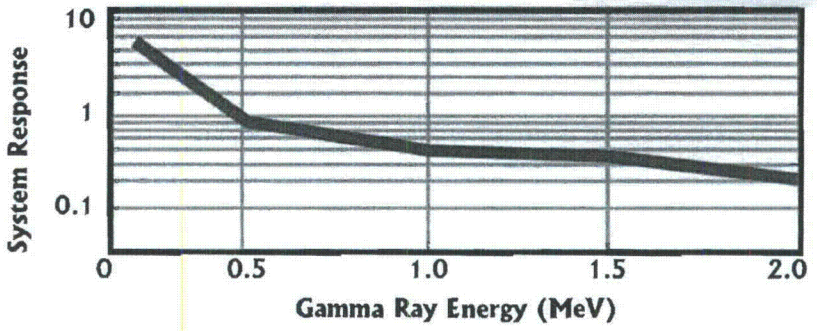




PWR Reactor Cavity
Exposure Time: 5 min.



Filter in Drum
Exposure Time: 4 min.



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GammaCam Model LT27 Radiation Detection and Imaging System

The GammaCam LT27 is a portable gamma ray imaging system that revolutionizes the assessment of radiological environments by providing accurate two dimensional spatial mappings of gamma ray emitting nuclides in real time. Remote operation and control allows safe image acquisition in high radiation environments, minimizing operator exposure.

Feature

- Protability
- Easy Setup
- High Spatial Resolution
- High Sensitivity
- User Friendly

Applications

The system can be tailored to countless applications which include:

- Critical Path Survey Management
- Safe, Remote Surveys of Large Areas
- Evaluation of Shielding Requirements and Implementation
- Monitoring of Dynamic Radiological Conditions
- Cost Effective Sorting of Radioactive Waste

GammaCam is comprised of a sensor head and a laptop computer. Data analysis, data storage, and all aspects of sensor operation are controlled from the computer. The unique system architecture uses proven technology to provide high sensitivity and high spatial resolution in a compact package. Its small footprint and light weight allows for easy setup and portability which are essential for efficient cost effective usage in a wide range of applications. In addition, the **GammaCam** is capable of operating in high background fields without requiring the use of heavy and bulky shielding.

Consistent with ALARA principles, a user's exposure to radiation fields are minimized because of the sensor's ability to operate at large stand-off ditances, typically 15' to 30' or more from the area being imaged. In addition, the portable computer can be positioned away from the sensor head to further reduce exposure.

System setup is simple, connect the sensor head to the computer and aim the **GammaCam** sensor at the area of interest. All sensor head functions are controlled remotely from the laptop. The **GammaSoft** system control software provides the operator with a complete image acquisition and analysis environment using simple menu driven commands.

Composite images generated by the system are presented on the computer display with radiation intensity shown in pseudocolor over a conventional black and white video image. The range of gamma ray intensity with a particular image is automatically scaled to indicate the highest radiation levels are red and the lowest level as blue.

A yellow border indicates the gamma ray field of view which user selectable at 25° (narrow) or 50° (wide).

The exposure time required to visualize a given radiation source depends upon several factors including gamma ray energy, source strength, distance to the source, and the distribution of the source. As a rule of thumb, for Cs-137 point sources, the sensor must receive an integrated dose of approximately 1μR to achieve a signal-to-noise ratio of 7:1. As an example, consider a 50 mR/hr Cs-137 point source (measured at foot as per 10CFR20) at a distance of 30' from **GammaCam** sensor head. The field strength at the sensor's input aperture is approximately 60 uR/hr ($1/r^2$ loss) so that an exposure time of 1/60 hr or 1 minute would be required for a 1 μR integrated dose.

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Spectral Range:	< 50 keV to > 1.5 MeV
Detector:	High density terbium-activated scintillating glass
Sensitivity:	1μR integrated dose for Cs-137 point source and 7:1 SNR
Exposure Time:	User selectable: < 1 millisecond– 10 minutes Software Summing for > 10 minutes
Field of View	25° Narrow FOV Mode 50° Wide FOV Mode
Spatial Resolution	1.3° Narrow FOV Mode 2.6° Wide FOV Mode
Dynamic Range:	Instrument: > 1E8 Single Image: > 20:1
B&W Video FOV:	73° Horizontal 55° Vertical
Temperature:	Operation: 5°C— 40°C Storage: -20°C— 50°C
Humidity:	0-99% noncondensing
Detection Head:	Weight: 45 Lbs. Size: 20 in Length 10 in Width 10 in Height Tripod Mountable
Processor (Optional):	Rugged Laptop Computer (IBM PC Compatible) Intel Pentium CPU 256 Megabytes RAM (Minimum) Active Matrix LCD Color Display Internal Hard Drive CDRW Drive
Standard Software:	GammaSoft
System Power:	120 Watts 110-240 VAC 50/60 Hz

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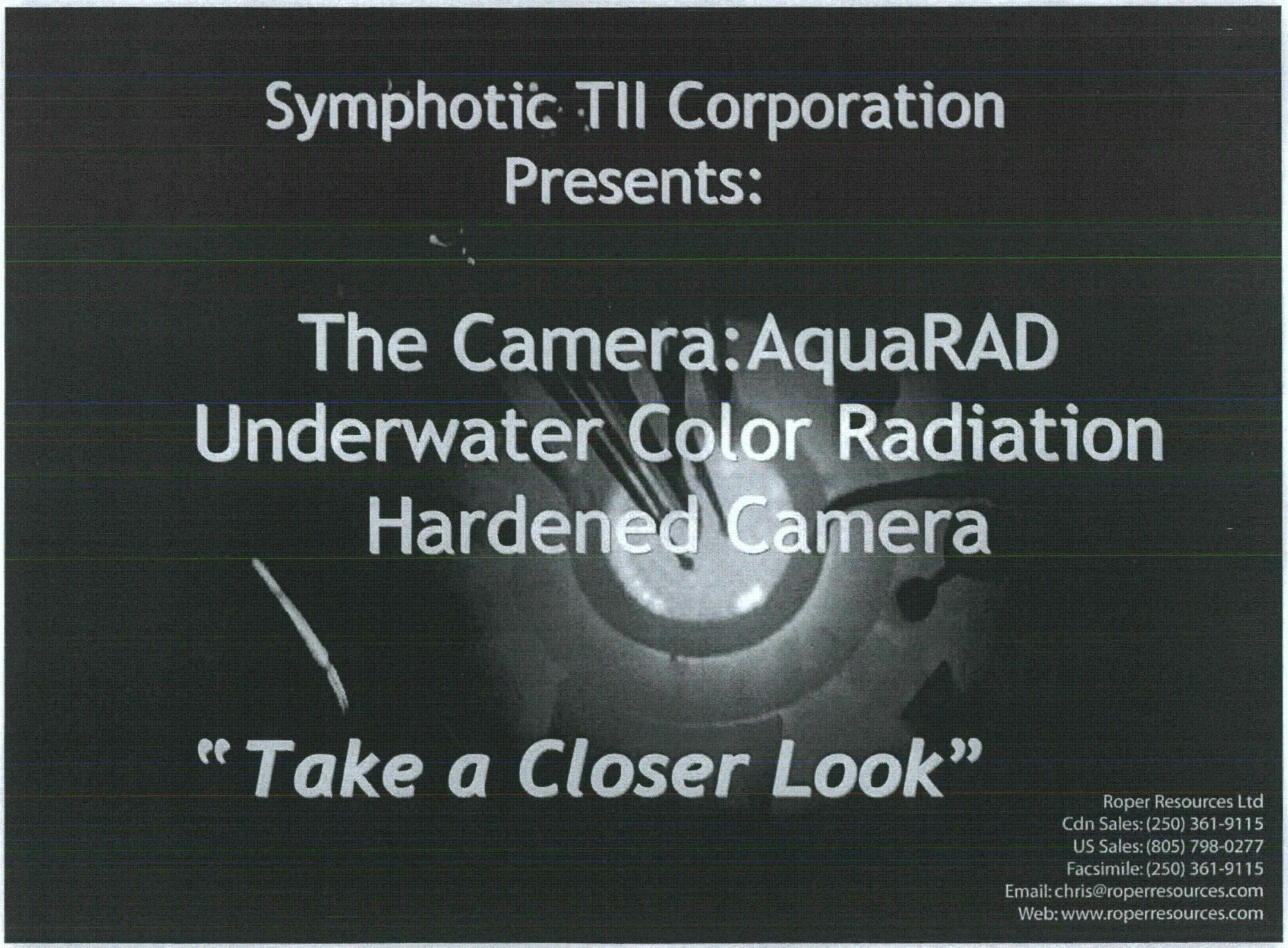
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Email: chris@roperresources.com
Web: www.roperresources.com

The Camera:AquaRAD is the most advanced underwater radiation hardened camera system available

Developed by a consortium of nuclear materials handling, radiation hardened camera, and underwater inspection equipment companies.

Development team

- Symphotic TII–Manufacturing and Design Team Leader
- Roper Resources–Underwater imaging and inspection specialists
- Inuktun Services–Remote and underwater inspection equipment manufacturing
- Spectra-Physics CIDTEC–Radiation hardened solid state imager manufacturer
- Nuclear Fuels Industries–Nuclear fuel manufacturing and handling

Basic Operation of a CCD

- Light strikes and generates a charge
- The charge is collected at electrodes or gates
- The charge is moved down the columns of electrodes to a readout register.
- Each line is read out serially by an on-chip amplifier

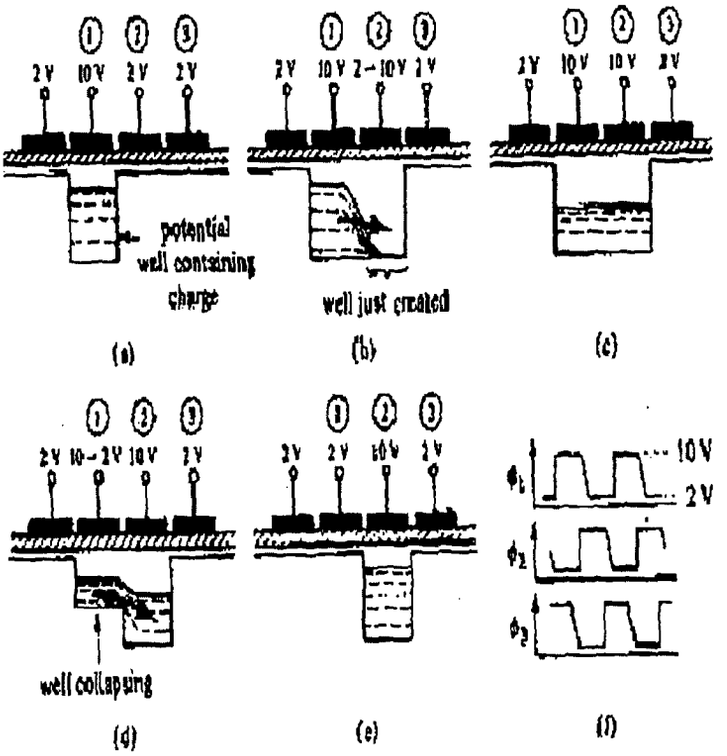


Fig. 2.15 (a)–(e) Movement of potential well and associated charge packet by clocking of electrode voltages; (f) clocking waveforms for a three-phase CCD.

- The charge is converted to an output voltage and digitally encoded
- "CTE"—Charge Transfer Efficiency is key to the operation of the CCD.

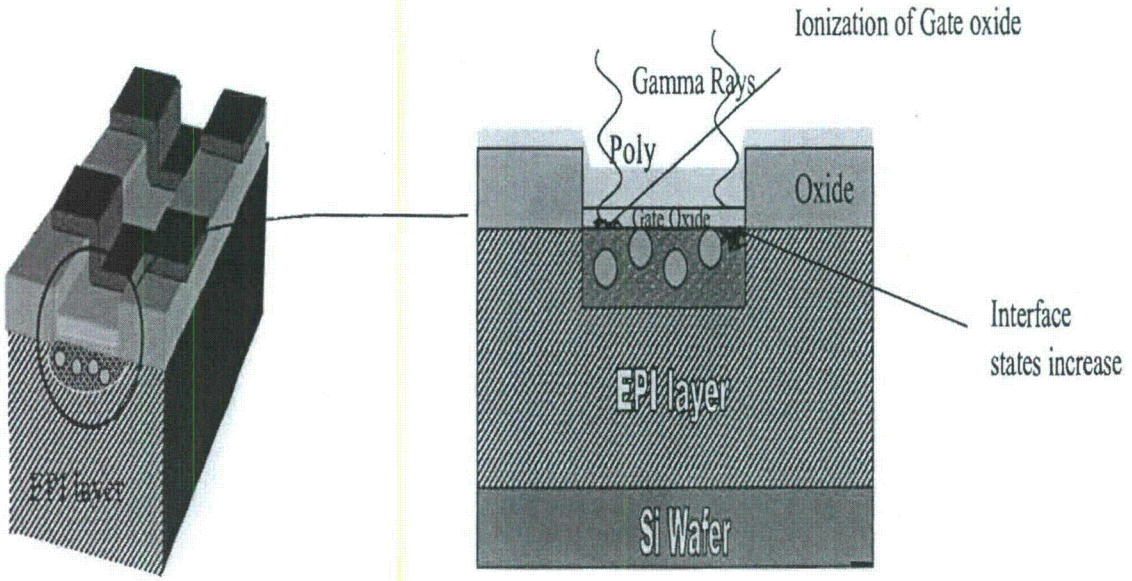
Damage to CCDs from Radiation:

- Oxide charging resulting in field effects
- Interface states and increased dark current
- Silicon atom displacement
- Inter-electrode leakages

Radiation Effects—severe for CCDs

Example of damage to surface of CCD:

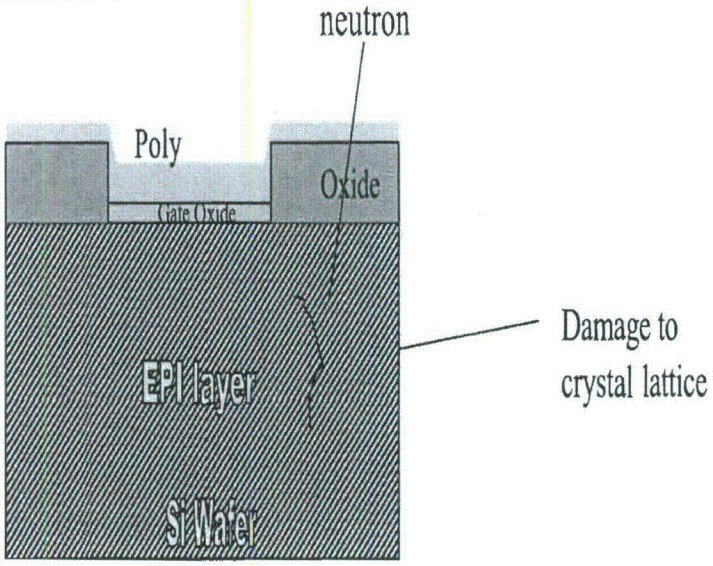
After irradiation surface states are found near the semiconductor and insulator interface. These states rapidly acquire charge, but do not easily release the charge.



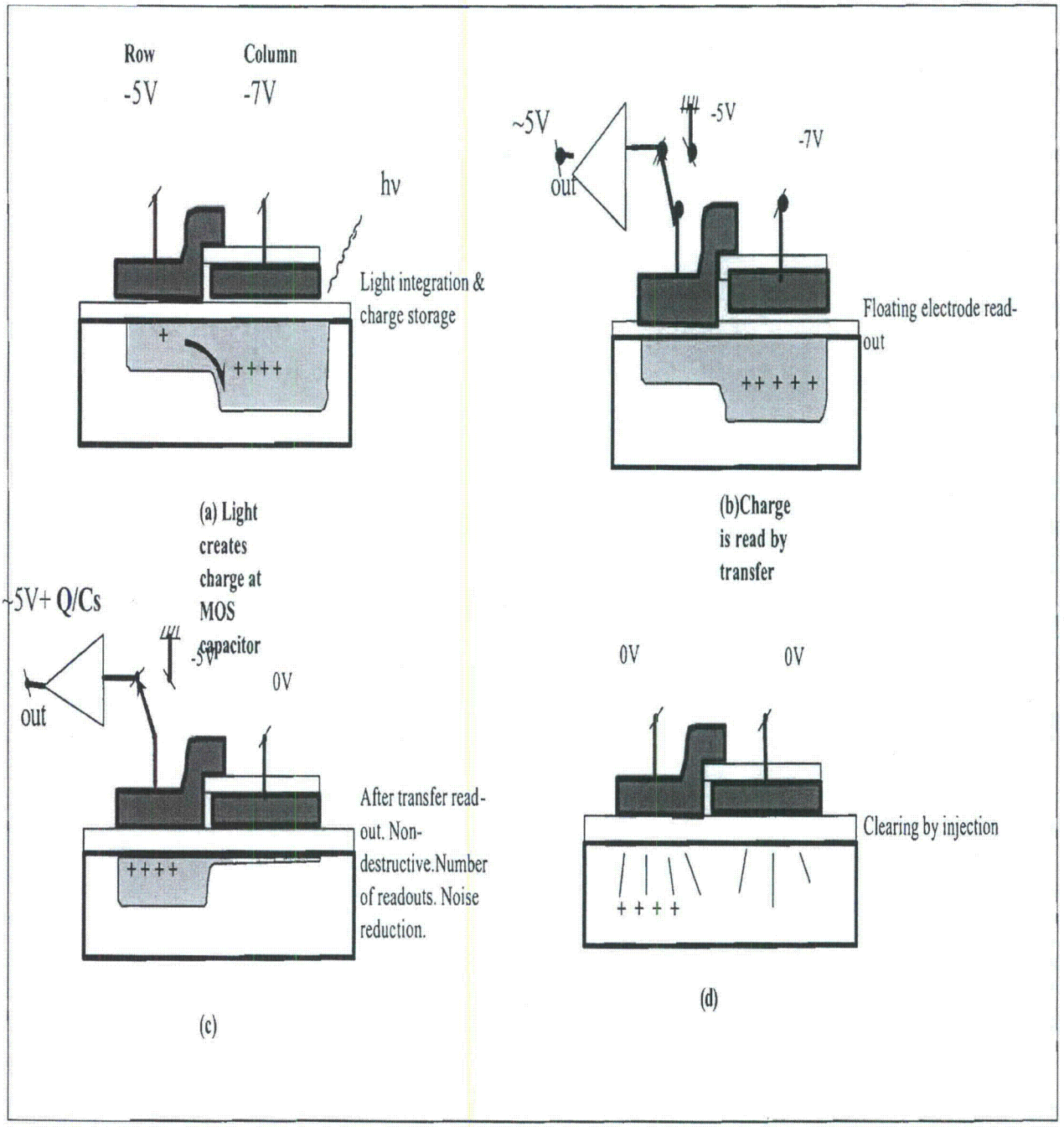
Radiation Effects

Example of damage to silicon lattice:

Displacement of silicon atoms from lattice leading to "bulk trapping"—a potential barrier to charge transfer



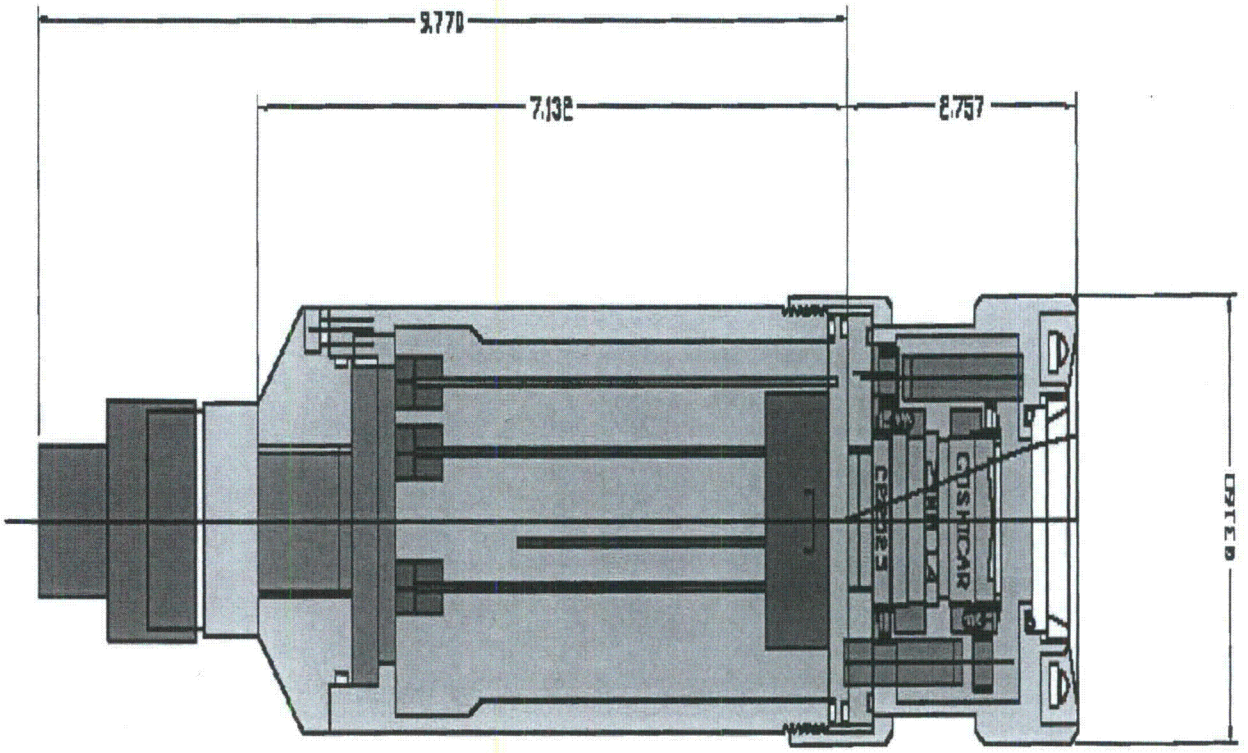
Basic Operation of a CID



CID cameras are designed to be radiation tolerant

- Charge transfer is only within individual pixels making the CID insensitive to charge transfer efficiency losses.
- Internal electronics of CID detector do not "short out" under dose.
- Changes in threshold voltages are compensated, extending the operational lifetime under dose.

The Camera:AquaRAD System



Cable Connector

Radiation Hardened Charge Injection Device Imager Module

Lens and Lighting Module

Waterproof modular design with easy replacement of modules

Camera:AquaRAD Housing Specifications

- 6061-T6 Aluminum Alloy
- Browning resistant window material
- Nuclear application grade underwater connectors
- Quick change lens assembly
- Cylindrical, 3.15 in diameter by 11.125 in (including connector)
- Quick change of imager unit

Camera:AquaRAD Lighting

- High intensity white LEDs
- 10 LEDS (or 20) potted in epoxy
- Half circle of full circle illumination
- Working range maximum of 2 meters
- Intensity controlled remotely

Camera:AquaRAD Lens Specification

- 25 mm replaceable lens (shop replacement)
- Economical "browning" lens unit
- Remotely adjustable focus and iris
- Minimum focus range 3 inches (user specified)

Camera:AquaRAD Cable Specifications

- Cable Type: Hybrid Round Cable, 40 meter nominal, 12.9 mm diameter, polyurethane--flame retardant, halogen-free yellow outer jacket.
- Operating temperature: -50 degrees to +90 degrees C
- Weight: 247 g/m
- Radiation Resistance:
  - Components: 1.5×10^6 Rad
  - Jacket: 2×10^8 Rad
- Recommended bending radius at continuous flex: 130 m

Camera:AquaRAD Key Features and Benefits

- Modular design–Simple field replacement of imager and lens units.
- 2.5 MegaRAD total dose/1 MegaRAD/hr dose rate–High radiation tolerance
- 40 meter underwater cable–Applicable for power reactor inspections
- Separate Camera and Control unit–Compact camera head

For more information contact

Roper Resources Ltd.
984 St. Patrick Street,
Victoria, BC, Canada
V8S 4X5
Canadian Sales: (250) 361-9115
USA Sales: (805) 798-0277
Email : chris@roperresources.com
Web : www.roperresources.com

symphotic TII corporation

"Take a Closer Look"

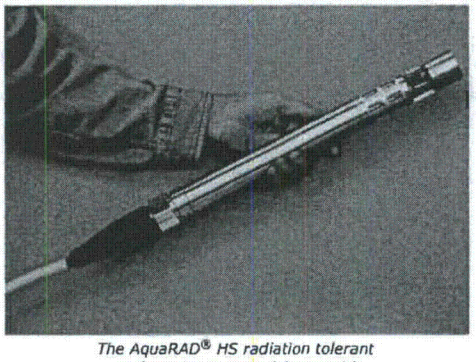
Home

Products

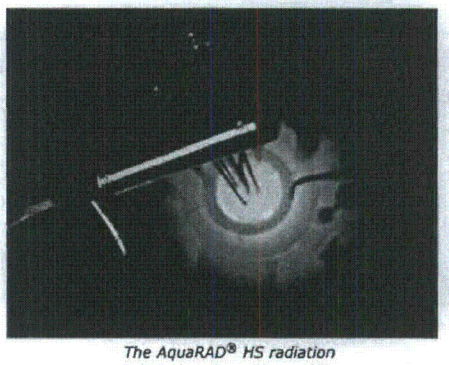
Radiation Tolerant Cameras

The AquaRAD®, the AeRAD™ and the MegaRAD™ radiation tolerant cameras.

The AquaRAD® Underwater Camera



The AquaRAD® HS radiation tolerant underwater camera (shown with optional motorized right angle viewer)



The AquaRAD® HS radiation tolerant underwater camera

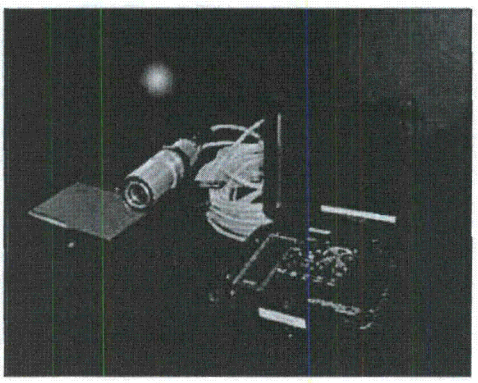
The AquaRAD® is the world's first and only highly radiation tolerant color solid state camera for use in underwater applications. The Aqual is available exclusively from Symphotic TII Corporation.
The AquaRAD® and AeRAD™ cameras are now available with a series of options for your application: static or motorized right angle viewe underwater pan and tilt, and zoom or standard lens configuration. It can also be built in a low profile configuration for tight inspections.

Also available as a monochrome version, the AquaRAD® series of cameras can take a closer look at your high radiation inspection targets underwater.

Key Features

- Radiation tolerant to beyond 3×10^6 Rad--3×10^4 Gy
- Close focus for underwater inspection
- Right angle viewer
- Color, solid state imager--simple to setup, simple to use
- NTSC or PAL versions available.
- Analog Video or USB Video output

The ÆRAD™ Custom Radiation Tolerant Camera Systems



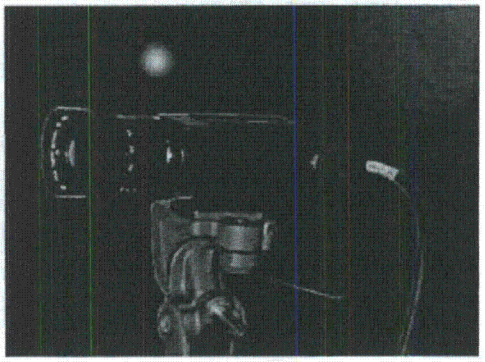
Custom zoom AeRAD™ radiation tolerant camera with pan and tilt

The AeRAD series are custom designed cameras for use in hot cells and radiation environments where conventional cameras would fail. U the same CID technology as our AquaRAD® cameras, but with the capability for longer cable lengths and special housings, zoom lenses, a nuclear grade pan and tilts, we can configure a camera for your most demanding requirements.

Key Features

- Radiation tolerant to beyond 5 x 10^6 Rad--5 x 10^4 Gy
- Configure with zoom or fixed focal length lens, rad tolerant glasses or replaceable lenses
- Fixed or nuclear grade pan and tilt mount
- Color or monochrome, solid state imager--simple to setup, simple to use
- Extended cable lengths to simplify penetration design

The MegaRAD Monochrome Camera



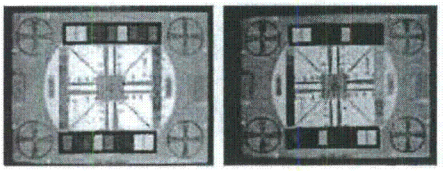
The MegaRAD™ radiation tolerant air camera

Where simple installation, rugged design, and low cost, the MegaRAD camera is ideal for radiation environments in otherwise ambient environmental conditions.

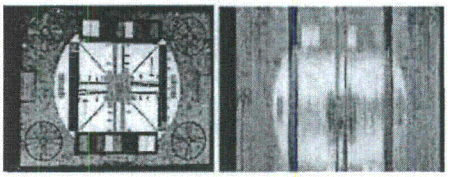
Key Features

- Radiation tolerant to beyond 1 x 10^6 Rad--1 x 10^4 Gy
- Configure with zoom or fixed focal length lens, rad tolerant glasses or replaceable lenses
- Monochrome, solid state imager--simple to setup, simple to use
- Extended cable lengths to simplify penetration design
- Low cost

WHY CID?



AquaRAD® and AeRAD™ images (above): The picture on the right is a screen shot taken at t=0, 10,000 Rad/hr (100Gy/hr) dose rate. TI picture on the left is the same imager taken at t=45hr, or 0.45 MegaRAD (4500Gy) total dose.



CCD camera images (above): For comparison, the picture on the right is a CCD camera at t=0, 10,000 Rad/hr (100Gy/hr) dose rate, anc the left, the same imager after 1 hr, total dose = 0.01 MegaRAD (100Gy).

To Learn More: (please check the cameras of interest)

- ☐ AquaRAD® cameras
- ☐ AeRAD™ custom radiation tolerant camera systems
- ☐ MegaRAD monochrome cameras
- ☐ Other radiation environment requirements

*indicates required field

Title: Please select: *

Name: *

Job Title:

Organization: *

Country: Please Select: *

E-mail: *

Phone: *

Address:

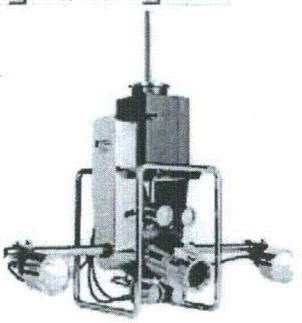
Details of your requirement:

Submit Reset

Contact Information

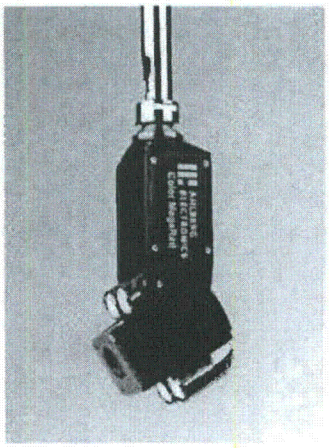
Telephone
805 484-6639
Postal address
Symphotic TII Corporation
880 Calle Plano, Unit K
Camarillo, CA 93012 U.S.A.

E-mail
E-mail to customer support



Product categories

- Reactor Service Cameras
- Rad. Hardened Cameras
- Fuel Inspection Cameras
- 4-Face Fuel Inspection
- Refueling Machine Cameras
- Manipulator Crane Camera
- CCTV Cameras
- Pan & Tilt Units
- Underwater Lighting
- Inspection racks
- Camera Control Units
- Lighting Power Units
- Camera Hoist
- Cable Reels
- Underwater Connectors
- Cables
- Accessories
- Special Products



PDF Video

Larger image

Details:
State of the art camera regarding image quality and radiation tolerance with 720 TV-lines horizontal resolution and perfect color reproduction.
Special inspection in high radiation areas and spaces.
IVVI inspections of reactor internals.
This camera is radiation hardened.

« Tillbaka

Color MegaRad L PTZ

The Color MegaRad L camera is a high radiation tolerant color camera with an auto-focused X10 optical
zoom lens (X10 digital, giving X100). The L model has
4 (2+2) adjustable lights, a remotely controlled zoom, and iris/auto-iris.
The camera has high quality close-up characteristics
with excellent high resolution color reproduction.
It is special designed for inspections in the high radiation areas of reactor vessels and internal parts in reactors of any type. The Color MegaRad is also ideal for fuel inspections.

Related products

T32-12K Camera Cable
Specially designed Camera Cable with Kevlar braid for handling the camera hanging from the cable only.

Pole system
Camera pole system for flexible camera handling with possibility to connect and extend the poles from a variety of length.
Rigid system with double security joints for precise alignment designated as camera carrier

PIS600 Portable Inspection System
Portable monitoring system for all Ahlberg camera types

PIS180 Portable Inspection System
The Portable Inspection System (PIS) 180 is specially designed for easy monitoring and recording during inspection using Ahlberg CCD, MegaRad and tube cameras.

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Swedish office
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761 41 Norrtälje, SE

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Telefax: +46 176 22 37 15
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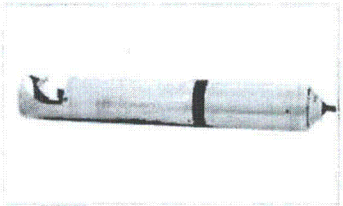


N620-PTZ

Small-size Radiation Tolerant IVVI Color MegaRad Camera

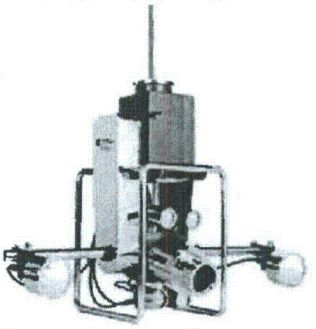
N620Z is a small-size flexible auto-focus radiation tolerant color camera with X10 optical zoom lens (X10 digital, giving X100 zoom) and built-in lights. It is designed for best possible image sharpness and depth of focus working with up to 720 TV-lines image.

With the mirror and rotation unit mounted the N620Z becomes a high performance and complete Pan, Tilt and Zoom camera. With the rotation unit and mirror extensions it can tilt the image up to 120° and pan around its own axis 360°. It can look sideways around corners and under edges for high resolution color inspection of areas where other cameras fail to perform. N620Z/PTZ is equipped with twelve high powers LED lighting attached to the front or to the mirror following the tilting movement. N620-PTZ is ideal for use in areas with limited space with high radiation such as the belt-line area and inside nozzles and pipes.

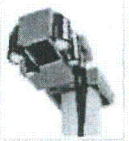
Application:
– Small-size (62 mm) X10 optical zoom camera with auto-focus and lighting for special inspection and time saving surveillance during outage services

– 720 TV-lines Color MegaRad IVVI camera

– Adaptable to inspection manipulators and tools



NEWS



N180-TZ
N180-TZ is a high radiation tolerant color camera designed for permanent mounting on a BWR refueling machine mast.

N620-PTZ
Small-size Radiation Tolerant IVVI Color MegaRad Camera

Nuclear Plant Journal
Article about the 4-Face Fuel Inspection System in the Nuclear Plant Journal

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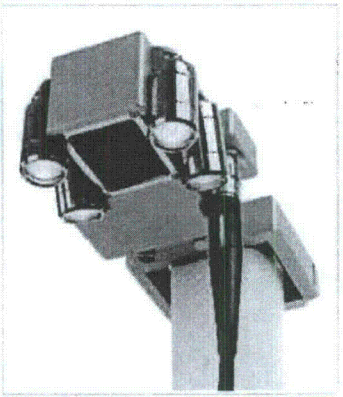
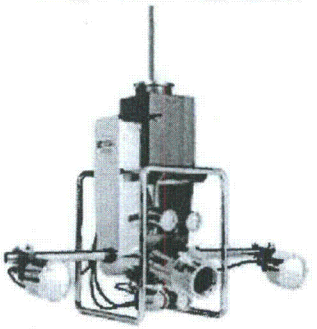


N180-TZ

N180-TZ is a high radiation tolerant color camera designed for permanent mounting on a BWR refueling machine mast.

It is designed for best possible image sharpness and depth of focus working with up to 720 TV-lines image. It has a remotely controlled adjustable (angle) mirror. This enables the machine operator to steer the mirror in order to read the fuel assembly identification numbers (at the top of the reactor core). A flick of a switch on the control panel enables the camera to view the bottom of the assembly for core grid guidance during fuel handling. In order to ensure safe gripping and fuel handling, N180-TZ visualizes the refueling machine grapple and the fuel bottom end or grid position simultaneously with the same depth of focus. N180-TZ features low light sensitivity with auto-focus and auto-iris making the camera user-friendly. The camera is robustly constructed and resists shock and vibrations.



NEWS

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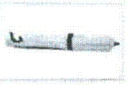

N620-PTZ
Small-size Radiation Tolerant IVVI Color MegaRad Camera

Nuclear Plant Journal
Article about the 4-Face Fuel Inspection System in the Nuclear Plant Journal

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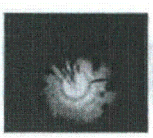

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U.S. Department of
ENERGY

Radiation-Hardened Cameras Available to the Government of Japan

March 23, 2011

United States Department of Energy
Washington, DC 20585

Summary of Radiation Camera Availability

The Department of Energy is pleased to offer the Government of Japan use of our existing inventory of radiation-hardened cameras in its response at the Fukushima Daiichi nuclear power plant.

Immediately available

- 3 limited-feature radiation-hardened cameras ($30,000 each) – RECOMMENDED FOR CRANE APPLICATION
- 1 GammaCam from DOE and others can be purchased ($40,000 - $60,000 each) – RECOMMENDED FOR CRANE APPLICATION
- 5 entry-level radiation-hardened cameras can be purchased ($12,000 each) – Available to augment limited-feature radiation-hardened cameras for crane application if more than 3 crane-based cameras are required
- Standard 2-3 color and 4 black/white CCD cameras ($1000 each) – RECOMMENDED FOR UAV APPLICATION

Short term (4-6 weeks)

- Additional limited feature radiation-hardened camera can be purchased from industry ($20,000 - $40,000)
- Development of a full-featured "radiation tolerant" camera ($50,000 - $75,000)

Long term (2-3 months)

- Full featured radiation-hardened camera system can be special ordered from industry ($60,000 +)

Table of Contents

I. Background

Radiation-Hardened Cameras have been used in the Nuclear Industry for many years. They are built to endure large doses of radiation and minimize image artifacts induced by radiation (sparkle). They have progressed from very large and bulky systems to fairly small and compact units. There are numerous manufacturers of radiation-hardened cameras. Following are a sampling of vendors:

Thermo Scientific
Spectra-Physics
Symphotic Tii
Ahlberg Electronics
Mirion Technologies

These vendors can supply individual units or systems consisting of pan and tilt units, light rings, controllers, monitors etc. Camera sizes range from 56.5 x 48.3 x 101.6 mm and less than 1 kg (not including lenses and connectors) to 10 kg systems. An entry-level radiation-hardened black-and-white camera including a lens and 10 m of cabling will cost approximately $12,000 USD. If features such as color imaging, a non-browning lens, zoom lens, pan and tilt mechanism, light rings and etc. are desired, then expect to pay in the neighborhood of $60,000 USD or even more. Systems can be configured for close-up inspection activities or general surveillance. Systems can also be procured which are waterproof. Vendors do not normally stock full-featured systems but rather assemble them according to customer specifications. Vendors likely have "standard" models available shorter term but that needs to be validated. Cut sheets for several camera models are included in an appendix to this document.

II. Deployment Options

Selection of a radiation-hardened camera or camera system will depend on the method used for camera deployment. Based on our understanding of the Government of Japan's requirement to gather visual and temperature information from the reactor pools, we recommend two deployment options. One option is to use a mobile crane to lift a camera system up over the facility wall and lower it into position near the pool, and the other options is to deploy the camera from a UAV.

III. Crane Based Sensor Deployment

Radiation-hardened cameras are recommended for crane-based deployment. Cranes allow for heavier systems with more sophisticated camera options. The best crane-based option would be a radiation-hardened, full-featured camera system, which would include features such as pan, tilt, and zoom to capture details of areas of interest. Unfortunately DOE has not yet identified any full-feature, radiation hardened cameras available within our own inventory but we are continuing to search. A full-feature camera can be special ordered from industry but would take 2-3 months to deliver.

Another option is to use a radiation-hardened camera with features such as non-browning lens and zoom, but without other features such as pan and tilt. DOE has 3 limited-feature radiation-hardened cameras immediately available from Idaho National Laboratory (INL). The replacement costs for these cameras is approximately $30,000 each. DOE also has 3 entry-level radiation-hardened cameras immediately available and can quickly procure others, yet they do not have features such as non-browning and zoom. The replacement cost for these entry-level cameras is approximately $12,000.

An additional system that could be deployable from a crane is a GammaCam. This system can be placed into a radiation environment to capture a video image of the area of interest and also over-lay a radiation map of the area on the video image. DOE has 1 GammaCam immediately available and additional systems are available from Industry. The replacement (and procurement) cost is approximately $40,000 - $60,000 per GammaCam.

IV. UAV Based Sensor Deployment

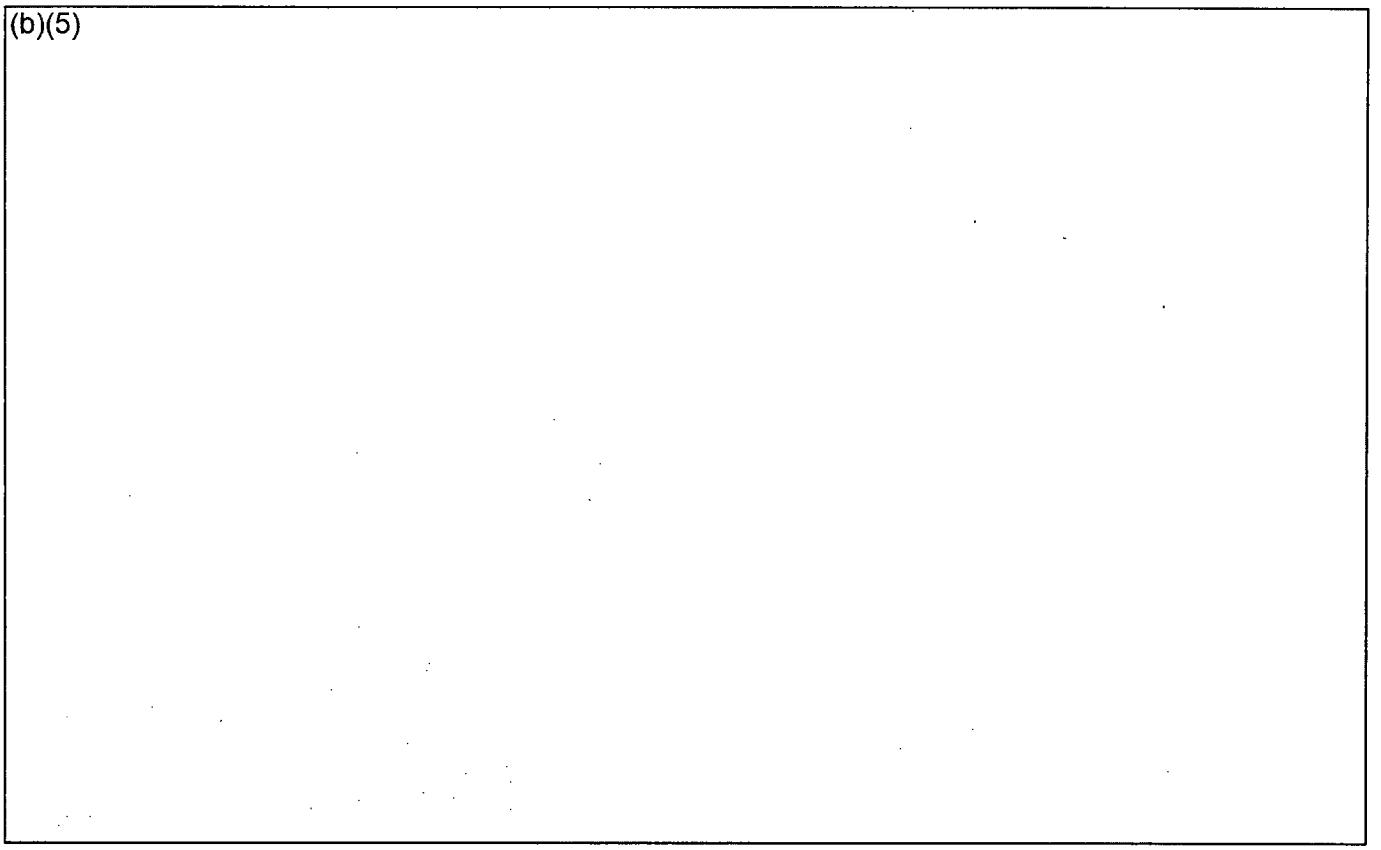
Radiation hardening is not required for cameras deployed from a UAV because the UAV's electronic components are not radiation hardened and will likely fail before the camera does. The best UAV-based option is a color CCD camera. DOE has 5-6 color and 4-5 black/white CCD cameras immediately available and others can be procured quickly from industry. The cost is approximately $1,000 per camera.

V. Lessons Learned

The Department of Energy's Idaho National Laboratory (INL) has been deploying cameras and camera systems for a number of years in radiation environments. A small inexpensive CCD camera and optics can be used. The camera will experience "sparkle" from the radiation environment and will "burn out" after a period of time but usually the information gained during its limited life in the radiation environment is sufficient. Radiation-hardened cameras cost nearly 10 times more than a standard CCD camera.

Better image quality (less noise) results if the camera cable is shielded or a fiber optic system is used. Radiation affects not only the camera but also the cable transmitting the data from the camera. Care should be taken to use approved cable or use fiber optics to eliminate radiation interference.

As an alternative to radiation hardened cameras there are camera systems that are "radiation tolerant" due to packaging in shielding. A standard camera can be placed within a shielded housing behind leaded glass and survive for an extended period of time in a high radiation environment. This provides a solution that is more readily available and less costly.


(b)(5)

Potential Measurement Deployment Ideas from the DOE Labs

Information compiled by Derek Wadsworth, INL; all info has been sent to Chris Denny as instructed.

The attached report from yesterday lists the first set of ideas that have come up for deploying sensor technology to examine the water in SFP #4.

They have compiled a set of documents on 13 rad-hardened camera options and sent that to use.

One person is all that is required to accompany any of the technology options on a commercial flight. Most, including UAVs, will fit in a suitcase. Could be ready to go quickly.

Potential Sensor Deployment Approaches to Support Reactor Cooling Operations

To assist in maintaining situational awareness of the Japanese reactors and spent fuel pools, sensors and delivery methods are required. Following is a list of some proven and readily available sensors followed by ideas for their deployment or delivery.

SENSORS

Extensive experience exists in deploying sensors into hazardous environments. A few relevant sensors that have been deployed on remote systems include:

- Radiation monitors
- Video/still/infrared cameras
- Radiation hardened cameras
- Radiation field mapping cameras
- Thermal sensors (contact and standoff)

In this application, sensor selection will be influenced by power consumption requirements, size/weight, and communication protocol.

DELIVERY METHODS

1) **Sensor Deployment Using Existing Concrete Pumpers.**
   It has been reported that there are currently long-extension concrete pumpers that have been used to deliver water into the spent fuel cooling pools. These pumpers reportedly have an extension of at least 50 meters. If the concrete pumpers can be positioned in the vicinity of the pools, then a sensor package may be attached to the end of the boom and provide surveillance of the pools. With this arrangement a wired or tethered communication and power cable could be deployed and avoid the use of wireless communication and batteries.

   This technique could be used for lowering a sensor package into the reactor building and may be able to position sensors near or

even in the fuel pools. These packages could be left in place for long-term observation if desired.

Advantages:

- Quick deployment using currently available equipment
- More reliable communications and power
- Can support a heavy sensor package
- Boom articulates for placement

Potential Issues:

- Ability to position boom in desired location may be hindered by infrastructure and debris
- Even with suitable positioning of boom, the area of interest may be obscured
- Lowering the sensor package would require the boom to be directly over the deployment location with no ability to maneuver inside the building

2) Portable Crane Delivery

This delivery method is similar to the concrete pumper but has a couple of distinguishing capabilities including: Mobile cranes have a reach of up to 225 meters, mobile cranes have an enormous lifting capacity and the system could handle virtually any sensor package or equipment that would be deployed. Using a portable crane in lieu of the pumper may allow simultaneous operation of the pumper and mobile crane. These cranes could potentially be manned or unmanned variants depending on radiation levels.

Advantages:

- Could be deployed in a way so as not to inhibit the current use of the concrete pumpers
- Can be dynamically located based on available access points outside reactor building and repositioned as needed
- Reliable communications and power
- Can be used for placement of large equipment such as demolition or debris moving systems or unmanned ground vehicles inside the reactor area

Potential Issues:

- Availability of large mobile cranes at or near the reactor facilities
- If unmanned operation is needed or desired, retrofitting the crane would be necessary and may require a number of days
- Can the mobile cranes be maneuvered into a suitable position outside the reactor buildings
- Similar positioning issues as with the concrete pumpers

3) Rotary Unmanned Aerial Vehicle

A small-unmanned rotary vehicle can be used to position still/video/infrared cameras, remote temperature measuring devices, or a radiation detector inside the reactor building. Access to the inside of the building would be accomplished through holes in the roof or sides. The UAV would offer improved maneuverability and allow more options for sensor placement. The UAV could be remotely controlled or operated in a fully autonomous mode to maintain hovering position. Operation can be accomplished from up to 1 km away. Flight time is approximately 20 minutes with a payload of roughly 1 kg.

Advantages:

- Provides greatest flexibility of proposed systems for positioning sensors
- Two systems immediately available at the INL with additional systems readily available from industry
- Perch and stare capability allows placement of sensor in the hazardous environment

Potential Issues:

- Sensor selection limited by payload capacity
- Requires highly trained operator
- Debris may limit where the UAV can fly
- Operator needs situational awareness to fly the UAV
- Radiation effects on electronic flight controller is unknown
- Only short flight times are achievable

4) Dirigible Aerial Vehicle

A dirigible vehicle or blimp can be used in a fashion similar to the rotary UAV for sensor positioning above or within the reactor building. Dirigible size will determine payload capacity and reasonably will be 2 to 3 kg. An effective use of a dirigible would be to provide video to the rotary UAV operator to enhance situational awareness.

Advantages:

- Simple operation requiring little training and minimal supervision
- Readily available from multiple sources
- Resistant to radiation
- Provided only light winds, platform is stable

Potential Issues:

- Maneuverability in confined spaces
- Increasing size for payload decreases maneuverability
- Payload limited
- Adverse weather limitations

5) Fixed Wind Unmanned Aerial Vehicle Observations

A small fixed wing UAV could be deployed in a defined path over the reactors and provide persistent oversight and surveillance of ongoing operations. Systems are field deployable and do not require a prepared runway and associated infrastructure. In autonomous mode the UAV can perform it's mission without operator intervention and the mission can be initiated a safe distance away from the target. Flight times of 6 hours are common with a payload of 7 to 10 kg.

Advantages:

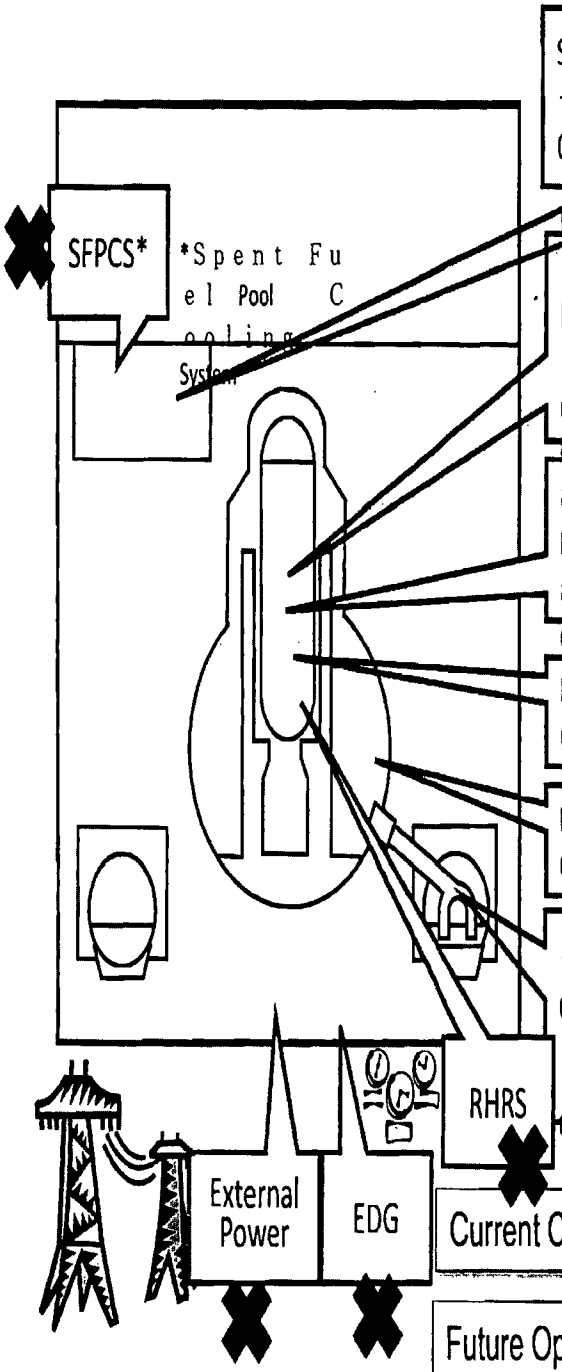
- Deployable from a safe distance
- Extended on station time
- Large area coverage
- Larger payload and greater endurance than rotary vehicles

- Provides potential of plume and air sampling
- Can be used to extend range of communications by acting as a repeater
- Two Arcturus T-16 systems immediately available at the INL
- Four Arcturus T-15 systems available at the INL
- Additional platforms readily available from Arcturus

Potential Issues:

- Reactor infrastructure and debris may occlude areas of interest
- Distance to area of interest is greater than the rotary vehicle and may reduce data resolution

Conditions of Fukushima Dai-ichi Nuclear Power Stations Unit 1
(As of 07:00 March 20th, 2011)



Spent Fuel Pool Water Temperature
－　℃
Condition: No data available

Reactor Water Level A －１７５０ mm
Reactor Water Level B －１７５０ mm
Condition: No flooding of top of active

Reactor Pressure A 0.304MPa
Reactor Pressure B 0.263MPa
Condition : No large fluctuation

Reactor Water Temperature －　℃
Condition: No data available

PCV Pressure １８０kPa
Condition: No data available

S/P Water Temperature
－　℃
Condition : Detector Inoperable

S/P Pressure １７０kPa
Condition : No large fluctuation

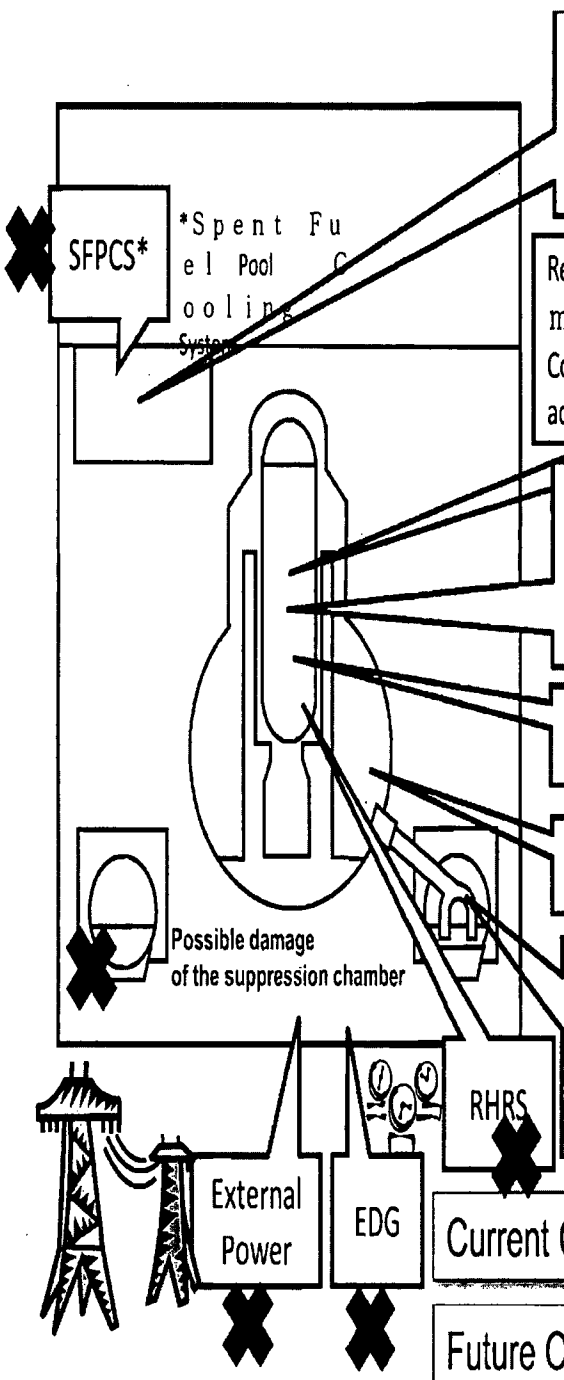
Major Events after the earthquake

11th 14:46 : Under operation, Automatic shutdown by the earthquake
11th 15:42 : Report of the Article 10 (loss of A/C power)
11th 16:36: Occurrence of the Article 15 event (Loss of water injection function)
12th 0:49 Occurrence of the Article 15 event (unusual increase of PCV pressure)
12th 14:30 Start to vent
12th 15:36 Sound of explosion
12th 20:20 Start of injection of seawater and borated water to the core

Current Conditions : Seawater is being injected

Future Operation : Recovering of power supply and continuous injection of seawater to core. Monitoring of water temperature in the pool and so on.

Conditions of Fukushima Dai-ichi Nuclear Power Stations Unit 2
(As of 07:00 March 20th, 2011)



Spent Fuel Pool Water Temperature
－ ℃
Condition: No data available

Reactor Water Level A －1300 mm
Condition : No flooding of top of active fuel until the above level

Reactor Pressure A 0．0873MPa
Reactor Pressure B 0．0723MPa
Condition : No large fluctuation

Reactor Water Temperature － ℃
Condition : No data available

PCV Pressure 130kPa
Condition: No data available

S／P Water Temperature － ℃
Condition: No data available
S／P Pressure － kPa
Condition; Down scale

Major Events after the earthquake

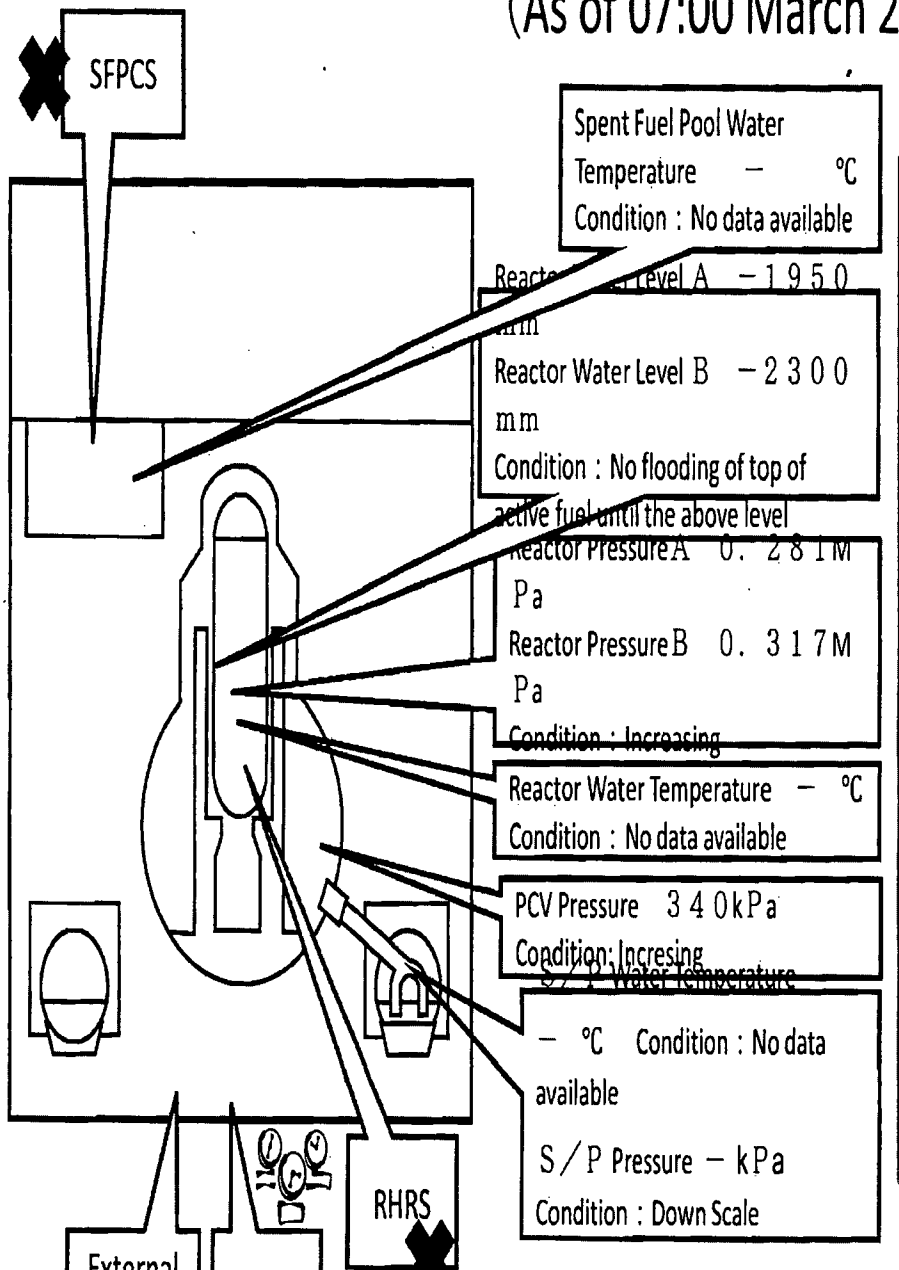
11th 14:46 Under operation, Automatic shutdown by the earthquake
11th 15:42 Report of the Article 10 (loss of A/C power)
11th 16:36 Occurrence of the Article 15 event (Loss of water injection function)
14th 13:25 Occurrence of the Article 15 event (Loss of water cooling function)
14th 22:50 Occurrence of the Article 15 event (unusual increase of PCV pressure)
15th 6:10 Sound of explosion
15th about 6:20 Possible damage of the suppression chamber

Current Conditions : Seawater is being injected

Future Operation : Recovering of power supply and continuous injection of seawater to core. Monitoring of water temperature in the pool and so on.

Conditions of Fukushima Dai-ichi Nuclear Power Stations Unit 3

(As of 07:00 March 20[illegible])



Major Events after the earthquake

11th 14:46 Under operation, Automatic shutdown by the earthquake
11th 15:42 Report of the Article 10 (loss of A/C power)
13th 5:10 Occurrence of the Article 15 event (Loss of water injection function)
13th 8:10 Start to bent
14th 7:44 Occurrence of the Article 15 event (unusual increase of PCV pressure)
11:01 Sound of explosion
16th about 8:30 White smoke generated
17th 9:48~10:01 Water discharge by the helicopters of Self-Defense Force (4 times)
19:05~20:09 Water spray from the ground by High pressure water-cannon trucks (Police: once, Self-Defense Force: 5 times)
18th before 14:00~14:38 Water spray from the ground by same trucks (Self-Defense Force: 6 times)
~14:45 Water spray from the ground by US water-cannon trucks (US armed forces: 1 time)
19th 0:00 ~01:00 Water spray by Hyper Rescue Unit of Tokyo Fire Department.
14:10 Start of the second water spray (continued)

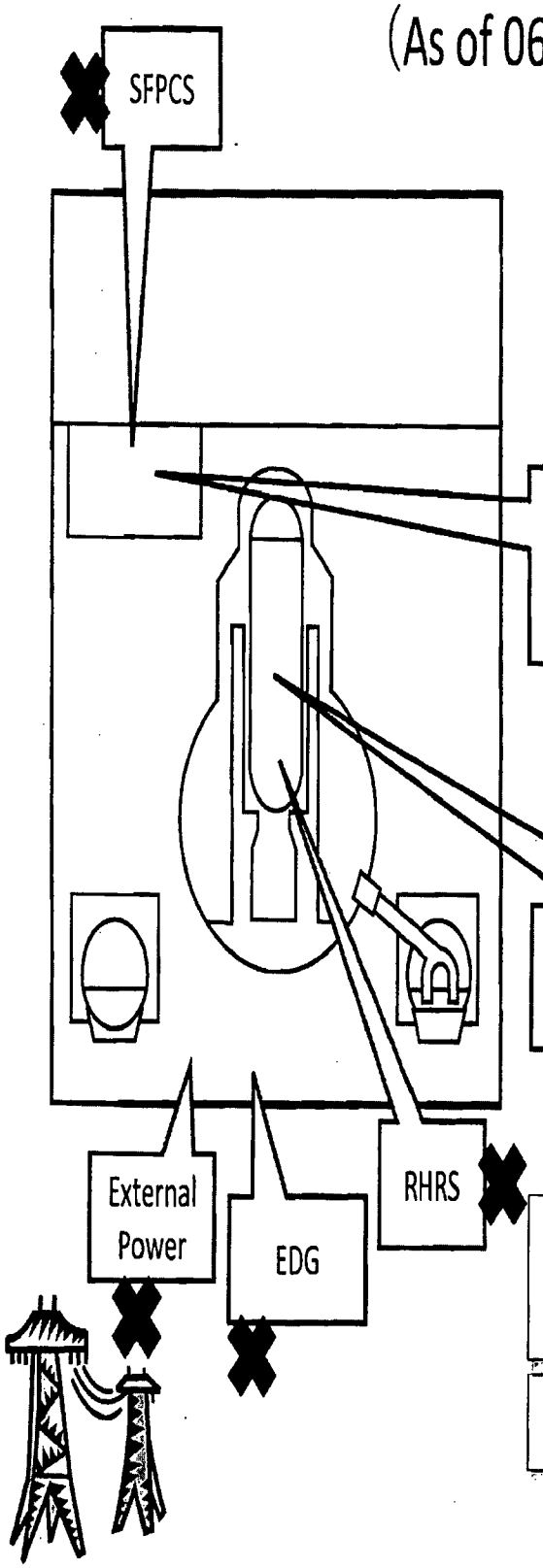
Current Conditions : Continuous operations for water spray to the pool and seawater injection to the Reactor Core

Future Operation : Recovering of power supply and continuous injection of seawater to core.

※SFPCS: Spent Fuel Pool Cooling System

Conditions of Fukushima Dai-ichi Nuclear Power Stations Unit 4

(As of 06:30 March 19th, 2011)



In periodic inspection outage

Water temperature in the pools is not available

No fuel is inside the reactor core

Major events after the earthquake

In periodic inspection outage when the earthquake occurred.

14th 4:08 Water temperature in the Spent Fuel Pool, 84℃

15th 6:14 Damage of wall in the 4th floor confirmed

15th 9:38 Fire occurred in the 3rd floor (12:25 extinguished)

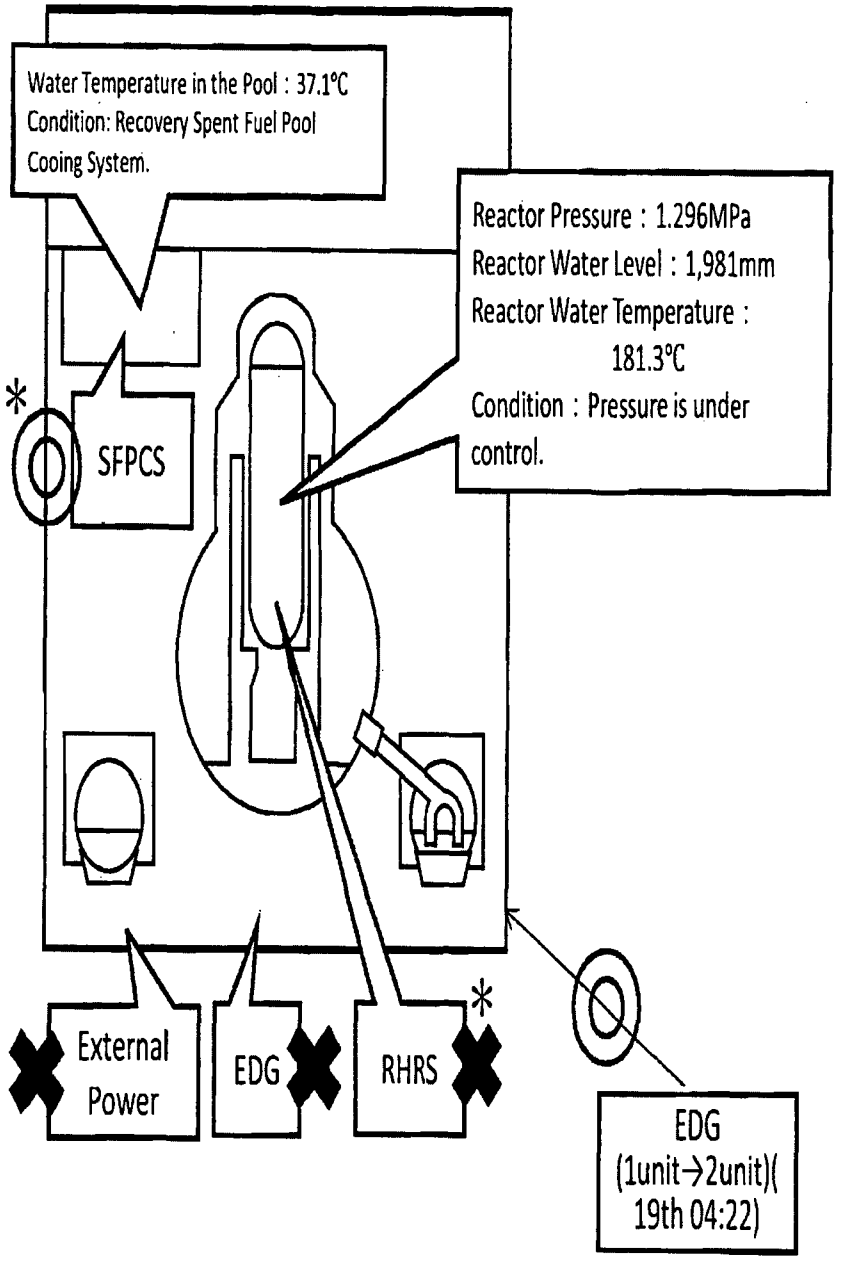
16th 5:45 Fire occurred. TEPCO couldn't confirm any fire on the ground. (7:26 extinguished)

Current Conditions : No fuel is in the RPV. Water is evaluated to remain in the Pool (TEPCO)

Future Operation : Recovery of power supply

Conditions of Fukushima Dai-ichi Nuclear Power Stations Unit 5
(As of 07:00 March 20th, 2011)

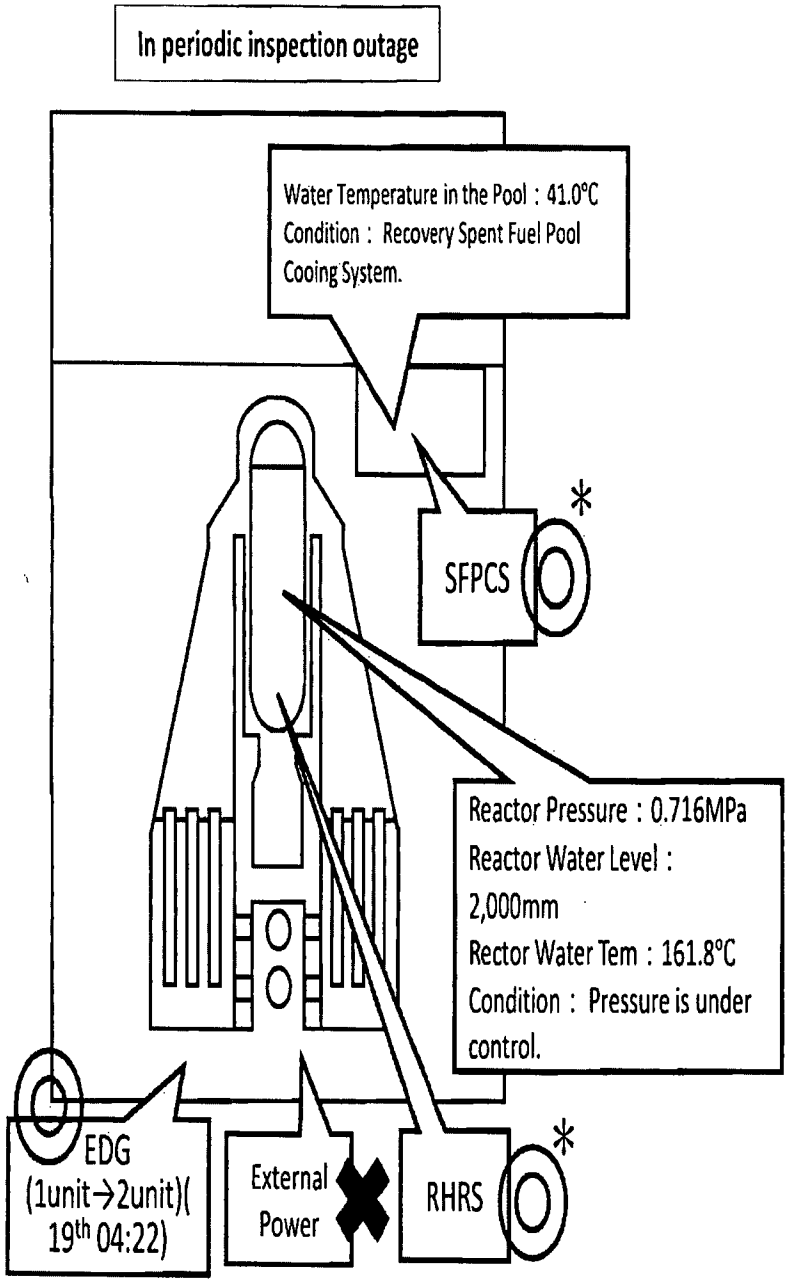
In periodic inspection outage



Current Conditions : Emergency Diesel Generator (1 unit →2 unit) for Unit 6 is being operated. (supplying electricity to Units 5 and 6) Pump of RHR for Unit 5 started up.

Future Operation : Start operating for recovery of external power

Conditions of Fukushima Dai-ichi Nuclear Power Stations Unit 6
(As of 07:00 March 20th, 2011)



Current Conditions : Emergency Diesel Generator (19th 04:22 1 unit →2 unit) for Unit 6 is being operated. (supplying electricity to Units 5 and 6)
RHR (B) for Unit 6 recovered and started full operation. (22:14 March 19th).

Future Operation : Start operating for recovery of external power

* It cools Spent Fuel Storage Pool with priority

From: Sheron, Brian
To: Flory, Shirley
Subject: FW: Fukushima No. 1
Date: Thursday, March 17, 2011 9:39:00 AM
Attachments: 3-16-11-Fukishima.ppt

From: Gibson, Kathy
Sent: Thursday, March 17, 2011 8:48 AM
To: Sheron, Brian; Uhle, Jennifer
Subject: Fw: Fukushima No. 1

From: Lee, Richard
To: Gibson, Kathy; Scott, Michael
Sent: Thu Mar 17 08:39:25 2011
Subject: Fukushima No. 1

Kathy & Mike:

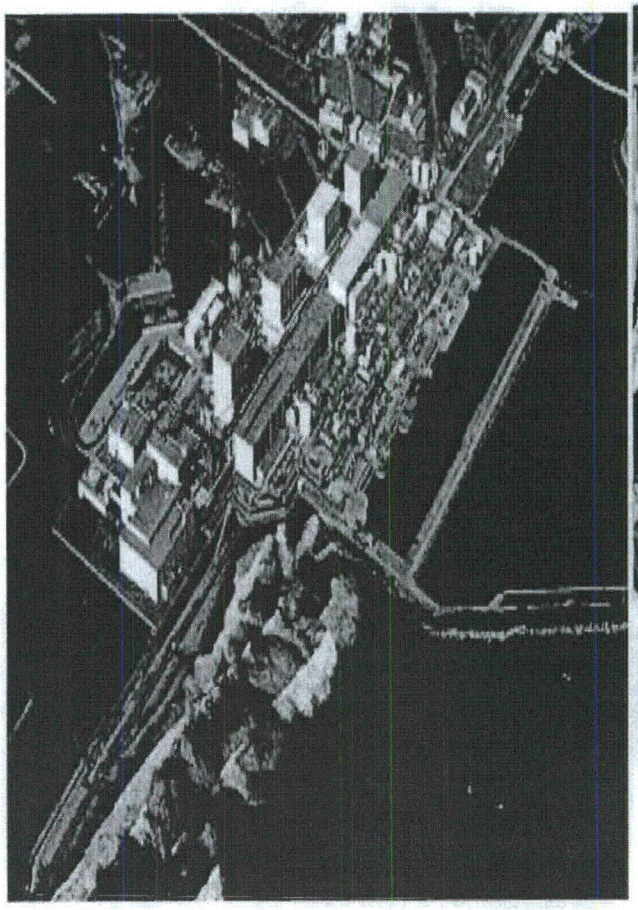
Attached is VGs received from Prof. Mike Corradini yesterday.

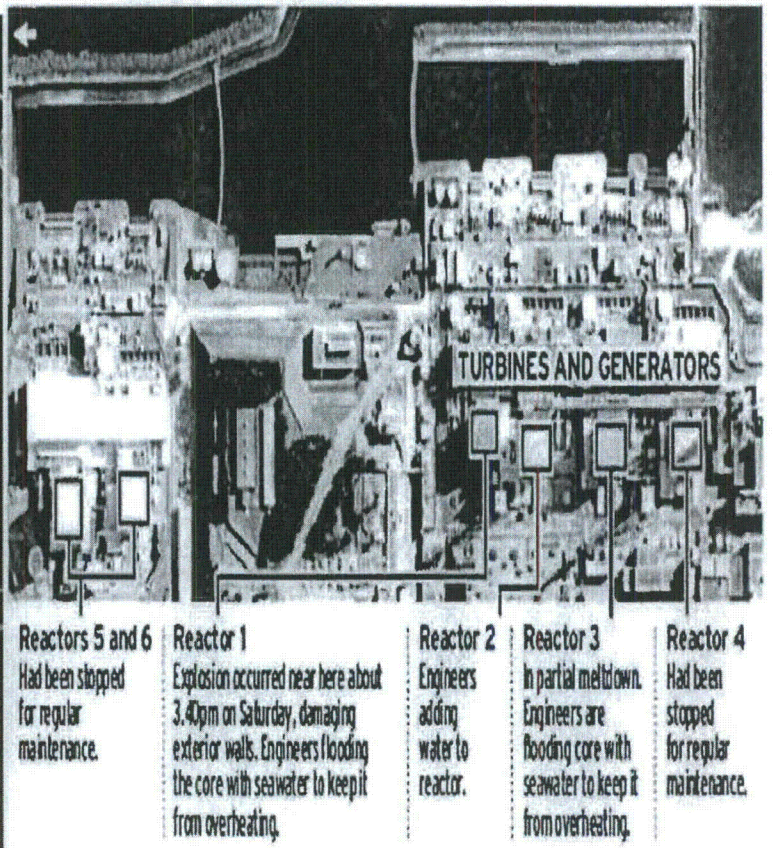
Richard

CH/293

Fukushima Daiichi Nuclear Station

- Six BWR units at the Fukushima Nuclear Station:
  - Unit 1: 439 MWe BWR, 1971 (unit was in operation prior to event)
  - Unit 2: 760 MWe BWR, 1974 (unit was in operation prior to event)
  - Unit 3: 760 MWe BWR, 1976 (unit was in operation prior to event)
  - Unit 4: 760 MWe BWR, 1978 (unit was in outage prior to event)
  - Unit 5: 760 MWe BWR, 1978 (unit was in outage prior to event)
  - Unit 6: 1067 MWe BWR, 1979 (unit was in outage prior to event)

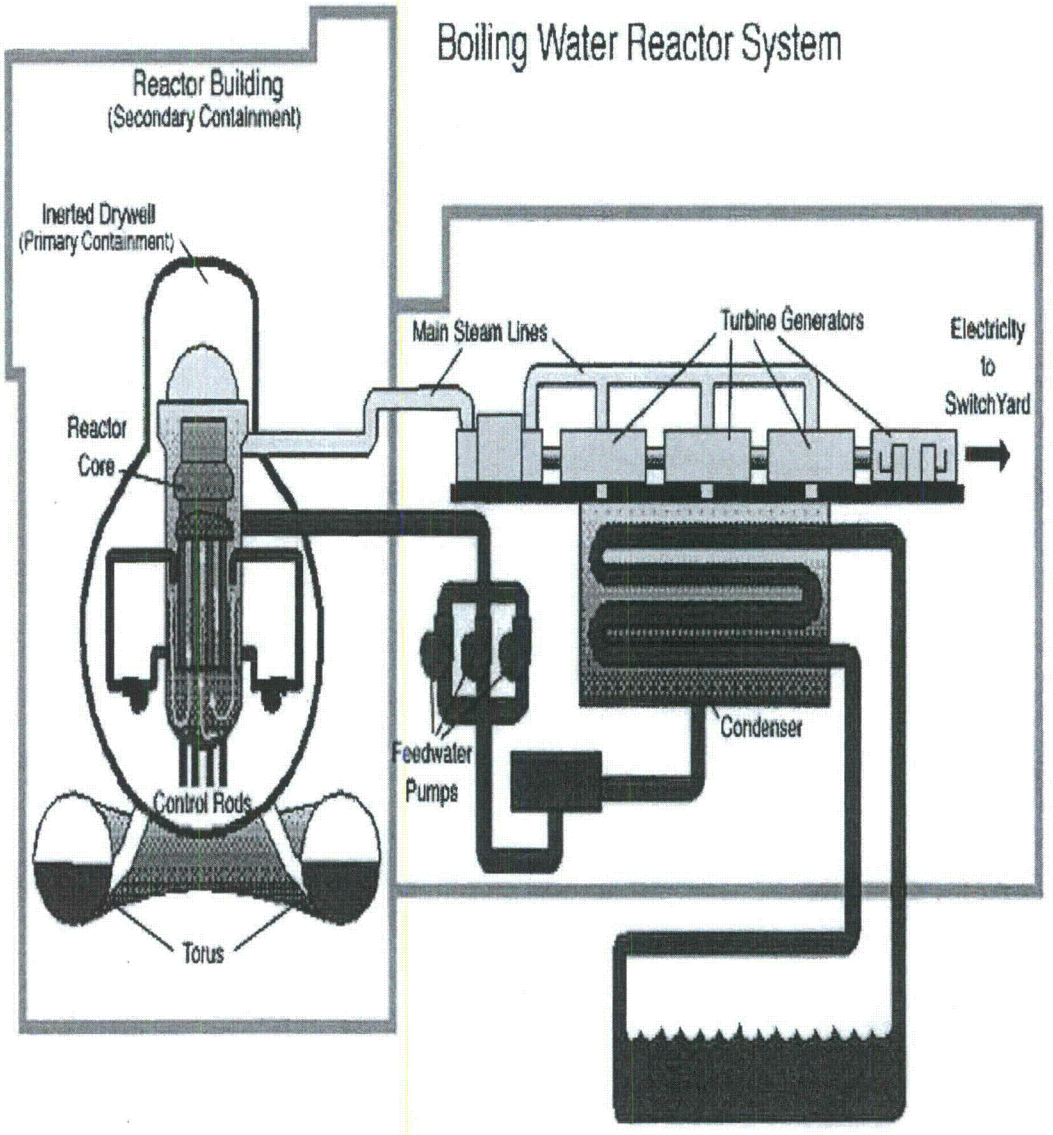




SOURCE: NYT; TOKYO ELECTRIC POWER; SATELLITE IMAGE BY DIGITAL GLOBE VIA GOOGLE EARTH

Fukushima Daiichi Unit 1

- Typical BWR 3 and 4 Reactor Design
- Some similarities to Duane Arnold Power Plant in Iowa



Fukushima Daiichi Unit 1

Mechanism of Boiling Water Reactor Power Station

Primary Containment Vessel(Dry Well)

It would confine radioactive substances discharged from the reactor facilities if some pipes were broken by accident.

Reactor Pressure Vessel

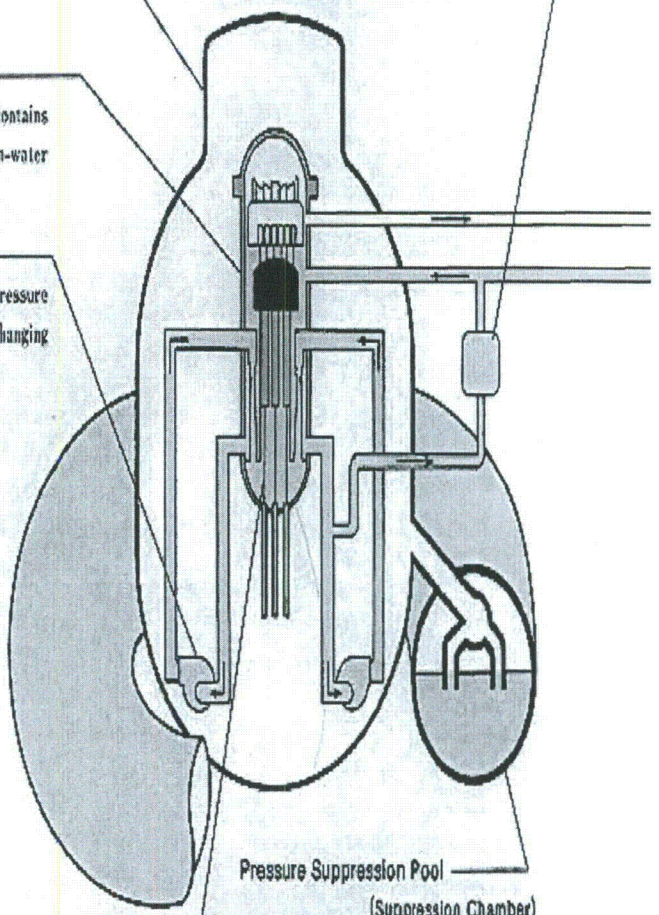
It is made of 12cm thick steel and contains fuel, control rods, jet pumps, steam-water separator and steam dryer.

Primary Recirculation pump

It circulates water in the reactor pressure vessel and changes reactor power by changing water quantity.

Cleanup Water System

It maintains the purity of the water circulating through the reactor.



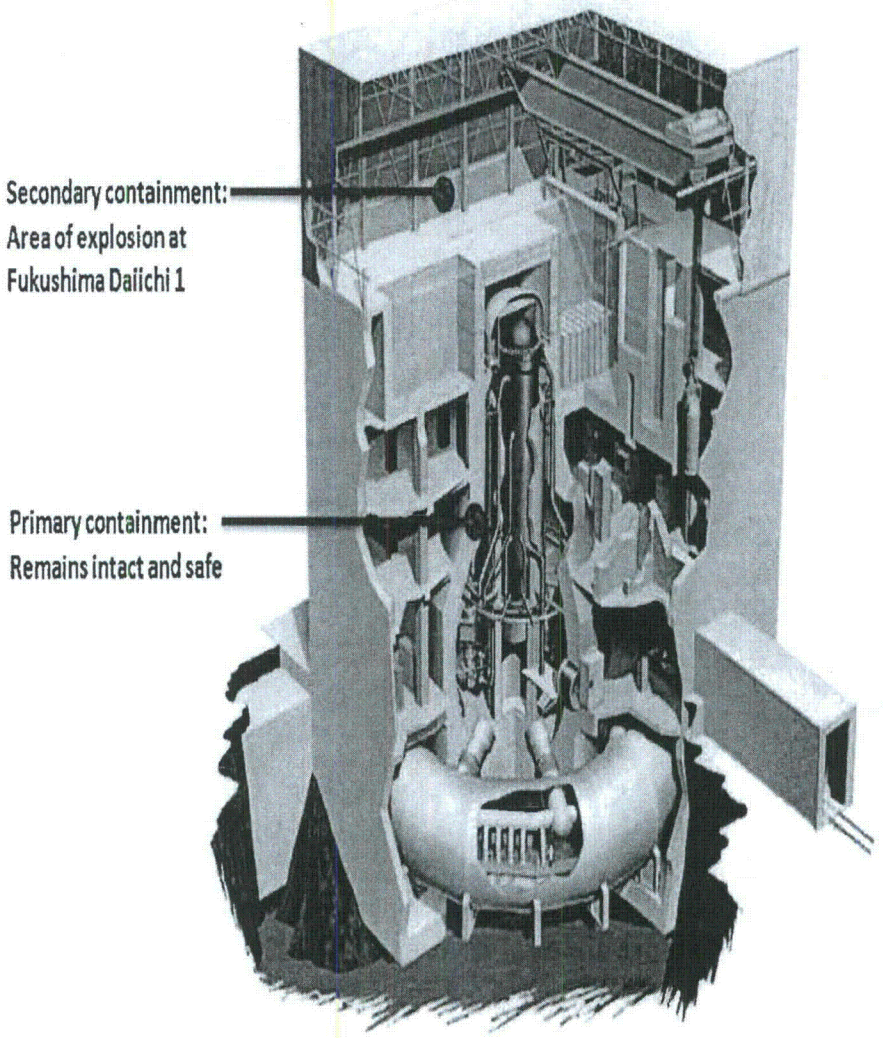
Pressure Suppression Pool (Suppression Chamber)

It always contains water. Should pipes in the primary containment vessel ever break, leaked steam would be conducted into the pool, where it would be cooled down and condensed with a large amount of water to suppress any rise in pressure in the primary containment vessel.

Control Rods

They are used to start and stop the reactor and to change reactor power (amount of nuclear fission) by individually inserting and extracting from the bottom of the reactor.

Fukushima Daiichi Unit 1

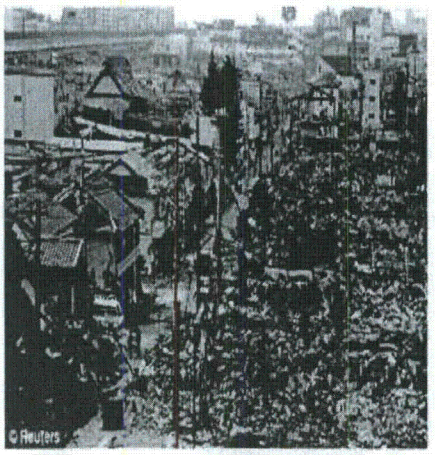


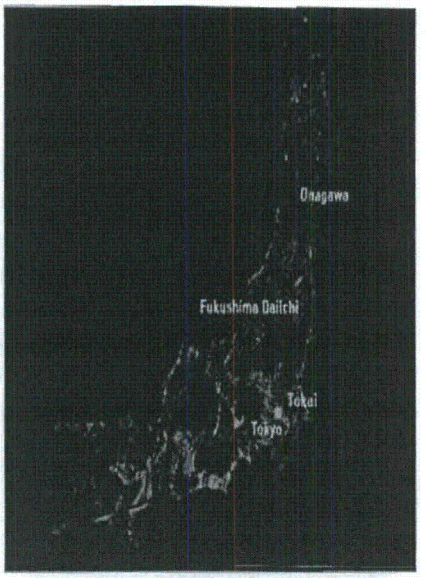
Boiling Water Reactor Design

Event Initiation

- The Fukushima nuclear facilities were damaged in a magnitude 9 earthquake on March 11 (Japan time), centered offshore of the Sendai region, which contains the capital Tokyo.
  - Plant designed for magnitude 8.2 earthquake. An 9 magnitude quake is much greater in magnitude.
- Serious secondary effects followed including a significantly larger tsunami, significant aftershocks and a major fire at a fossil fuel installation.

By Janet Loehrke, USA TODAY





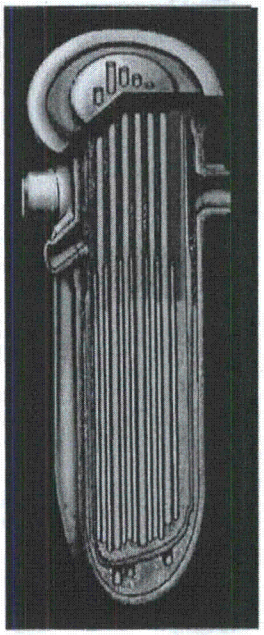
Initial Response

- Nuclear reactors were shutdown automatically. Within seconds the control rods were inserted into core and nuclear chain reaction stopped.
- Cooling systems were placed in operation to remove the residual heat. The residual heat load is about 3% of the heat load under normal operating conditions decreasing to much less than 1% after days.
- Earthquake resulted in the loss of offsite power which is the normal supply to a plant when it is shutdown.
- Emergency Diesel Generators started and powered station emergency cooling systems.
- One hour later, the station was struck by the tsunami. The tsunami was larger than what the plant was designed for (20ft waves). The tsunami took out all multiple sets of the backup Emergency Diesel generators and likely damaged the service water pumps which provide cooling from the sea.
- Reactor operators were able to utilize emergency battery power to provide power for cooling the core for 8 hours.
- Operators followed abnormal operating procedures and emergency operating procedures.

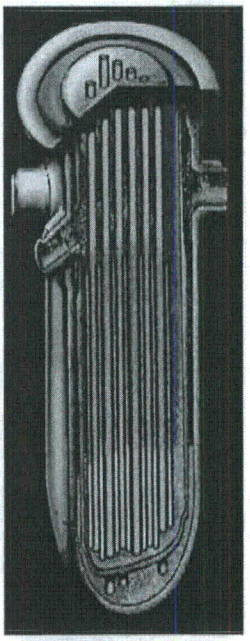
Loss of Makeup

- Offsite power could not be restored and delays occurred obtaining and connecting portable generators.
- After the batteries ran out, residual heat could not be carried away any more.
- Reactor temperatures increased and water levels in the reactor decreased, eventually uncovering and overheating the core.
- Hydrogen was produced from metal-clad/water reactions in the reactor.
- Operators vented the reactor to relieve steam pressure and energy (and hydrogen) was released into the primary containment (drywell) causing primary containment temperatures and pressures to increase.
- Operators took actions to vent the primary containment to control containment pressure and hydrogen levels through the wetwell. Required to protect the primary containment from failure.
- Primary Containment Venting is through a filtered path that travels through duct work in the secondary containment to an elevated release point on the refuel floor (on top of the reactor building).
- A hydrogen detonation subsequently occurred while venting the reactor building above the drywell. Occurred shortly following an aftershock at the station. Spark likely ignited hydrogen.

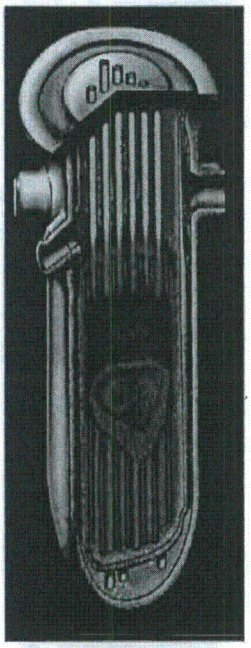
Core Damage Sequence



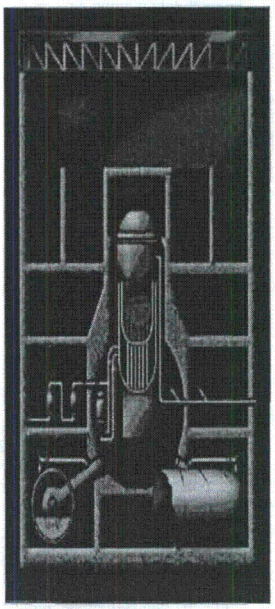
Core Uncovered



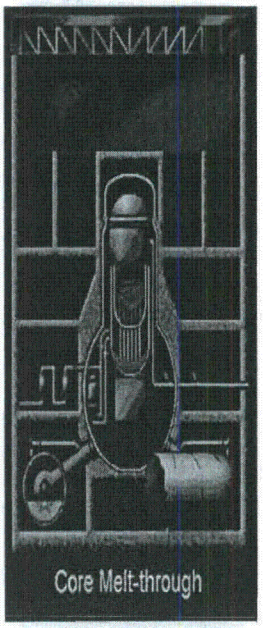
Fuel Overheating



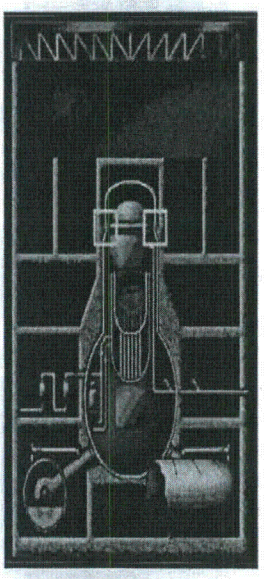
Fuel melting - Core Damaged



Core Damaged but retained in vessel



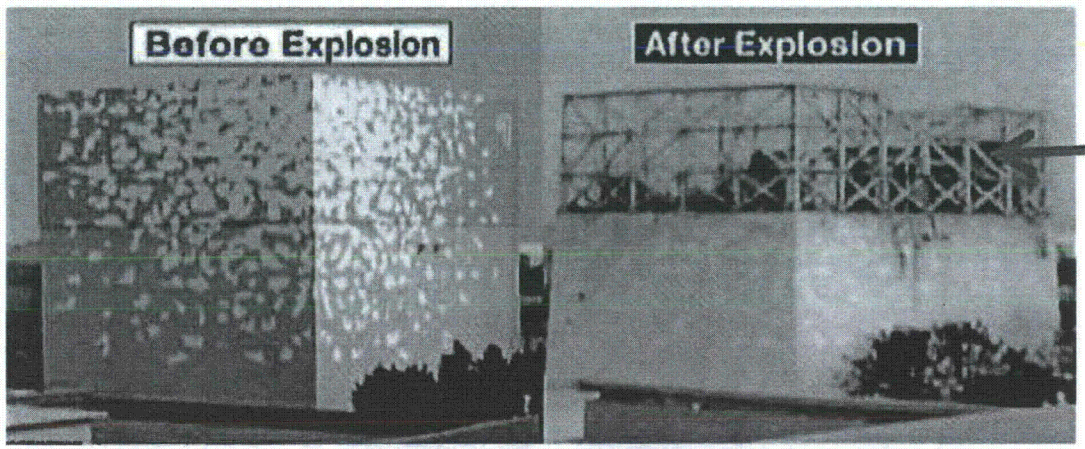
Some portions of core melt into lower RPV head



Containment pressurizes. Leakage possible at drywell head

Releases of hydrogen into secondary containment

Hydrogen Detonation at Unit 1

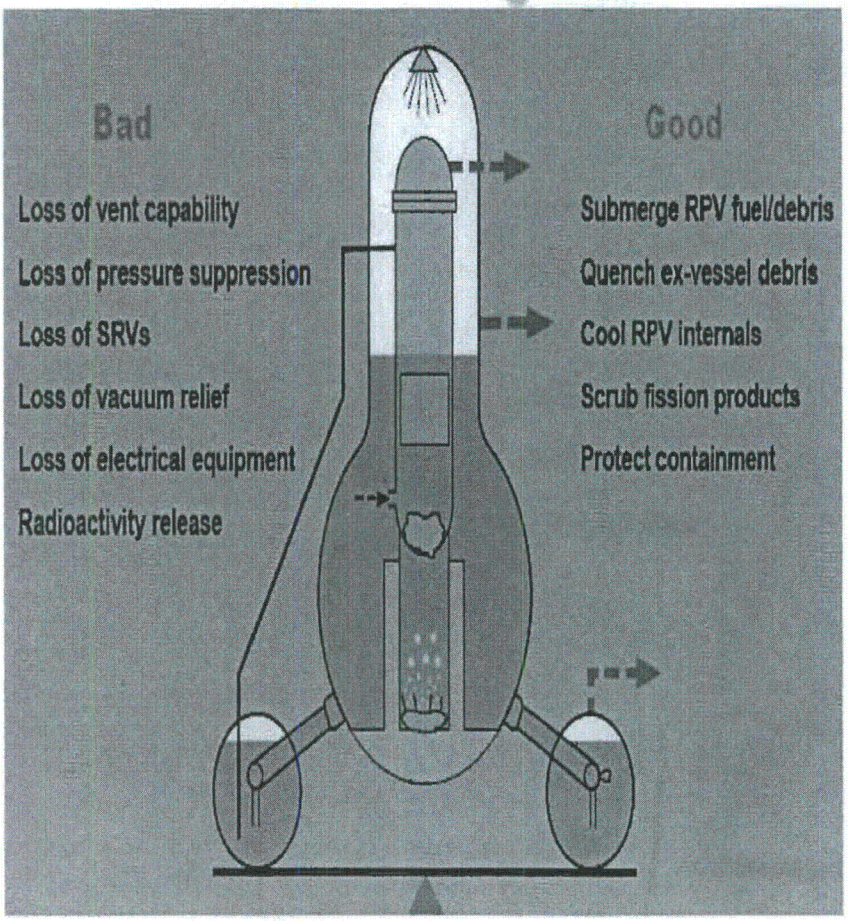


Reactor Building

Mitigating Actions

- The station was able to deploy portable power generators and utilize portable fire pumps to inject sea water into the reactor and primary containment.
- Station operators began flooding the reactor vessel
- Reports suggest that pumps were also injecting water into the containment – but it's unclear
- Boric acid was added to the seawater used for injection. Boric acid is "liquid control rod". The boron captures neutrons and speeds up the cooling down of the core. Boron also reduces the release of iodine by buffering the containment water pH.

Containment Flooding Effects



Emergency Response

- Equivalent of General Emergency declared to the initial events in Unit 1 on Friday.
- Evacuation of public performed within 20 km (13 miles) of plant; approximately 200,000 people evacuated and sheltering in place within 30km (20 miles).
- Similar hydrogen detonation subsequently occurred at Unit 3 late on Sunday, March 14th (Japan time). Primary containment appears to remain intact at Unit's 1 and 3 throughout the accident. There was considerable damage to the secondary containment (reactor building). A similar scenario occurred in Unit 2 on Tuesday.
- Recorded radiation levels have spiked after each event (above) at the Fukushima Daiichi site (140-800mrem/hr). Radiation levels were subsequently reduced to a few millirem after the after cooling was restored. The NRC's radiation dose limit for the public is 100 millirem per year and natural background is about 300 mrem per year.
- Several injured workers were reported at the plant with radiation exposure of ~10rem.
- Authorities distributed Potassium-iodide tablets to protect the public from potential health effects of radioactive isotopes of iodine that could potentially be released. This is quickly taken up by the body and its presence prevents the take-up of iodine-131 should people be exposed to it.
- Over 300 after shocks have occurred and continue to challenge station response.
- THE SITUATION FOR SPENT FUEL POOLS HAS NOT BEEN ADDRESSED HERE

From: Sheron, Brian
To: Droggitis, Spiros; Shane, Raeann
Subject: FW: Congressional call Today
Date: Thursday, March 24, 2011 3:43:00 PM

FYI.

From: Sheron, Brian
Sent: Thursday, March 24, 2011 3:40 PM
To: HOO Hoc
Subject: Congressional call Today

I received the following questions from congressional staff which I could not readily answer. Can you please ask the ET, RST and/or the PMT if they have any information that can address these questions?

1.) Two workers were reported to have been hospitalized due to radiation exposure. Have there been any more workers hospitalized, and do we know how they were exposed?

2.) Three workers were reported to have received radiation burns to their feet by spending too much time walking in contaminated water. Do we have any more information on this?

3.) It was reported that the Iodine levels in the Tokyo drinking water went down below allowable limits. Do we know what this is attributable to? Was it due to a shift in wind direction? Did the releases from the plant go down"?

4.) What action is the NRC taking regarding licensee plans to walk down their plants to confirm systems, procedures, etc., are in place to deal with natural phenomena? Are the resident inspectors going to accompany the licenses during the walkdowns?

Thanks.

CH/294

From: Miller, Tom
To: Versluis, Rob; DL-NERT-All; DL-NITsolutions
Subject: RE: URGENT: NRC RST Assessment Document.docx
Date: Thursday, March 24, 2011 3:57:13 PM

My only comment is regarding Unit 4 SFP : Directions for use of Boron are not given. Since recommendation is use of freshwater, boron addition should be required.

Tom Miller
(b)(6)

From: Versluis, Rob
Sent: Thursday, March 24, 2011 3:21 PM
To: DL-NERT-All; DL-NITsolutions
Subject: URGENT: NRC RST Assessment Document.docx

This is the NRC Incident Response Center Reactor Safety Team (RST) assessment of the Fukushima situation and proposed US recommendations. These recommendations were revised based on a long telecon this pm with GEH, INPO, EPRI, NR/KAPL, and myself for DOE, advising NRC RST. We have until 1600 to comment, after which it goes out to the DART team in Japan as a coordinated US assessment.

Please pass on to other DOE personnel who should be informed.

Rob

From: RST01 Hoc [mailto:RST01.Hoc@nrc.gov]
Sent: Thursday, March 24, 2011 3:09 PM
To: INPOERCAssistance; inpoerc@inpo.org; inpoercrp@inpo.org; INPOERCOP; INPOERCTech; Versluis, Rob; RST03 Hoc
Subject: 03-24-11 1500 RST Assessment Document.docx

To all:

Again, our great appreciation for your outstanding support.

We will hold for comments to this e-mail address until 1630 Eastern.

CH/295

From: Holdren, John P.
To: Binkley, Steve; Adams, Ian; Aoki, Steven; "RJBudnitz@lbl.gov"; Sheron, Brian; Brinkman, Bill; DAgostino, Thomas; Garwin, Dick; "rlg2@us.ibm.com"; "phillip.finck@inl.gov"; "john.grossenbacher@inl.gov"; Hurlbut, Brandon; Kelly, John E (NE); Koonin, Steven; Lyons, Peter; "harold.mcfarlane@inl.gov"; Owens, Missy; "peterson@nuc.berkeley.edu"; Poneman, Daniel; "ronaldo.szilard@inl.gov"; Fetter, Steve; SCHU
Subject: FW: GOJ MOD makes Formal Request for DOD support
Date: Thursday, March 24, 2011 4:50:31 PM
Attachments: Memorandum.pdf

Colleagues --

(b)(5)

Best,
John

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)

-----Original Message-----
From: PACOM JOC Director (b)(6)
Sent: Thursday, March 24, 2011 9:33 AM

(b)(6)

Subject: GOJ Formal Requests

Component Command Centers, attached document contains request for U.S. Military Support to Japan.

V/r,

Kevin

Kevin C. Hayes
CAPT USN
USPACOM JOC Director
DSN: 808-477-7377
Comm: 808-477-7377
Red Switch: (b)(6)
NIPR: (b)(6)

CH/296

SIPR: (b)(6)

24 March 2011

MEMORANDUM FOR Commander, United States Forces Japan, Yokota AB

SUBJECT: Request for U.S. Military Support to Japan

1. The government of Japan and the Japan Joint Staff request for military support on the following items in order to rapidly and effectively stabilize the situation at the Fukushima Nuclear Power Plant.

2. In reference to the memorandum, "Considerations for U.S Military Support to Japan," GOJ and JJS request support from three categories: Radiological Controls, Reactor Plant Stabilization, and USPACOM S&T Cell Actions.

3. Under Radiological Controls, request support on anti-contamination clothing and materials, radiation detectors, radiation dosimetry, respiratory protection, radiological control technicians (military and civilian), FRMAC support for airborne radiation monitoring, and UAV for imagery and radiation monitoring.

4. Under Reactor Plant Stabilization, request support on remotely operated vehicle capabilities and UAV aerial photography and radiation monitoring over reactor plant site.

5. Under USPACOM S&T Cell Actions, request support on deployment of heavy lift unmanned helicopter and deployment of DTRA's WMD Aerial Collection System (WACS) and Airborne Radiological Collection System (ARCS).

6. It is our understanding that the above supports will be provided at no costs to GOJ.

7. Additional requests may follow upon the conclusion of coordination with other GOJ agencies. Thank you for your ongoing effort to support Japan. POC for this memorandum is CAPT Sekiguchi at DSN 315-224-7721.

M. Hironaka

Masayuki Hironaka
Lt. Gen, JJS J3

Considerations for U.S. Military Support Request to FUKUSHIMA Nuclear Power Plant (Filled in by U.S.)

Category			Number of equipment/personnel able to provide	Estimated date of arrival	Arrival location within Japan (Yokota, Narita, Haneda, etc.)
Radiological Controls	Dose management and clean up (workers and general public)	Anti contamination clothing and materials			
		Radiation detectors			
		Radiation dosimetry			
		Respiratory protection			
		Radiological control technicians(military and civilian)			
	Environmental monitoring and sampling suport	FRMAC support for airborne radiation monitoring			
		UAV for imagery and radiation monitoring			
Reactor Plant Stabilization	Remotely operated vehicle capabilities				
	UAV aerial photography and radiation monitoring over reactor plant site				
USPACOM S&T Cell Actions	Deployment of heavy lift unmanned helicopter				
	Deployment of DTRA's WMD Aerial Collection System(WACS) and Airborne Radiological Collection System(ARCS)				

U.S. DEPARTMENT OF ENERGY | Nuclear Energy

Science Council Briefing on Fukushima Nuclear Plant Response

John E. Kelly
Steve Binkley
Steve Aoki

March 24, 2011

TOC

1. List of Calculations/Analyses Performed/Underway
2. Unit 1 Melt Progression
3. H_2 Detonation Threat
4. Shielding/Dose
5. Alternate Cooling System
6. Sensors
7. Spent Fuel Pool 4 (Water level and status)

U.S. DEPARTMENT OF ENERGY

Nuclear Energy

1 - National Lab Analyses

Topic Area	Analyses Underway or Completed	Lab
Decay Heat Removal	• Restoration of reactor cooling/alternate cooling • Effects and impact of using salt water • Salt behavior (precipitation, crusting, cooling blockage, etc.) • Energy mass balance • Venting and air ingress	INL, ORNL, ANL
Core Melt Progression	• Hydrogen generation • Fuel damage • Fission product release and deposition • H2 Detonation threat • RPV integrity	INL, Sandia, ORNL, ANL
Impact of Salt on Materials	• Issues and impacts on reactor materials, equipment and sensors	ORNL, INL
Instrumentation and Sensors	• Operability and reliability of instruments • Alternative approaches of measuring key plant parameters, e.g., water level	INL, ORNL
Dose and Shielding	• Evaluate equipment performance in high radiation environments • Equipment shielding options	ORNL
Robotics	• Identifying relevant lab robotics capabilities	INL, ORNL
Spent Fuel Pool	• Spent fuel pool condition studies • Long term cooling options, e.g., pool 4	ORNL, SNL

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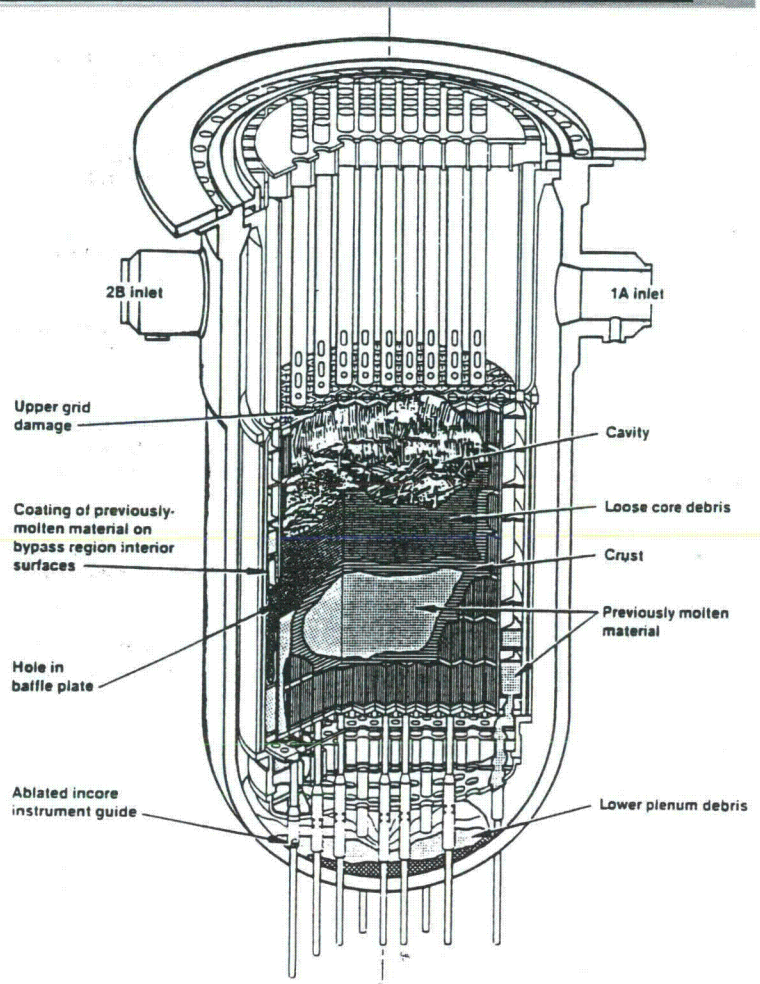
2 -- Melt Progression

- Core cooling has been sporadic; convincing evidence that melt has reached lower plenum and quenched
- Thermal coupling reading at bottom of head and at nozzle indicate downcomer is dry
- Nozzle penetration welds may be vulnerable
- Penetration failure create pathway between RPV and containment
- US BWR owners group recommendation: If reactor core is overheating due to any of the above, it is essential to flood the drywell with water (as part of severe accident management guidelines).



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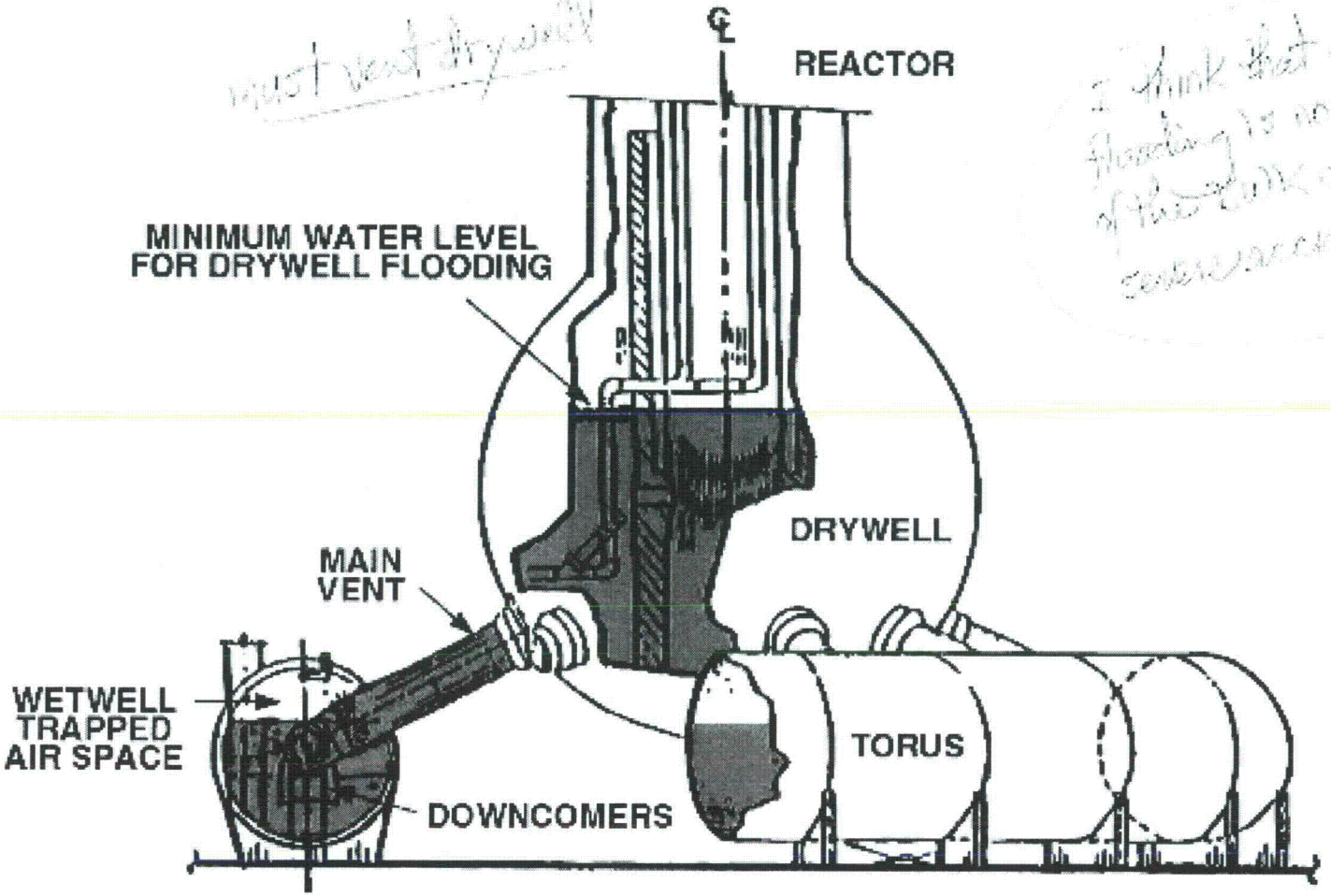
Nuclear Energy

Approx 5,700 m^3 of Water Needed to Cover Reactor Vessel Bottom Head at Largest BWR Facilities (1,100 MWe)



3 - Possibility for Hydrogen Combustion Inside Containment

- **At this point, parasitic heat losses to the large containment surface area (estimated as 7800 m^2) would need to be ~ 820 W/m^2 for units 2-3 to condense out all steam from Units 2-3 in containment.**
  - This type of heat loss is easily justifiable assuming free surface convection to air, or conduction into concrete.
  - Thus, with proper coolant flowrate, most steam could be captured inside containment and so minimize source term.
  - Downside: at some point containment will go sub-atmospheric and so potential for air ingress becomes real.
  - Can exacerbate issues related to H_2.

1. Establish controlled core coolant flowrate to all three units; decrease flow gradually to follow decay heat curve.
2. Monitor containment pressures; make preparations for non-condensable gas injection (N_2) to preclude going sub-atmospheric (N_2 injection will help reestablish inert conditions).

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4 - Shielding/Dose

Concerns with RHR Pumps

- Seal damage could leak very contaminated fluid into room.
- Seal must be essentially leaktight.
- Details of seal flushing and cooling system unknown; important to use clean water for this
- Motor and cables might not be rated for long-term operation in extreme radiation.

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Nuclear Energy

Potential FP Contributors to Primary System Doses

- **Well-known: ^{134}Cs, ^{137}Cs, ^{131}I, ^{132}I**
- **Other possible soluble γ-emitters**
  - **^{140}Ba as $Ba(OH)_2$**
    - ***Strong g's: 163, 305, 424, 537 keV + X-rays***
    - ***Readily soluble (~6 mol/kg at 80° C)***
  - **^{132}Te (if cladding oxidized) as TeO_2**
    - ***Strong g's: 228 keV + X-rays***
    - ***Sparingly soluble, but most would dissolve: 1000 MW plant (560 g Te total) with 500 m^3 primary water=0.00024 M (~sol. limit at 25° C)***

Release percentages for NRC DBA

Group	Gap	Heat-up
Xe, Kr	5	95
I	5	35
Cs	5	25
Te	0	5
Sr, Ba	0	2

In a core melt, these amounts would be released, and probably a lot more. If Zr oxidation occurs, then Te probably is similar to Cs release.

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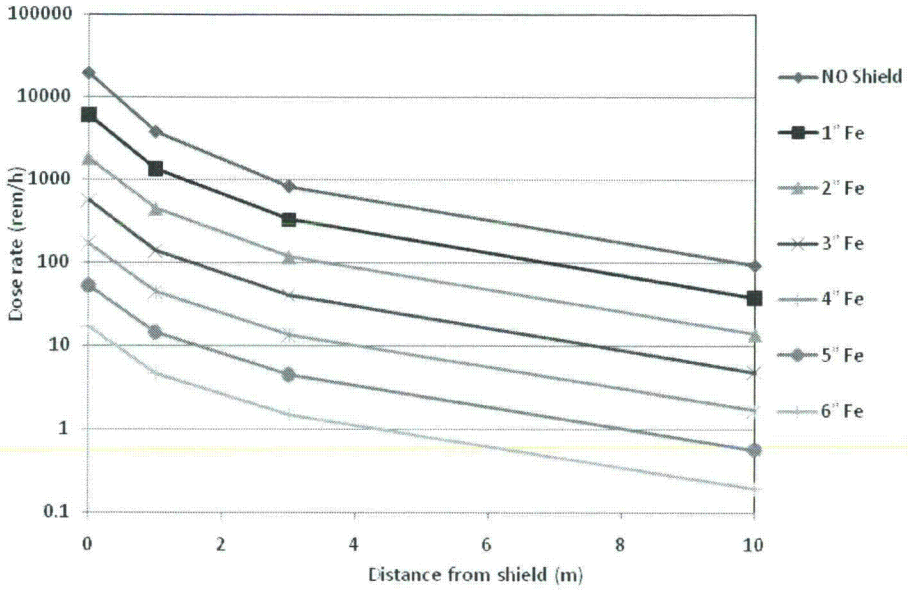
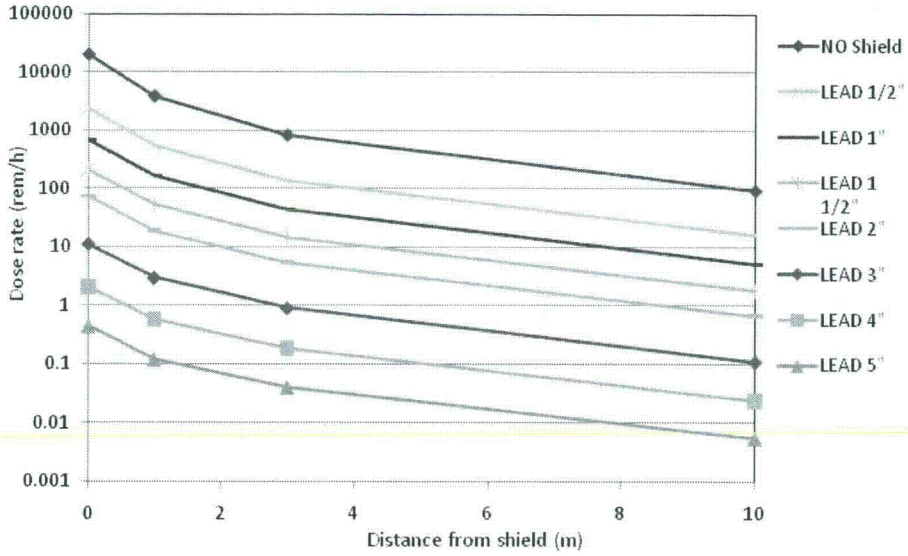
Estimated Dose rate (rem/h) versus distance from a 12" OD pipe with Iron (Fe) or Lead shielding (we think this pipe thickness is representative)





Key Assumptions

Unit X core inventory

50% core damage with following release fractions: I,Cs 0.8 - Te 0.5 - Nb, Mo 0.1

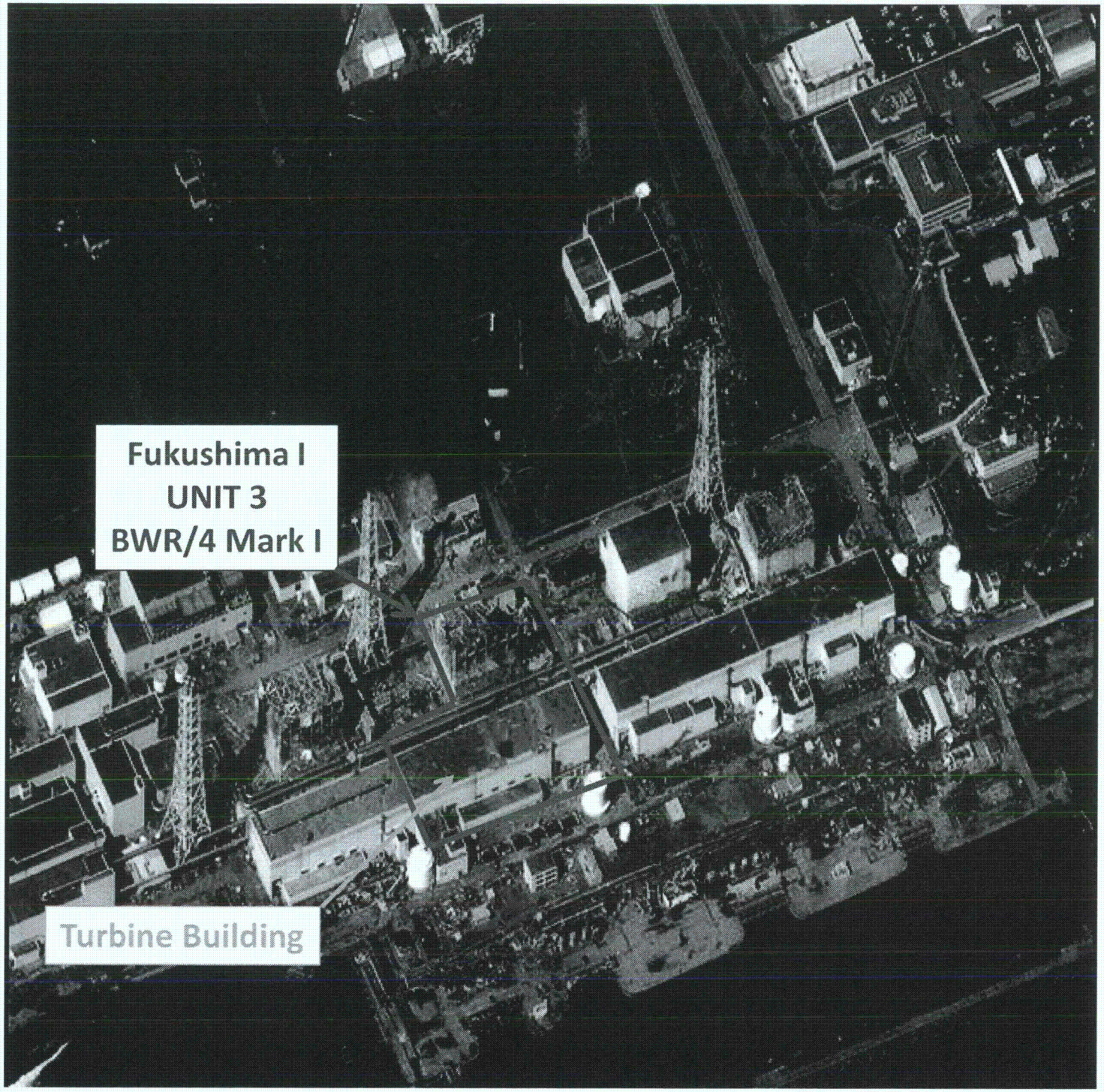
Mass of primary coolant - 207 t

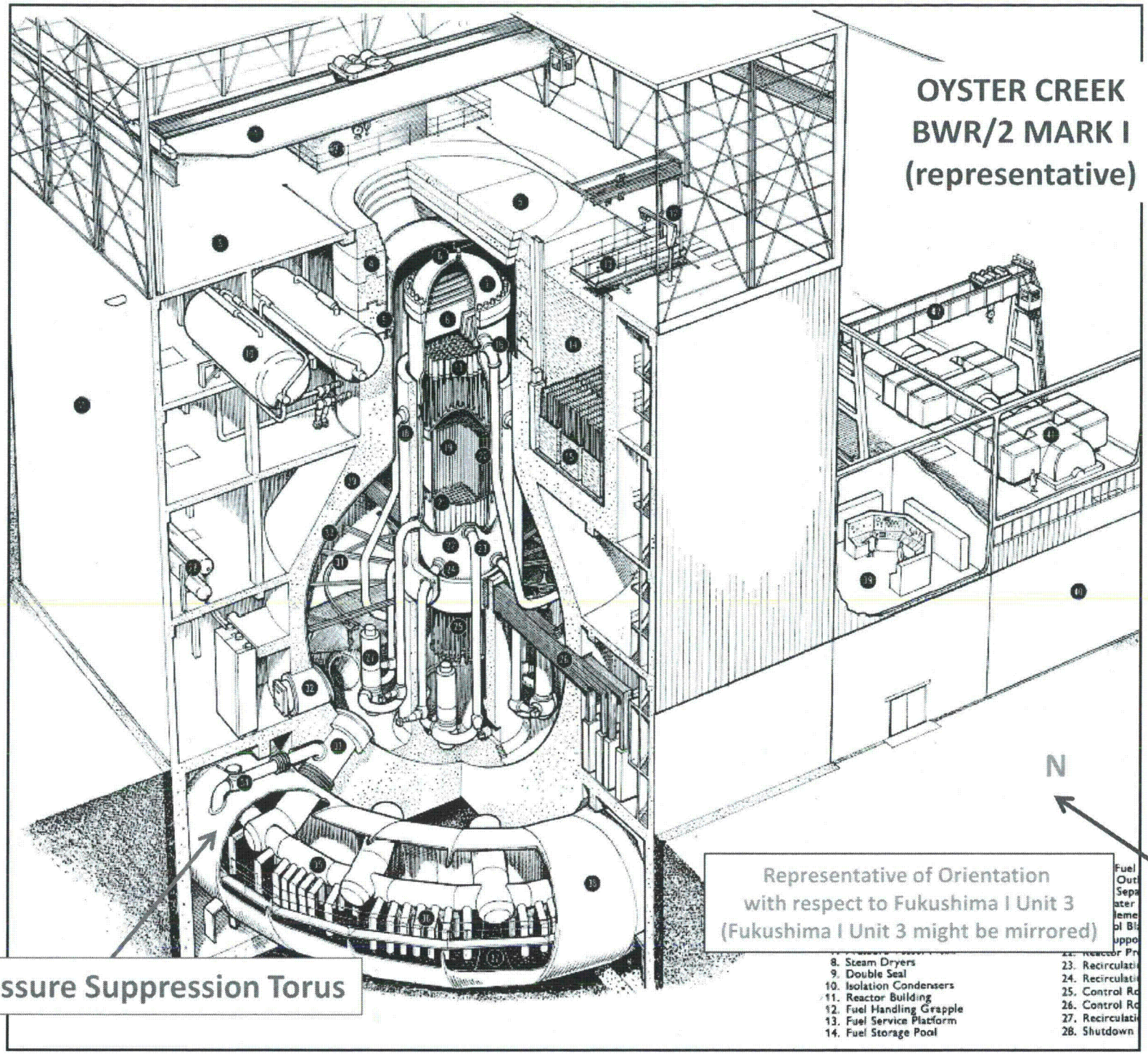
Length of pipe - 3 m

OD, ID, wall thickness of steel pipe – 12, 11.6, 0.40 in

Coming Soon

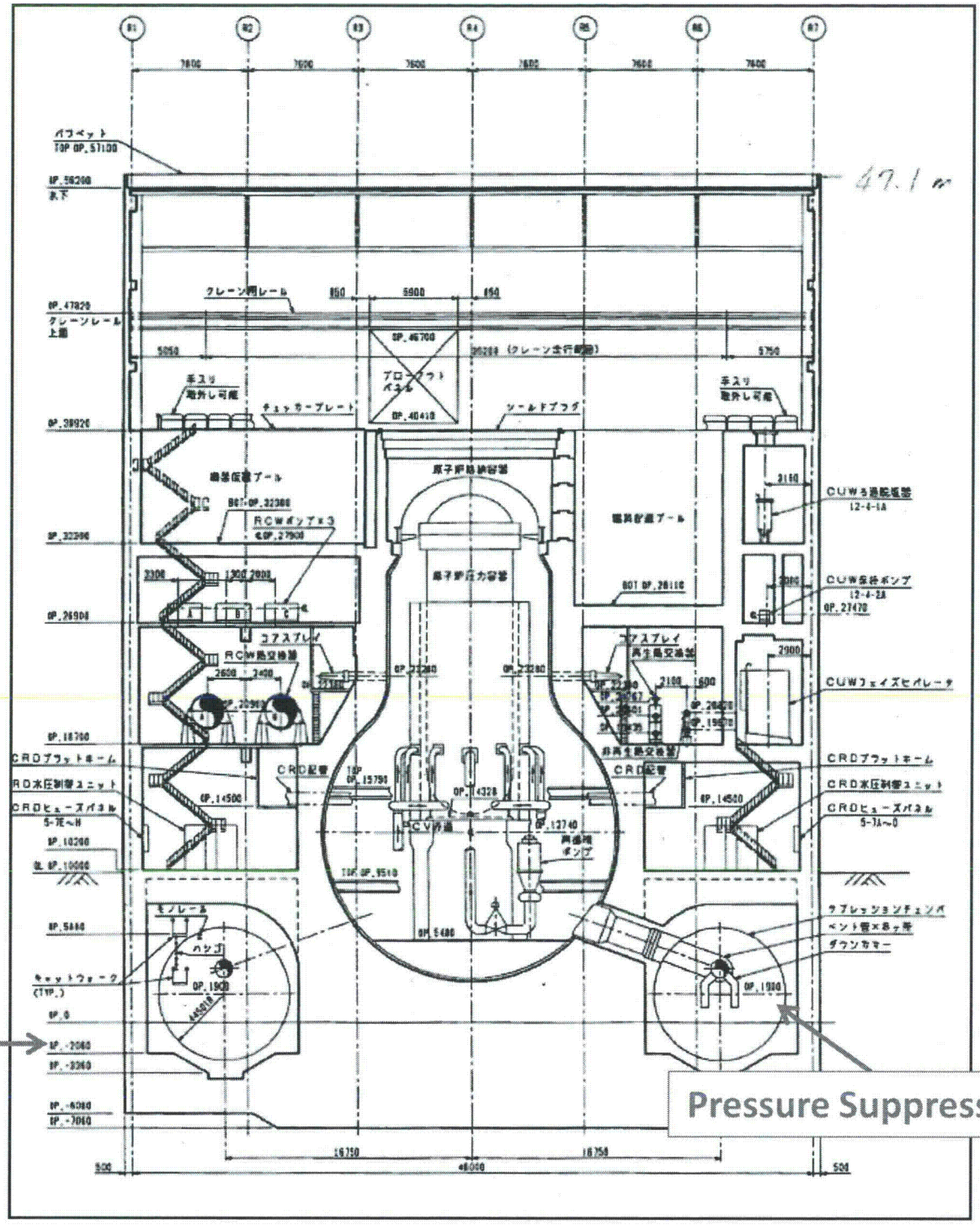
- Dose reduction factors for various shield thicknesses
- Variations in source term / release fractions

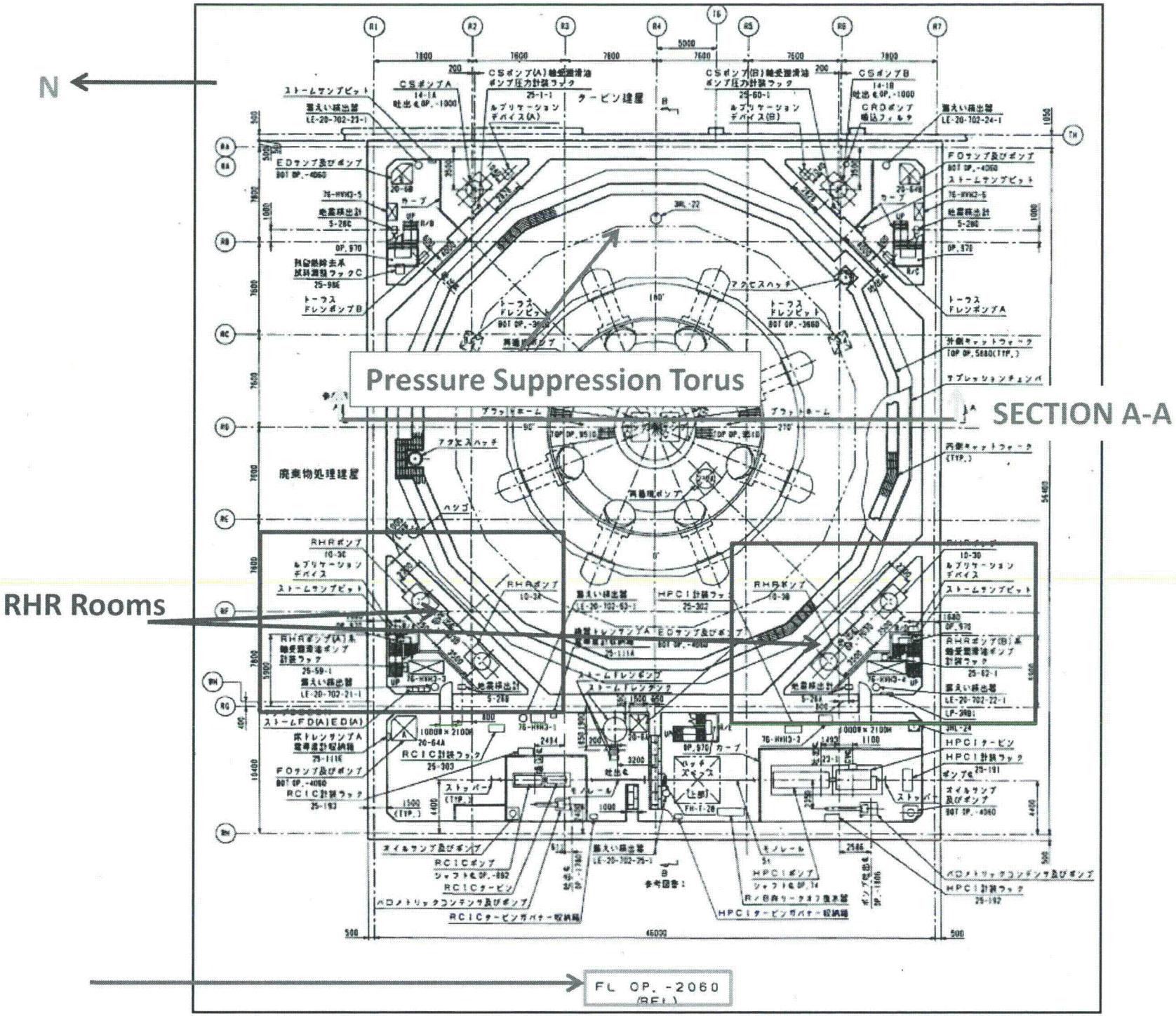

N
Fukushima I
UNIT 3
BWR/4 Mark I
Turbine Building

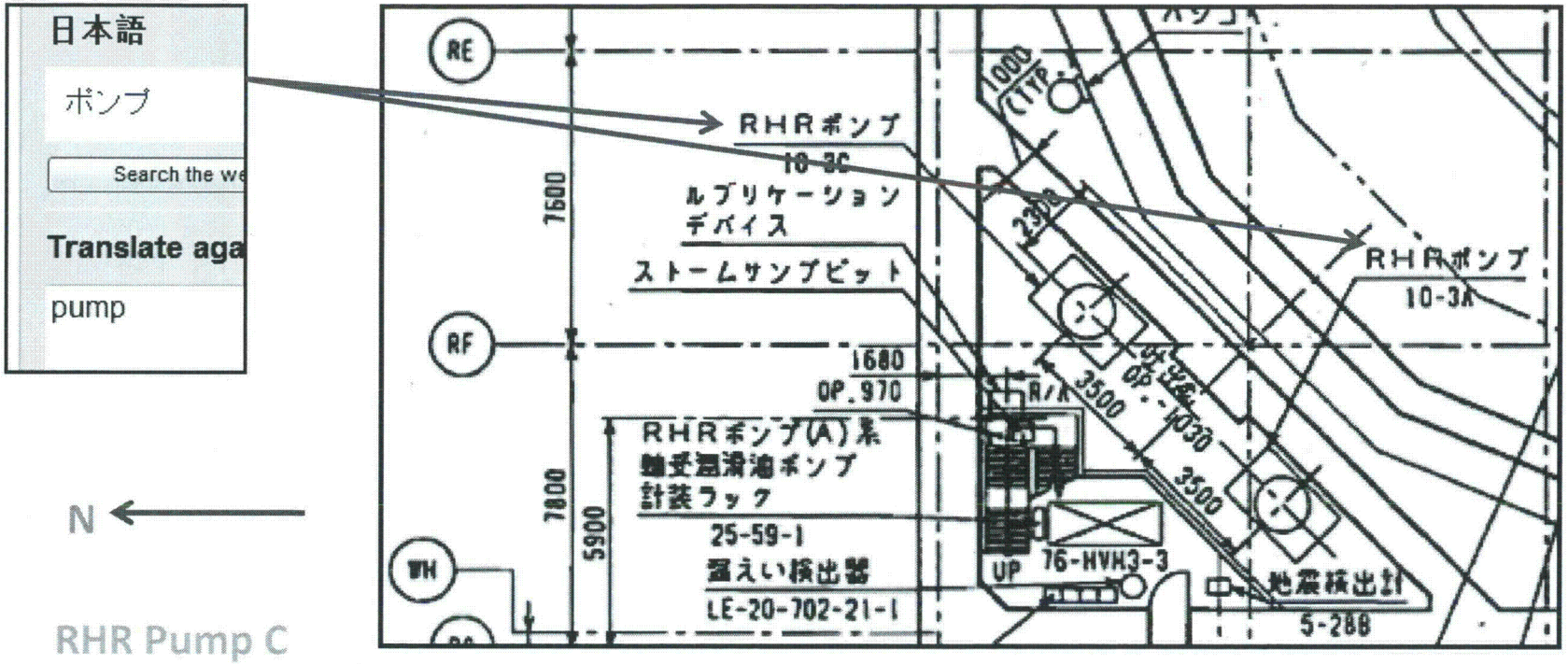

OYSTER CREEK
BWR/2 MARK I
(representative)
N
Representative of Orientation
with respect to Fukushima I Unit 3
(Fukushima I Unit 3 might be mirrored)
Pressure Suppression Torus
8. Steam Dryers
9. Double Seal
10. Isolation Condensers
11. Reactor Building
12. Fuel Handling Grapple
13. Fuel Service Platform
14. Fuel Storage Pool

SECTION A-A

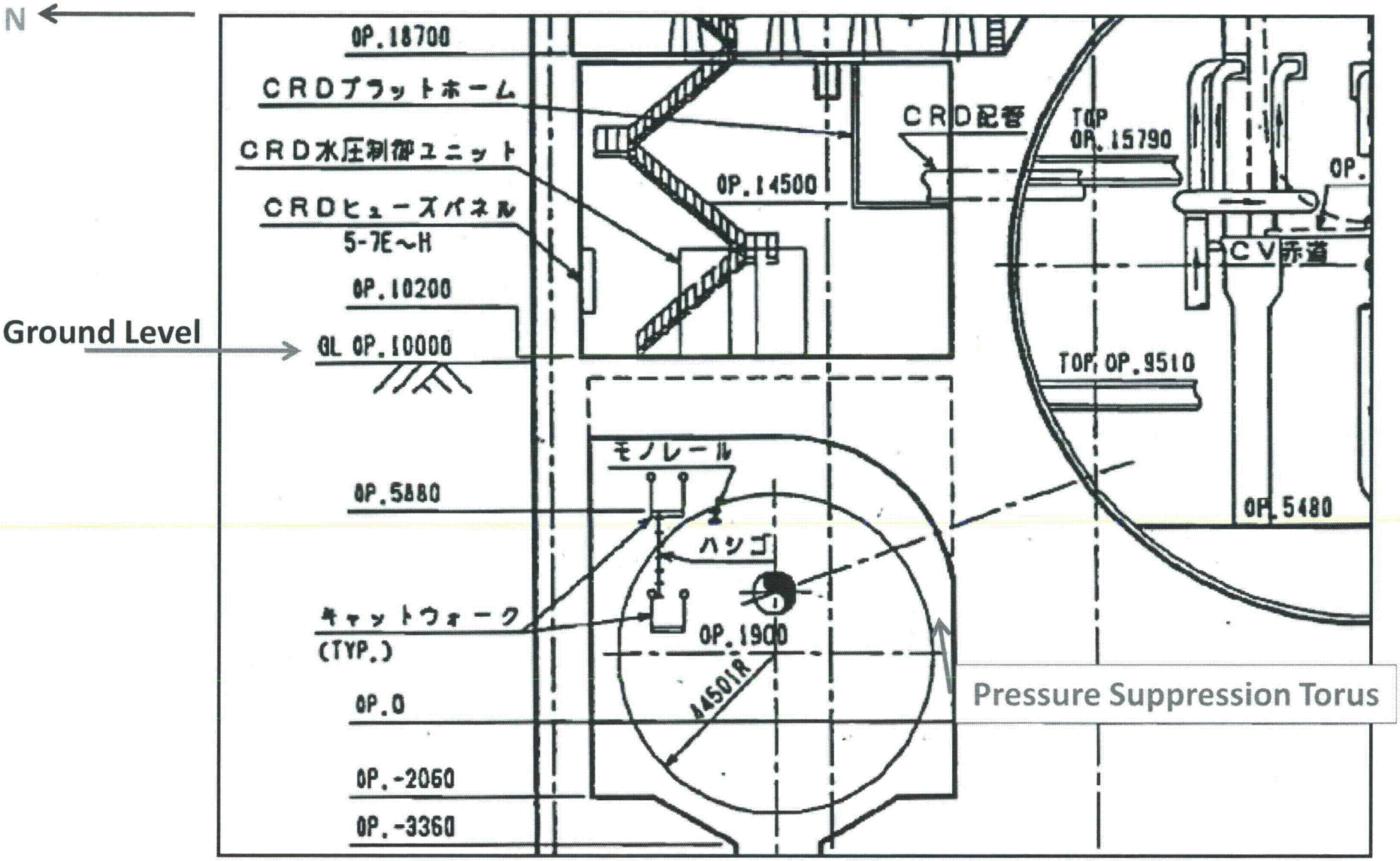
N


47.1 m
クレーン用レール
チェッカープレート
ツールドプラグ
原子炉格納容器
原子炉圧力容器
RCWポンプ×3
RCW熱交換器
コアスプレイ
CRDプラットホーム
CRD水圧制御ユニット
CRDヒューズパネル
CRD配管
CUW冷却ポンプ
CUWフェイズセパレータ
再循環ポンプ
ベント管×8ヶ所
ダウンカマー
OP. -2060
Pressure Suppression Torus


N
Pressure Suppression Torus
SECTION A-A
RHR Rooms
FL OP. -2060
(RFL)


日本語
ポンプ
Search the we
Translate aga
pump
RHRポンプ
10-3C
ルブリケーション
デバイス
ストームサンプピット
RHRポンプ
10-3A
RE
RF
WH
7600
7800
5900
1680
OP.970
RHRポンプ(A)系
軸受潤滑油ポンプ
計装ラック
25-59-1
漏えい検出器
LE-20-702-21-1
R/B
3500
3500
UP
76-HVH3-3
地震検出計
5-288
N
RHR Pump C
RHR Pump D
Pressure Suppression Torus
RHRポンプ
10-3A
RHRポンプ
10-3B
漏えい検出器
LE-20-702-63-1
HPCI計装ラック
25-302
機器トレンサンプA
電導度計収納箱
25-111A
EDサンプ及びポンプ
801 OP.-4060
ストームドレンポンプ
ストームドレンタンク
801 1500, 650
RHRポンプ(B)系
軸受潤滑油ポンプ
計装ラック
25-62-1
漏えい検出器
LE-20-702-22-1
76-HVH3-4
地震検出計
5-28A
RHR Pump A
RHR Pump B
Stairs
Stairs
FL OP. -2060
(BFL)

SIDE VIEW


N
Ground Level
OP.18700
CRDプラットホーム
CRD水圧制御ユニット
CRDヒューズパネル
5-7E~H
OP.10200
GL OP.10000
OP.5880
キャットウォーク
(TYP.)
OP.0
OP.-2060
OP.-3360
CRD配管
TOP
OP.15790
OP.14500
CV赤道
TOP OP.9510
モノレール
ハシゴ
OP.1900
φ4501R
OP.5480
Pressure Suppression Torus

AERIAL VIEW

N ←

RHR Heat Exchanger (1 of 2)

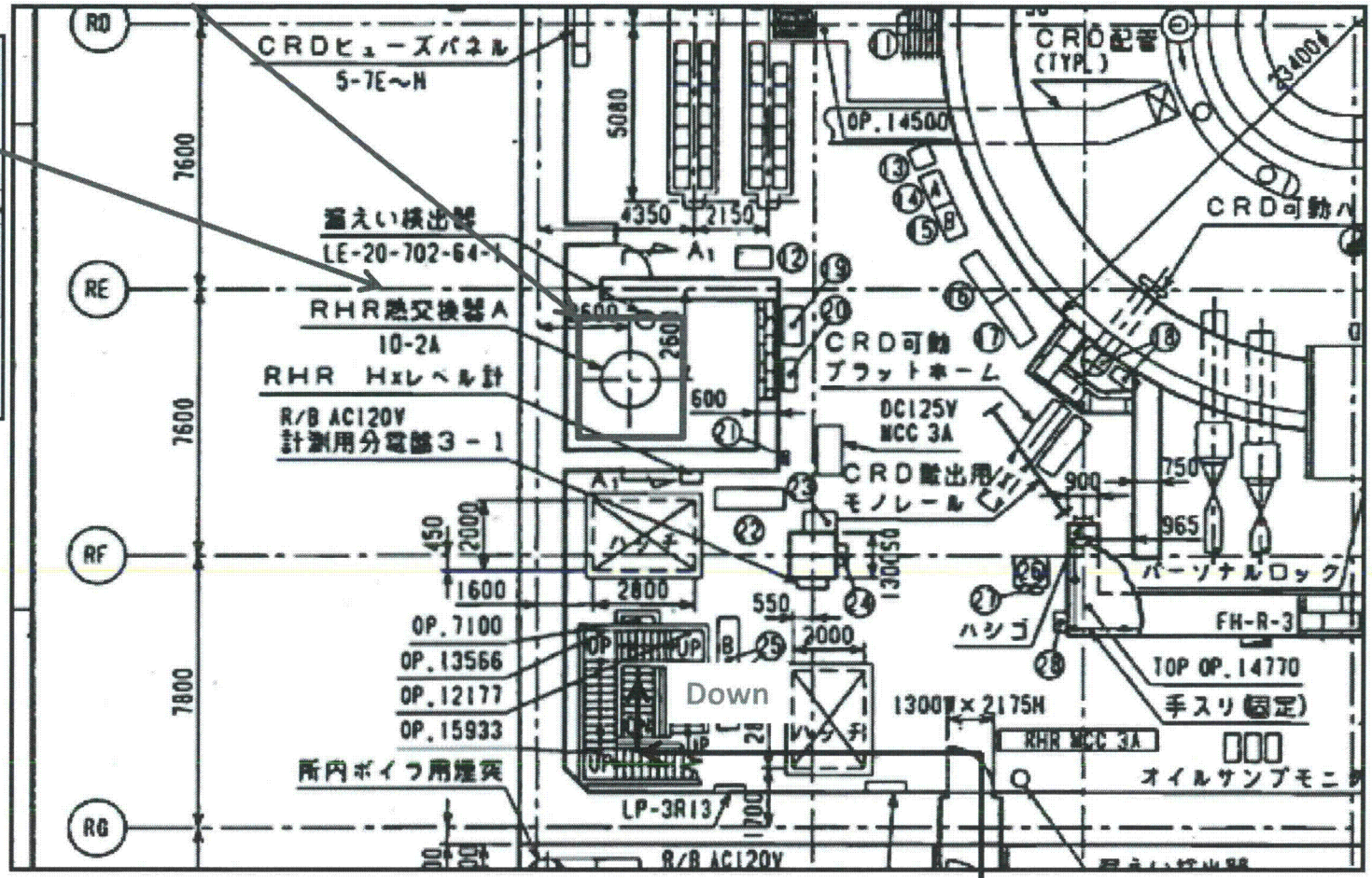
日本語

熱交換器

Search the web

Translate again

heat exchanger



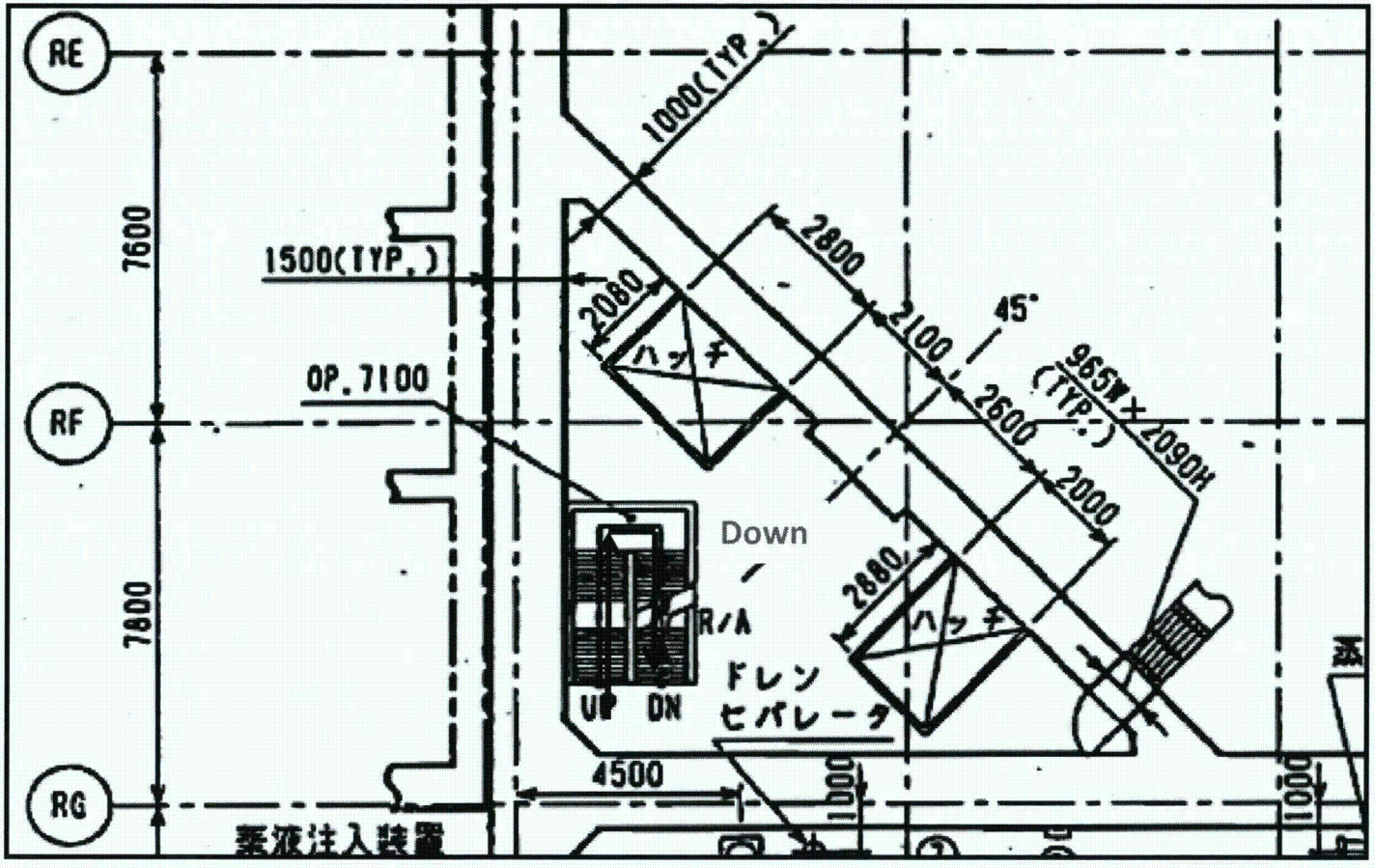
FL OP. 10200
(1FL)

(~Ground Level)

Possible route to RHR Pumps A and C

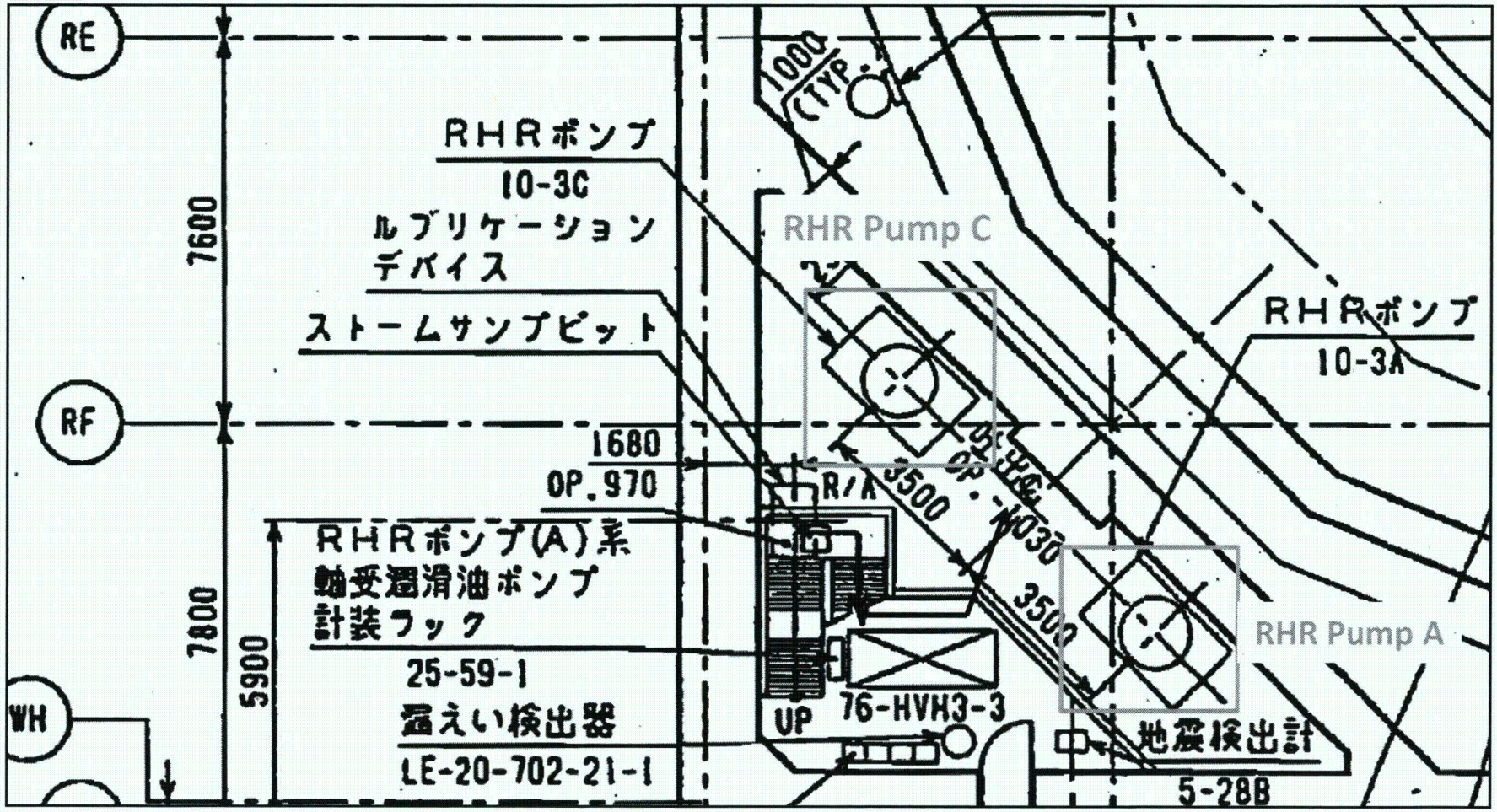
AERIAL VIEW

N ←

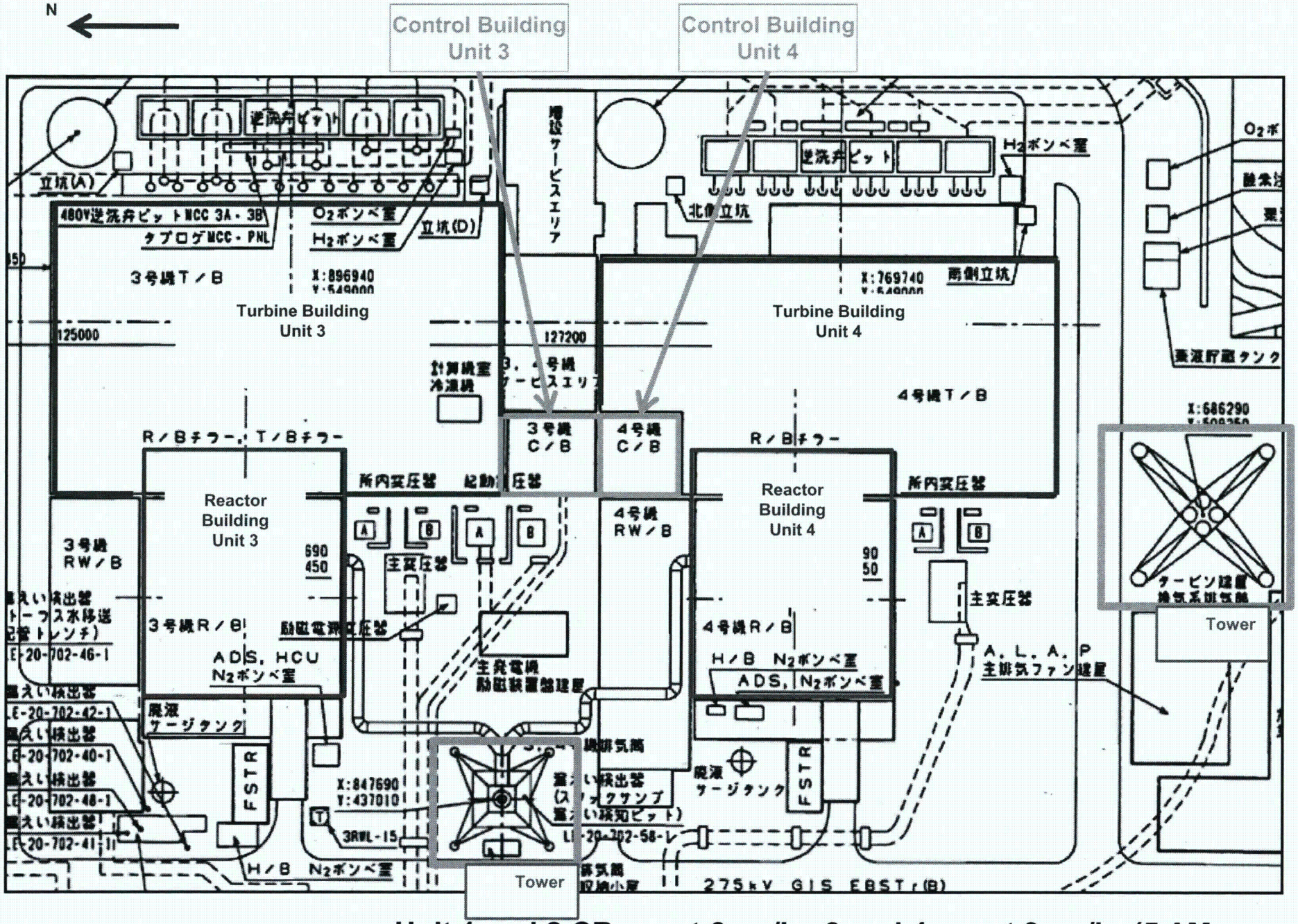


FL OP. 4000

AERIAL VIEW



FL OP. -2060
(BFL)



Control Room Locations

Unit 1 and 2 CR are at 6 mr/hr, 3 and 4 are at 3 mr/hr (5 AM JST 3/23, INPO)

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5 – Alternate Cooling System

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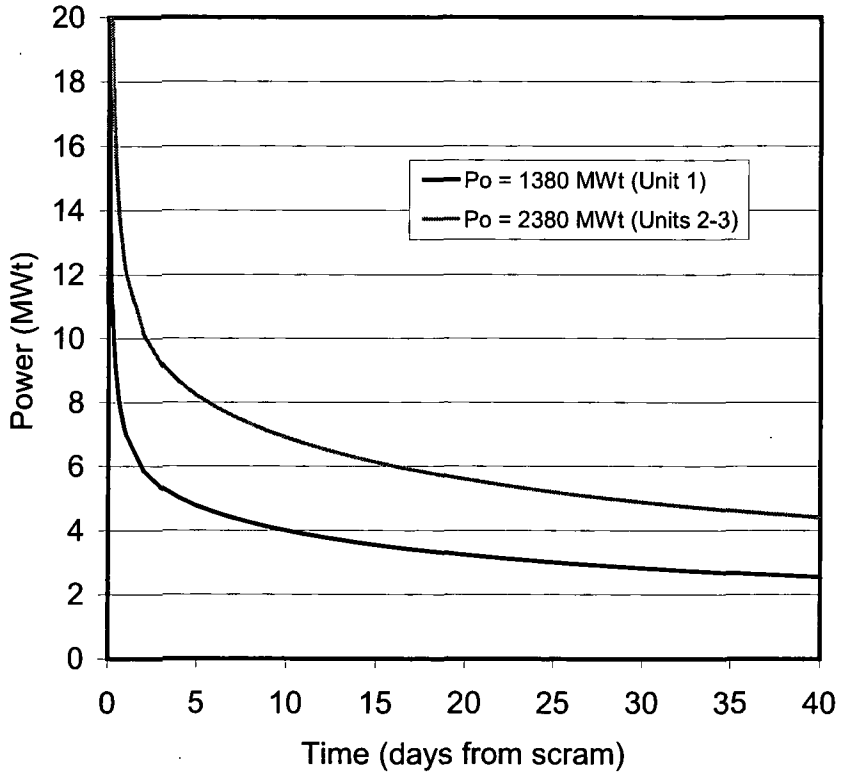
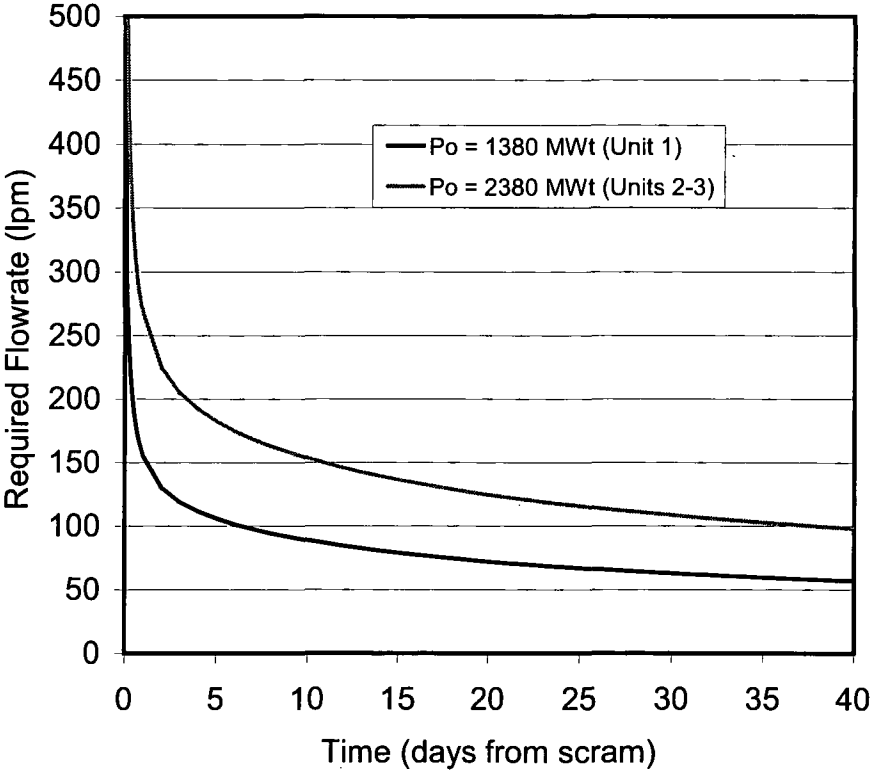
Decay Heat and Required Coolant Flowrate

Decay Heat for Units 1-3



Water Flowrate to Remove Decay Heat
(Atmospheric Pressure Saturated Steam at Core Exit)



5 – Alternate Cooling System

- **Establish Long Term "Fresh Water" Cooling**
  - Current Scenario
    - *Seawater injection has likely slowed, but not stopped core degradation.*
    - *Seawater has likely led to accumulation of salt in the RPV (up to 100 tons) enough to fill lower plenum.*
    - *Increasing flowrate to match decay heat and connection to an ultimate heat sink is of utmost importance.*

- **Removal of Salt Water**
  - Saltwater is now likely a concentrated brine and highly contaminated.
    - *10,0000 R/hr at 0.5 meters*
  - Flow paths for removal are inconceivable

Options for Longer Term Cooling

- **Reviews underway by GE, INPO, and Lab Teams**
- **Similar conclusions to date**
- **Options:**
  - —Residual heat removal system
  - —Standby liquid control system
  - —Control rod drive hydraulic system
  - —Connection to isolation condenser
  - —Reactor water cleanup unit
  - —Bring in external system
  - —Flood reactor building
- **All options pose problem**
  - —Location in high rad fields
  - —Require some level of manual realignment of valves.
  - —Damage from quake or tsunami

6 – Sensors and Instruments

- We have compiled two documents on sensors and would like to finalize for transmittal to Japan
- We've considered new instruments and sensors as well as approaches of fixing existing instruments
- Remote-operated camera (used at PNNL to inspect waste tanks)
- Radar level gauge at end of flexible metal tube (waveguide)
- Gamma Thermometer/Level Gauge

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7 – Spent Fuel Pools

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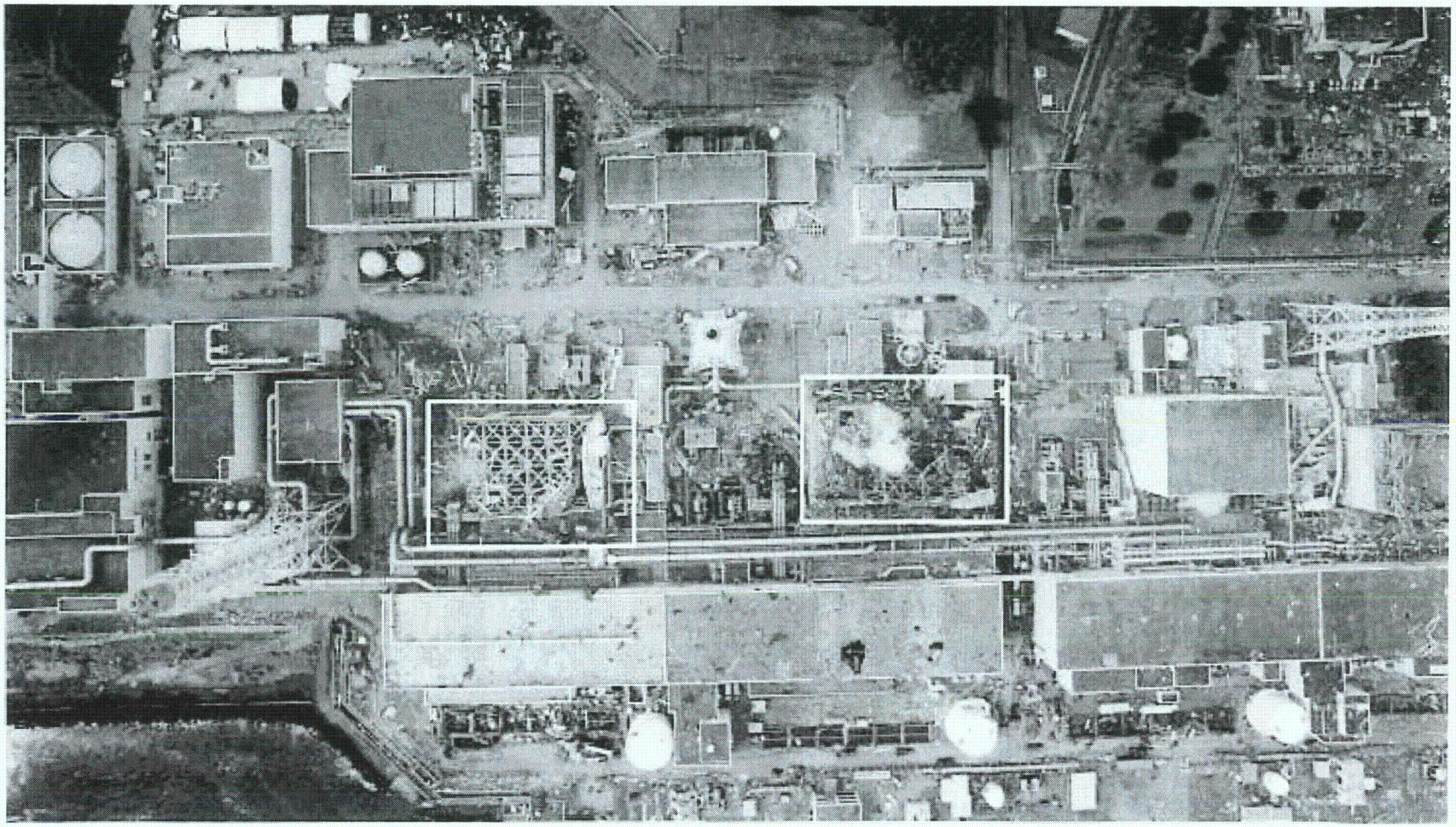
Fukushima Plan View March 20, 2011

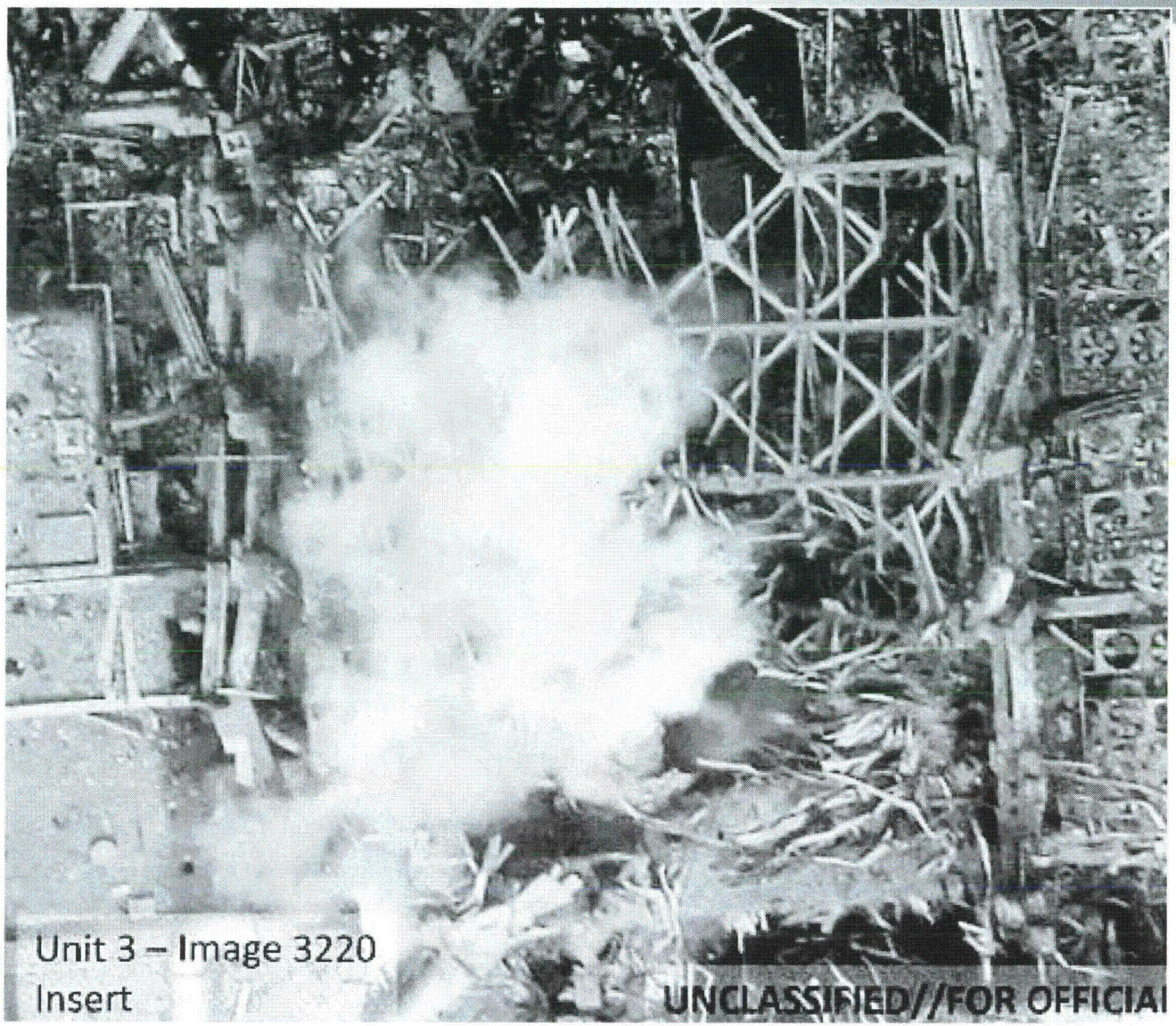


Unit 3 and 4 – Image 3193

U.S. DEPARTMENT OF ENERGY

Nuclear Energy

Fukushima Unit 3 March 20, 2011



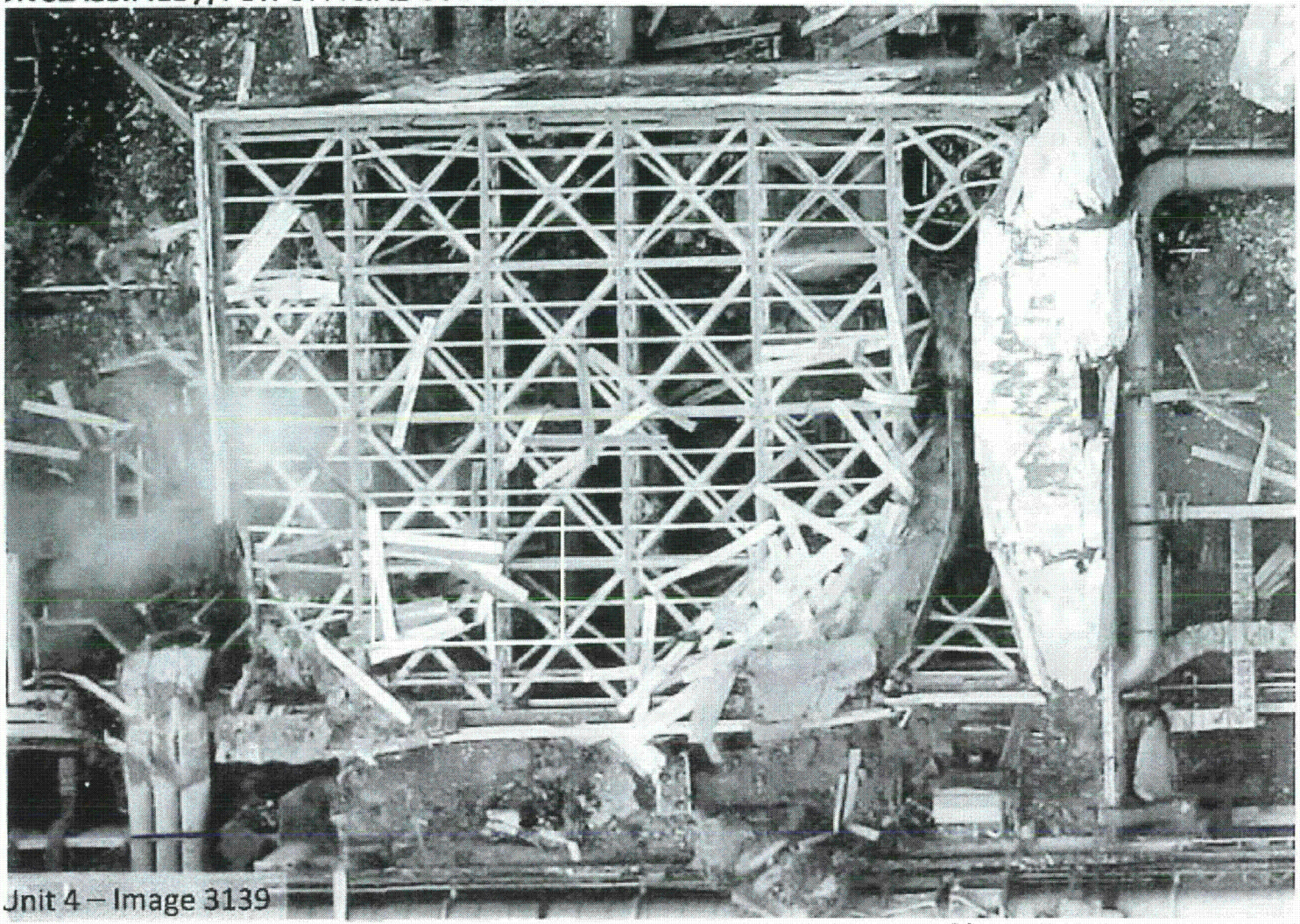
Unit 3 – Image 3220
Insert

U.S. DEPARTMENT OF
ENERGY
Nuclear Energy

Fukushima Unit 4 March 20, 2011

JNCLASSIFIED//FOR OFFICIAL USE ONLY

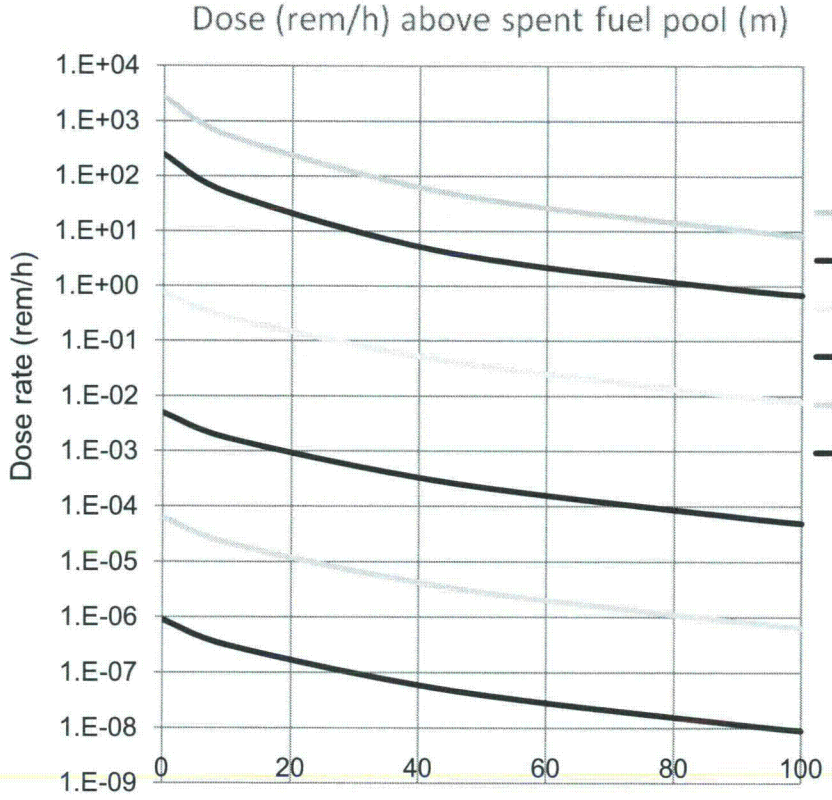
20 Mar 1135 – 1145 Local



Unit 4 – Image 3139
nsert

UNCLASSIFIED//FOR OFFICIAL USE ONLY

Direct radiation dose vs distance for various SFP water depths – Unit 4



Water level scenarios

† top fuel - water level at top of fuel assembly

top rack - water level at top of spent fuel rack

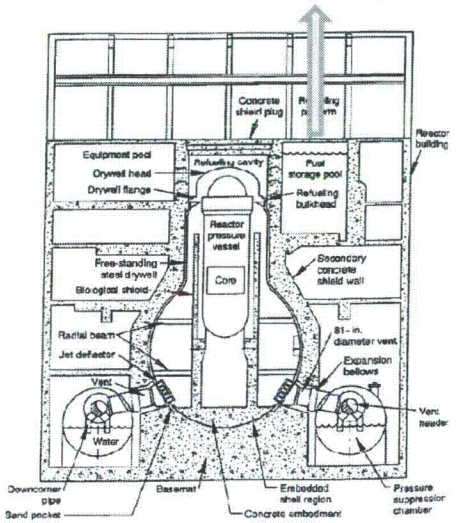
rack +1m - water level 1 meter above the top of the spent fuel rack

rack +2m - water level 2 meters above the top of the spent fuel rack

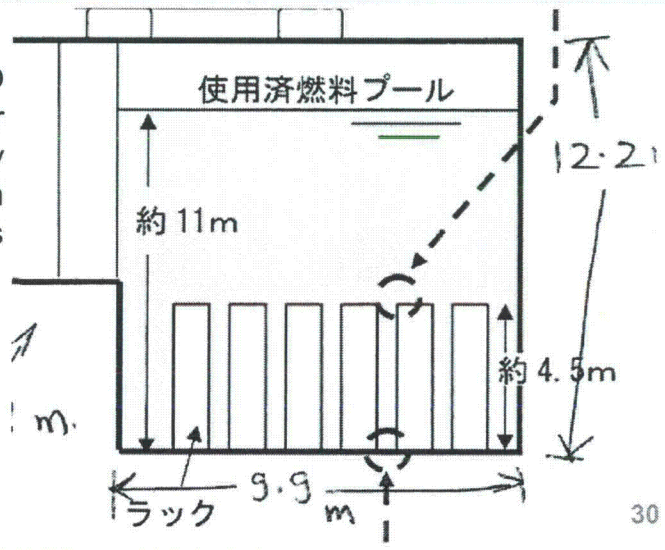
rack +3m - water level 3 meters above the top of the spent fuel rack

rack +4m - water level 4 meters above the top of the spent fuel rack

Distance above spent fuel pool (m)



From TEPCO document: Water level typically maintained ~6.5 m above racks



BACKUP SLIDES

U.S. DEPARTMENT OF ENERGY

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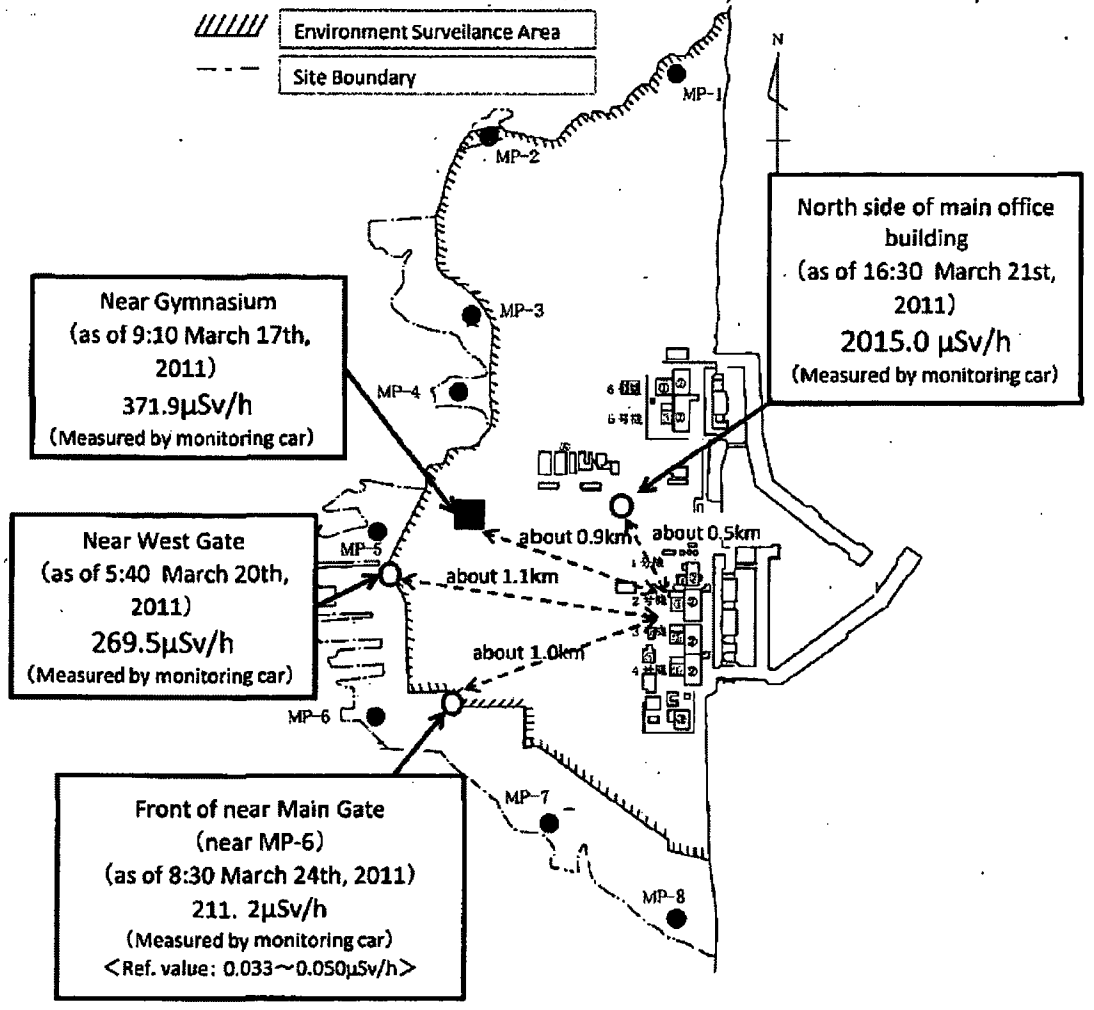
Radiological Survey Data 3/24/2011

Fukushima Dai−ichi NPS

as of 8:30, March 24th, 2011



From: Montgomery, Carlos

To: Armstrong, Janine; Ash, Darren; Bartley, Malion; Bellosi, Susan; Boger, Bruce; Bollwerk, Paul; Borchardt, Bill; Boyce, Thomas (OIS); Breskovic, Clarence; Brown, Milton; Cannady, Ashley; Casby, Marcia; Chernoff, Margaret; Chokshi, Nilesh; Cohen, Miriam; Colleli, Catherine; Corley, Cherrie; Crockett, Steven; Cupidon, Les; Cutchin, James; Daniels, Stanley; Dean, Bill; Deegan, George; Dickey, Karen; Doane, Margaret; Doolittle, Elizabeth; Dyer, Jim; Erwin, Kenneth; Evans, Bridget; Freeland, Kendra; Gallo, Jenny; Garland, Stephanie; Gold, Meg; Gonzalez, Hipolito; Greene, Kathryn; Grobe, Jack; Hackett, Edwin; Hackworth, Sandra; Hamilton, Brandi; Haney, Catherine; Harrington, Holly; Higginbotham, Tina; Hilton, Nick; Holahan, Gary; Howard, Patrick; Hudson, Sharon; Jarriel, Lisamarie; Jefferson, Steven; Johnson, Michael; Kelley, Corenthis; Kenney, Susan; Kokajko, Lawrence; Kreuter, Jane; Krupnick, David; Langlie, Liz; Leeds, Eric; Lewis, Doris; Lindsay, Sandy; Lyons, James; Madden, Patrick; Marks, Sharon; Marziale, Riqueza; McCormick, Chad; McCrary, Cheryl; McCree, Victor; Miles, Patricia; Miller, Charles; Moore, Mary; Nourbakhsh, Hossein; Olive, Karen; ORourke, Christine; Pedersen, Renee; Raspa, Rossana; Reyes, Luis; Rihm, Roger; Rivera, Eric; Ronewicz, Lynn; Ross, Robin; Ruland, William; Sall, Basia; Salus, Amy; Samuel, Olive; Schaeffer, James; Sheron, Brian; Sims, Carolyn; Southerland, Angela; Steger (Tucci), Christine; Taylor, Renee; Thomas, Loretta; Walker, Dwight; Weber, Michael; Wellock, Thomas; Wertz, Trent; Williams, Barbara; Williams, Donna; Zimmerman, Roy

Cc: Powers, Dale

Subject: Schedule for NRC:What It Is & What It Does March 29-30th

Date: Thursday, March 24, 2011 4:53:07 PM

Attachments: Schedule MARCH 2011.doc

Importance: High

Hello, Everyone.

I know many of you have been busy in one way or another with the Japanese event, and so the speaker schedule for next week's offering of *NRC:What It Is & What It Does* may have been impacted. Please check the attached schedule to ensure the speaker's names and titles are correct and notify me of any corrections, changes, etc. as soon as possible.

Thanks, and I'll see you all next week.

Mr. Carlos Montgomery
Senior Training Program Specialist USNRC
Gateway Building 7201-4A19
Mailstop GW 4A18
301-492-2311

CH/297

NRC: WHAT IT IS AND WHAT IT DOES

COURSE SCHEDULE

All presenters subject to change

March 29th, 2011 **LOCATION:**

Day 1	**Tab**	**TWFN Auditorium**
8:30 - 8:35 a.m.		Welcome and Introductions Carlos Montgomery, Senior Training Program Specialist, HRTD/RFT
8:35 - 9:05 a.m.	**1**	Office of the Executive Director for Operations Bill Borchardt, Executive Director for Operations
9:05 - 9:40 a.m.	**2**	History of the NRC Tom Wellock, NRC Historian
9:40 – 9:50 a.m.		Break
9:50 – 10:20 a.m.	**3**	Office of Public Affairs Holly Harrington, Public Affairs Officer, OPA
10:20 – 10:50am	**4**	Office of International Programs Margie Doane – Director
10:50 – 11:00 a.m.		Break
11:00 - 11:30 a.m.	**5**	Office of Nuclear Reactor Regulation (NRR) John Lubinski, Acting Director, Division of Component Integrity
11:30 - 12:00 p.m.	**6**	NSIR and Incident Response Operations Michael C. Layton, Deputy Director, Division of Security Policy, NSIR
12:00 – 1:00 p.m.		Lunch
1:00 - 1:40 p.m.	**7**	Atomic Safety and Licensing Board Panel [redacted]Bollwerk **NOTE: Held in the ASLBP Courtroom – T3B45**
1:40 - 2:20 p.m.	**8**	Commission Procedures and External Relationships Steven Crockett, Special Counsel for Legal Counsel, Legislation, and Special Projects **NOTE: Held in the ASLBP Courtroom – T3B45**
2:20 - 2:35.m.		Break
2:35 - 3:20 p.m.		Operations Center Tour (Group 1) **(T4-B9)**
3:20 – 4: 05 p.m.		Operations Center Tour (Group 2) **(T4-B9)**

NRC: WHAT IT IS AND WHAT IT DOES

COURSE SCHEDULE

All presenters subject to change

March 30th, 2011 **Day 2**	**Tab**	**LOCATION:** **TWFN Auditorium**
8:30 – 9:05 a.m.	**9**	Regional Operations and Program Management Dale Powers, R IV Senior Technical Analyst
9:05 – 9:50 a.m.	**10**	Office of Investigations Cheryl McCrary, Office Director, OI
9:50 – 10:05 a.m.		Break
10:05 – 11:05 a.m.	**11**	NRC Corporate Management Panel (OEDO/OIS/CFO/ADM/HR/SBCR/CSO) & Q&A session
11:05 – 11:40 a.m.	**12**	Office of Nuclear Regulatory Research Dr. Jennifer Uhle, Deputy Director, RES
11:40 - 12:15 a.m.	**13**	Office of Federal & State Materials and Environmental Management (FSME), Scott Moore, Acting Deputy Director
12:15 – 1:15 p.m.		Lunch
1:15 – 1:55 p.m.	**14**	Office Of Enforcement Roy Zimmerman, Director, Office of Enforcement Renee Pedersen, Differing Views Program Manager
1:55 – 2:25 p.m.	**15**	Office of New Reactors William Burton, Branch Chief, Rulemaking and Policy Branch
2:25 – 2:35 p.m.		Break
2:35 – 2:55 p.m.	**16**	Advisory Committee on Reactor Safeguards Ed Hackett, Executive Director, ACRS
2:55 – 3:35 p.m.	**17**	Office of Nuclear Material Safety and Safeguards Catherine Haney, Office Director, NMSS
3:35 – 4:15 pm	**18**	Office of the Inspector General Rossana Raspa (Investigations) Paul Rades (Audits)

NRC: WHAT IT IS AND WHAT IT DOES

COURSE SCHEDULE

All presenters subject to change

From: Sheron, Brian
To: Kardaras, Tom
Cc: Valentin, Andrea
Subject: RE: IT Purchase Requests
Date: Thursday, March 24, 2011 5:04:00 PM

Go ahead with it.

From: Kardaras, Tom
Sent: Thursday, March 24, 2011 4:51 PM
To: Sheron, Brian
Cc: Valentin, Andrea
Subject: FW: IT Purchase Requests

See below

Brian,

(b)(5)

Regards,
Tom Kardaras, Deputy Director (Acting)
Program Management, Policy Development and Analysis Staff
Office of Nuclear Regulatory Research
(o) 301-251-7667

From: Coe, Doug
Sent: Thursday, March 24, 2011 2:30 PM
To: Valentin, Andrea; Kardaras, Tom
Subject: FW: IT Purchase Requests

(b)(5)

CH/298

(b)(5)

Doug

From: Valentin, Andrea
Sent: Monday, March 07, 2011 4:18 PM
To: Case, Michael; Richards, Stuart; Coe, Doug; Coyne, Kevin; Gibson, Kathy; Scott, Michael
Cc: Uhle, Jennifer; Sheron, Brian
Subject: IT Purchase Requests

(b)(5)

Thanks,

Andrea Valentin, Acting Director
Program Management, Policy Development and Analysis Staff
Office of Nuclear Regulatory Research
301-251-7497

From: Sheron, Brian
To: Uhle, Jennifer
Subject: FW: Schedule for NRC:What It Is & What It Does March 29-30th
Date: Thursday, March 24, 2011 5:06:00 PM
Attachments: Schedule MARCH 2011.doc
Importance: High

See below and attached. Can you still do this on Wednesday next week?

From: Montgomery, Carlos
Sent: Thursday, March 24, 2011 4:53 PM
To: Armstrong, Janine; Ash, Darren; Bartley, Malion; Bellosi, Susan; Boger, Bruce; Bollwerk, Paul; Borchardt, Bill; Boyce, Thomas (OIS); Breskovic, Clarence; Brown, Milton; Cannady, Ashley; Casby, Marcia; Chernoff, Margaret; Chokshi, Nilesh; Cohen, Miriam; Colleli, Catherine; Corley, Cherrie; Crockett, Steven; Cupidon, Les; Cutchin, James; Daniels, Stanley; Dean, Bill; Deegan, George; Dickey, Karen; Doane, Margaret; Doolittle, Elizabeth; Dyer, Jim; Erwin, Kenneth; Evans, Bridget; Freeland, Kendra; Gallo, Jenny; Garland, Stephanie; Gold, Meg; Gonzalez, Hipolito; Greene, Kathryn; Grobe, Jack; Hackett, Edwin; Hackworth, Sandra; Hamilton, Brandi; Haney, Catherine; Harrington, Holly; Higginbotham, Tina; Hilton, Nick; Holahan, Gary; Howard, Patrick; Hudson, Sharon; Jarriel, Lisamarie; Jefferson, Steven; Johnson, Michael; Kelley, Corenthis; Kenney, Susan; Kokajko, Lawrence; Kreuter, Jane; Krupnick, David; Langlie, Liz; Leeds, Eric; Lewis, Doris; Lindsay, Sandy; Lyons, James; Madden, Patrick; Marks, Sharon; Marziale, Riqueza; McCormick, Chad; McCrary, Cheryl; McCree, Victor; Miles, Patricia; Miller, Charles; Moore, Mary; Nourbakhsh, Hossein; Olive, Karen; ORourke, Christine; Pedersen, Renee; Raspa, Rossana; Reyes, Luis; Rihm, Roger; Rivera, Eric; Ronewicz, Lynn; Ross, Robin; Ruland, William; Sall, Basia; Salus, Amy; Samuel, Olive; Schaeffer, James; Sheron, Brian; Sims, Carolyn; Southerland, Angela; Steger (Tucci), Christine; Taylor, Renee; Thomas, Loretta; Walker, Dwight; Weber, Michael; Wellock, Thomas; Wertz, Trent; Williams, Barbara; Williams, Donna; Zimmerman, Roy
Cc: Powers, Dale
Subject: Schedule for NRC:What It Is & What It Does March 29-30th
Importance: High

Hello, Everyone.

I know many of you have been busy in one way or another with the Japanese event, and so the speaker schedule for next week's offering of *NRC:What It Is & What It Does* may have been impacted. Please check the attached schedule to ensure the speaker's names and titles are correct and notify me of any corrections, changes, etc. as soon as possible.

Thanks, and I'll see you all next week.

Mr. Carlos Montgomery
Senior Training Program Specialist USNRC
Gateway Building 7201-4A19
Mailstop GW 4A18
301-492-2311

CH/299

NRC: WHAT IT IS AND WHAT IT DOES
COURSE SCHEDULE
All presenters subject to change

March 29th, 2011 **LOCATION:**
Day 1 **Tab** **TWFN Auditorium**

8:30 - 8:35 a.m.		Welcome and Introductions Carlos Montgomery, Senior Training Program Specialist, HRTD/RFT
8:35 - 9:05 a.m.	1	Office of the Executive Director for Operations Bill Borchardt, Executive Director for Operations
9:05 - 9:40 a.m.	2	History of the NRC Tom Wellock, NRC Historian
9:40 – 9:50 a.m.		Break
9:50 – 10:20 a.m.	3	Office of Public Affairs Holly Harrington, Public Affairs Officer, OPA
10:20 – 10:50am	4	Office of International Programs Margie Doane – Director
10:50 – 11:00 a.m.		Break
11:00 - 11:30 a.m.	5	Office of Nuclear Reactor Regulation (NRR) John Lubinski, Acting Director, Division of Component Integrity
11:30 - 12:00 p.m.	6	NSIR and Incident Response Operations Michael C. Layton, Deputy Director, Division of Security Policy, NSIR
12:00 – 1:00 p.m.		Lunch
1:00 - 1:40 p.m.	7	Atomic Safety and Licensing Board Panel [redacted]Bollwerk **NOTE: Held in the ASLBP Courtroom – T3B45**
1:40 - 2:20 p.m.	8	Commission Procedures and External Relationships Steven Crockett, Special Counsel for Legal Counsel, Legislation, and Special Projects **NOTE: Held in the ASLBP Courtroom – T3B45**
2:20 - 2:35.m.		Break
2:35 - 3:20 p.m.		Operations Center Tour (Group 1) **(T4-B9)**
3:20 – 4: 05 p.m.		Operations Center Tour (Group 2) **(T4-B9)**

NRC: WHAT IT IS AND WHAT IT DOES

COURSE SCHEDULE

All presenters subject to change

March 30th, 2011 **Day 2**	**Tab**	**LOCATION:** **TWFN Auditorium**
8:30 – 9:05 a.m.	**9**	Regional Operations and Program Management Dale Powers, R IV Senior Technical Analyst
9:05 – 9:50 a.m.	**10**	Office of Investigations Cheryl McCrary, Office Director, OI
9:50 – 10:05 a.m.		Break
10:05 – 11:05 a.m.	**11**	NRC Corporate Management Panel (OEDO/OIS/CFO/ADM/HR/SBCR/CSO) & Q&A session
11:05 – 11:40 a.m.	**12**	Office of Nuclear Regulatory Research Dr. Jennifer Uhle, Deputy Director, RES
11:40 - 12:15 a.m.	**13**	Office of Federal & State Materials and Environmental Management (FSME), Scott Moore, Acting Deputy Director
12:15 – 1:15 p.m.		Lunch
1:15 – 1:55 p.m.	**14**	Office Of Enforcement Roy Zimmerman, Director, Office of Enforcement Renee Pedersen, Differing Views Program Manager
1:55 – 2:25 p.m.	**15**	Office of New Reactors William Burton, Branch Chief, Rulemaking and Policy Branch
2:25 – 2:35 p.m.		Break
2:35 – 2:55 p.m.	**16**	Advisory Committee on Reactor Safeguards Ed Hackett, Executive Director, ACRS
2:55 – 3:35 p.m.	**17**	Office of Nuclear Material Safety and Safeguards Catherine Haney, Office Director, NMSS
3:35 – 4:15 pm	**18**	Office of the Inspector General Rossana Raspa (Investigations) Paul Rades (Audits)

NRC: WHAT IT IS AND WHAT IT DOES

COURSE SCHEDULE

All presenters subject to change

From: Sheron, Brian
To: Coe, Doug; Uhle, Jennifer
Cc: Barnes, Valerie; Coyne, Kevin
Subject: RE: RES concur on OE letter to ACRS
Date: Thursday, March 24, 2011 5:07:00 PM

OK.

From: Coe, Doug
Sent: Thursday, March 24, 2011 4:58 PM
To: Sheron, Brian; Uhle, Jennifer
Cc: Barnes, Valerie; Coyne, Kevin
Subject: RES concur on OE letter to ACRS

Brian/Jennifer,
OE has asked RES to concur on a letter responding to ACRS. The relevant sentence for RES in their response is

The Office of Nuclear Regulatory Research (RES) has indicated that it will be prepared to accommodate your request [to have an opportunity to review the safety culture traits validation study] in early fall 2011. At that time, RES will have had an opportunity to complete its planned analysis of the information used in the validation study.

We can accommodate this request. It is already part of our work under the OE User Need Request for safety culture.

Any objection?

Doug

ckt/300

From: Sheron, Brian
To: Lee, Richard
Subject: Call today
Date: Thursday, March 24, 2011 5:17:00 PM

Richard, Kathy was questioning why Randy was going to come here to be on the 6 pm conference call. Here main concern was that we should be paying him to be on the call. I am still here and can call in at 6pm today.

CH 1301

From:	Sheron, Brian
To:	Bonaccorso, Amy; Calvo, Antony; Case, Michael; Coe, Doug; Correia, Richard; Dion, Jeanne; Gibson, Kathy; Lui, Christiana; Richards, Stuart; Rini, Brett; Sangimino, Donna-Marie; Uhle, Jennifer; Valentin, Andrea
Subject:	FW: Tomorrow"s news tonight -- read and delete
Date:	Thursday, March 24, 2011 5:21:00 PM

From: Brenner, Eliot
Sent: Thursday, March 24, 2011 5:15 PM
To: Brenner, Eliot
Subject: Tomorrow's news tonight -- read and delete

~~Internal use only – no distribution outside NRC – no redistribution – May contain material proprietary to news agencies.~~

1: JAPAN STUFF – The onslaught continues on a number of fronts, starting with:

IG REPORT – The IG's office posted a report covering issues with the documenting of defects in nuclear plant systems. It started getting traction Thursday morning. Staff worked with OPA to craft a response given to all reporters who asked and posted to the NRC blog for a rapid response. The story will get wide play in the mainstream and trade press.

DIABLO CANYON – We fielded calls from KSBY-TV in San Luis Obispo, the Associated Press in San Francisco and a Japanese newspaper correspondent based in Los Angeles about a letter issued by Congresswoman Lois Capps requesting NRC halt its review of the plant's license renewal application.
http://www.ksby.com/news/rep-capps-calls-on-nrc-to-suspend-license-renewal-of-diablo-canyon/

BRAIDWOOD – The Braidwood annual community meeting is tonight. Timing is everything. During preplanned maintenance on Unit 2 control room alarm cabinets, more annunciators were lost than expected (over 75 percent) Maintenance was terminated and the annunciators were restored. The plant was operating at 100% power and remained stable during and after this event. The Unusual Event was terminated and an investigation will be conducted to determine the cause of the event. Thanks, fellas.

INDIAN POINT – Reporters for the PBS channel in New York, had multiple questions on the decommissioning of nuclear power plants and how it might work at Indian Point. Also, the Journal News (of Westchester, N.Y.) is working on a story on spent fuel storage and had several related questions. The paper also asked us to help fact-check a graphic that would run with the piece. In addition, Westchester Magazine wanted to know more about the MSNBC.COM seismic ranking of Indian Point and our approach to EPZs. Our recent blog posts on both came in handy. Also, the New York Daily News continues to pepper us with a variety of questions on Indian Point, in areas that include emergency preparedness and NRC-granted exemptions.

BECHTEL DEVICE – OPA was contacted by Bechtel corporate communications (Frederick, MD) for advice on how to talk about a pumping device, apparently dreamed up by the NRC and constructed in Australia by Bechtel, when word of its presence in Japan breaks. Our advice was to do a press event in the DC area – if the Japanese government

CH/302

formally requests the use of the machine -- to talk about the device's creation, mentioning the NRC role, and that we would take questions as necessary regarding our role. OPA explained our current public affairs posture in terms of saying, through NRC staff in Japan only if asked, that our role is to support the Embassy and the Japanese authorities working this problem.

2: OTHER STUFF, related and unrelated –

SAN ONOFRE – We responded to a request for information via e-mail from a CBS-TV Evening News producer for Katie Couric on a story in preparation. The network wanted to know about the Chilling Effect letter, the high number of allegations from the site, safety conscious work environment issues, the current performance of both units information about "equipment violations" and changes at the plant during the past two years.

WATTS BAR 2 – The TVA IG and the US Attorney in Eastern Tennessee today announced the indictment of a former worker at Watts Bar Unit 2 for allegedly falsifying paperwork related to electrical cables. Region II OPA acknowledged to reporters from FOX News, ABC, the AP and the Chattanooga Times-Free Press that although this investigation was separate, the NRC is aware of the situation and is also reviewing the issue.

TMI - Local citizens are planning to hold a vigil at Three Mile Island's North Gate on Monday to mark the 32nd anniversary of the TMI-2 accident. About 20 people are expected to be in attendance. The vigil is expected to last from 3:30 a.m. to 5:00 a.m. but could extend longer.

BROWNS FERRY – TVA is taking 50-60 reporters through Browns Ferry on Friday. We expect this to be heavily attended by the networks and major media (NYTimes is signed up). The Browns Ferry units are similar to the one's in Japan, GE Mark I BWRs.

OYSTER CREEK – An environmental group told the Chicago Tribune our review of the Oyster Creek license renewal application was flawed. We explained why we do not believe that to be the case, citing the many elements of the review.

EMERGENCY PLANNING – The News Journal (of Wilmington, Del.) inquired about the updating of Evacuation Time Estimates for nuclear power plants. We were able to speak to what our new EP rules would require in that area.

SEABROOK – The Newburyport (Mass.) Daily News plans to write something on the ASLB order earlier this week allowing Massachusetts to participate in the Seabrook license renewal proceeding as an interested governmental entity. The story would also touch on the reviews planned by the NRC in response to the Japan reactor events.

BEAVER VALLEY – The Beaver County (Pa.) Times is working on a story about spent fuel storage in general and specifically at the Beaver Valley nuclear power plant. The reporter also asked for information on the plant's seismic capabilities.

ROBINSON – About 65 people attended the annual assessment meeting for the Robinson plant to hear the plant had been moved to column 3 of the action matrix. Reporters from the Associated Press in Columbia, the Hartsville Messenger, and crews from WMBF-TV

and WPDE-TV covered the meeting. The Robinson plant has traditionally had very few people attend annual assessment meetings and the events in Japan have obviously heightened the interest far beyond previous levels.

Press releases and speeches posted
NRC Seeks Comment on Proposed Rule to Certify GE-Hitachi ESBWR Reactor Design
NRC Advisory Committee on Reactor Safeguards to Meet April 7-9 in Rockville, Md.

From: Salley, MarkHenry
To: Sheron, Brian
Cc: Uhle, Jennifer
Subject: FW: RES PLAN OF THE DAY: FRIDAY, MARCH 25, 2011
Date: Thursday, March 24, 2011 5:25:21 PM
Attachments: POD 03 25 11.doc

I like that joke in the Plan of the Day.....

Q: Where does bad light end up?
A: In a prism.

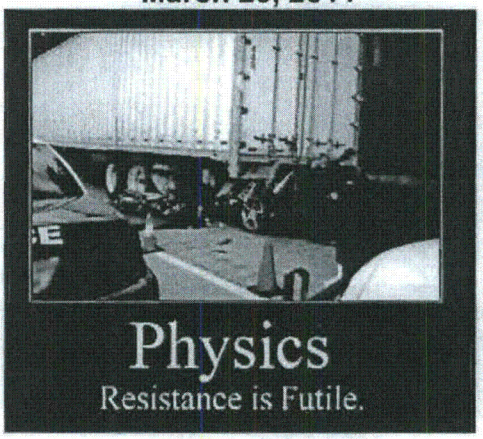
Funny, but that's the same place bad Fire Tests end up!

From: Flory, Shirley
Sent: Thursday, March 24, 2011 4:40 PM
To: RES Distribution; Cruz, Holly; Cullison, David; Frampton, Julie; Hudson, Nathanael; Peters, Sean; Richards, Stuart; Rini, Brett; Santiago, Patricia
Subject: RES PLAN OF THE DAY: FRIDAY, MARCH 25, 2011

CH/303

OFFICE OF NUCLEAR REGULATORY RESEARCH PLAN OF THE DAY

March 25, 2011



REMINDER:
Please remember to submit items for the EDO Daily Notes!
NRR Monday Morning Meetings, 8:45 AM, Room O-13G4: DE (Carpenter) to provide coverage.
NMSS Monday Morning Meetings, 8:30-9:30 AM, EBB: DRA (Gonzalez) to provide coverage.
FSME Monday Morning Meetings, 9:30-10:30, Room T-8A1: DSA (Huffert) to cover.
NRO Monday Morning Meetings, 8:30 AM, Room T-6A1: DSA (T. Zaki) to provide coverage.

TIME	PURPOSE	LOCATION	PARTICIPANTS
9:00-10:00	EDO Senior Management Meeting	**O- 17B4**	Sheron
10:00-11:00	Executive Resources Board	**O- 17B4**	Sheron
10:00-11:00	EPT Meeting	C- 6C8	Sangimino, Dehn, Eisenberg
2:30-4:00	POC	**O- 17B4**	Colon
3:00-4:00	Phone: Congressional Liaison Team Conference Call	1-800-593-7189 Passcode (b)(6)	Sheron

DELEGATIONS
M. Scott, Acting Deputy Director, Division of Systems Analysis
T. Zaki, Acting NARB Branch Chief until M. Scott Returns
D. Coe, Acting Div. Dir. DRA until R. Correla come on board
T. Kardaras, Acting PMDA Deputy Director (Mar.-April)
L. Donaldson, Acting PMDA Deputy Director (April-May)
A. Valentin, Deputy Director when Mary Muessle Returns
A. Ramirez, acting TA for DSA while K. Armstrong supports SPB with Japan event response and SOARCA
S. Elkins for M. Scott (3/25)
C. Hoxie for M. Scott (3/28-4/1)
S. Rupinta for T. Kardaras (3/14 - 4/15)
J. Zabel for L. Donaldson (3/25)
S. Elkins for K. Gibson (3/21-25)
I. Frankl, Acting RSAB BC (3/21-25)
C. Chan for E. Oklesson (3/25)
D. Stroup for M. Salley (3/25)

Q: Where does bad light end up?
A: In a prism.

From: Binkley, Steve

To: Adams, Jan; Aoki, Steven; "RJBudnitz@lbl.gov"; Sheron, Brian; Brinkman, Bill; DAgostino, Thomas; (b)(6) (b)(6) m.com"; "phillip.finck@inl.gov"; "john.grossenbacher@inl.gov"; Hurlbut, Brandon; Kelly, John E (NE); Koonin, Steven; Lyons, Peter; "harold.mcfarlane@inl.gov"; Owens, Missy; "peterson@nuc.berkeley.edu"; Poneman, Daniel; "ronaldo.szilard@inl.gov"; (b)(6) ; SCHU; Binkley, Steve

Subject: Slides for 3/24 conference call have been sent

Date: Thursday, March 24, 2011 5:36:10 PM

You should receive them within a few minutes.

Steve Binkley

CH/304

From:	SCHU
To:	Kelly, John E (NE); Adams, Ian; Aoki, Steven; Binkley, Steve; Brinkman, Bill; Budnitz, Bob; DAgostino, Thomas; Finck, Phillip; Garwin, Dick (EOP); Garwin, Dick (IBM); Grossenbacher, John (INL); Hurlbut, Brandon; John Holdren; Kelly, John E (NE); Koonin, Steven; Lyons, Peter; McFarlane, Harold; Miller, Neile; Mustin, Tracy; NITSolutions; Owens, Missy; Peterson, Per; Poneman, Daniel; SCHU; Sheron, Brian; Steve Fetter; Szilard, Ronalo
Subject:	RE: Final Presentation for Science Council
Date:	Thursday, March 24, 2011 5:37:07 PM
Attachments:	water level sensor 3-24-2011.pptx

John, et al.,

Attached is a sketch of the idea I was proposing in this morning's tag-up meeting to measure water level height of the spent fuel pools that is resistant to radiation, etc. The tube can be lowered by a crane using the stiff indication rod. Low tech but it should work.

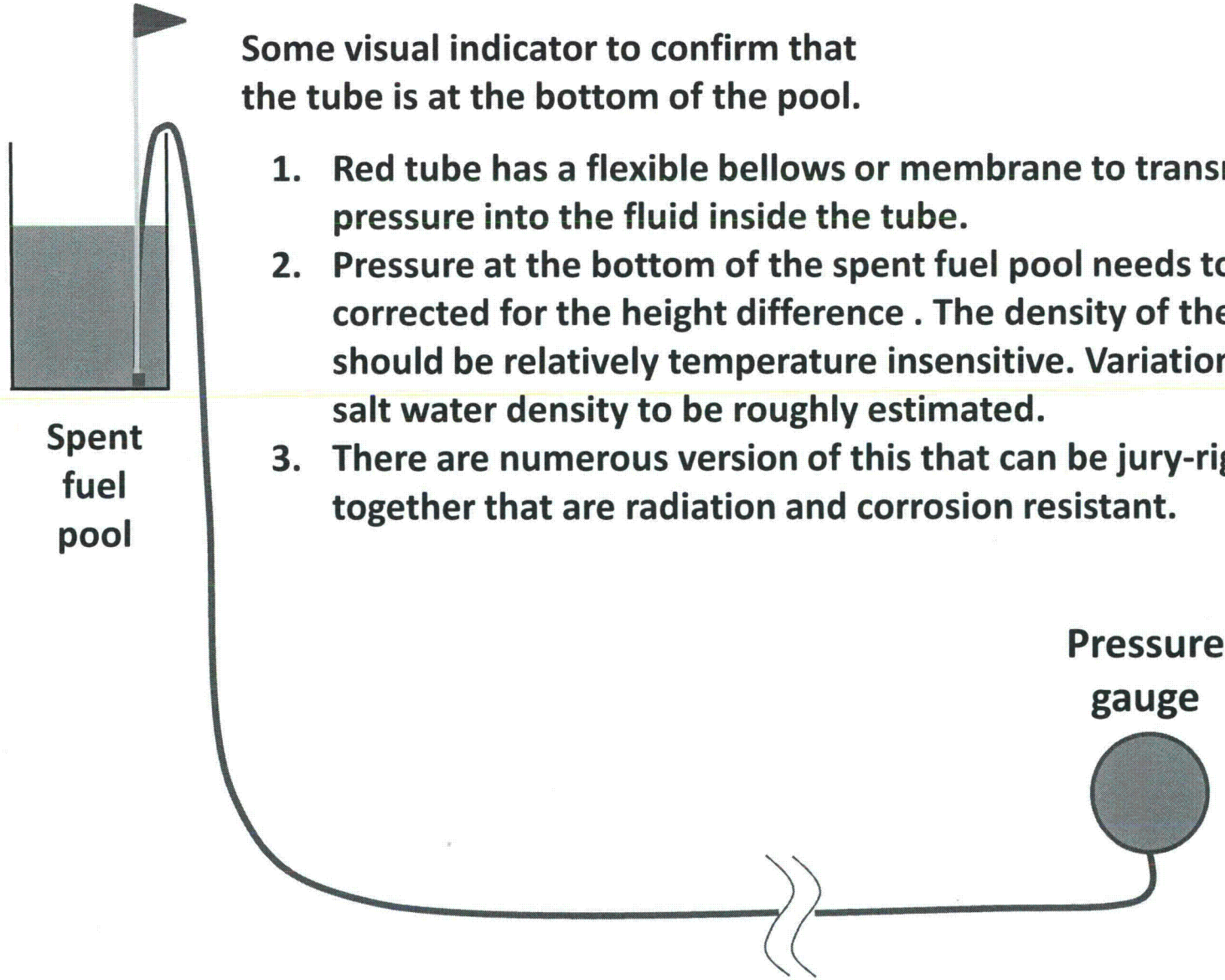
Steven Chu
Department of Energy

-----Original Message-----
From: Peltz, James On Behalf Of Kelly, John E (NE)
Sent: Thursday, March 24, 2011 5:31 PM
To: DL-NITsolutions
Subject: Final Presentation for Science Council

Enclosed is the final presentation.

CH/305

One example of a water level sensor I proposed at this morning's DOE tag-up meeting (3-24-2011)



Some visual indicator to confirm that the tube is at the bottom of the pool.

1. **Red tube has a flexible bellows or membrane to transmit pressure into the fluid inside the tube.**
2. **Pressure at the bottom of the spent fuel pool needs to be corrected for the height difference . The density of the fluid should be relatively temperature insensitive. Variations in salt water density to be roughly estimated.**
3. **There are numerous version of this that can be jury-rigged together that are radiation and corrosion resistant.**

From: Sheron, Brian
To: Rothschild, Trip
Subject: RE: MSNBC FOIA Request
Date: Thursday, March 24, 2011 5:38:00 PM

Thanks.

From: Rothschild, Trip
Sent: Thursday, March 24, 2011 5:28 PM
To: Sheron, Brian
Subject: RE: MSNBC FOIA Request

I forwarded your message to Pat Hirsch in OGC and we will get back to you. I understand your concerns.

From: Sheron, Brian
Sent: Thursday, March 24, 2011 5:26 PM
To: Rothschild, Trip
Subject: FW: MSNBC FOIA Request

Trip, can we get some help from OGC on this one too? I have no problem giving the person the information, but going through 600+ emails to determine what's OUO, etc., is a very time-consuming job, and I'm up to my ears in Japanese response activities.

From: Parks, Jazel
Sent: Thursday, March 24, 2011 5:18 PM
To: Sheron, Brian
Subject: RE: MSNBC FOIA Request

☹

I'll get back to you on how I want them. I am suppose to be having a brain storming session with Tom and John.

The requestor said he wanted the documents on a CD but there still needs to be a line by line review and exemptions if we are withholding documents and/or sections of documents

I think Brett and some other senior staff in PMDA could go thru your emails (I don't want to) but I have to see who has availability because people are going to be working in the OPS center.

From: Sheron, Brian
Sent: Thursday, March 24, 2011 5:14 PM
To: Parks, Jazel
Subject: FW: MSNBC FOIA Request
Importance: High

CH/306

Jazel, I need some guidance.

1,) I have probably about 600 e-mails that are in my in box or sent box between the dates

requested.

2.) Many of them may need to be withheld because they are OUO or for other reasons. Who is going to go through them and make that determination?

3.) How do you want them? I hope you don't expect me to print them all out. Many have extensive attachments, and if I printed everything out we are talking probably thousands of pages.

From: Coyne, Kevin
Sent: Thursday, March 24, 2011 4:33 PM
To: Parks, Jazel
Cc: Coe, Doug; Kardaras, Tom; Sheron, Brian; Uhle, Jennifer; Valentin, Andrea
Subject: MSNBC FOIA Request
Importance: High

Jazel –

I just received an MSNBC FOIA request for all incoming and outgoing email correspondence from March 11-18, 2011. I wanted to provide you a quick estimate of the time it will take to process the request.

I receive approximately 100 or more emails every day, many of them include one or more attachments. Similarly, I send 50 or more emails in a typical day. Since the FOIA covers 6 working days, this is approximately 900 emails and associated attachments that need to be reviewed prior to release (and I am sure that others listed on the FOIA have more than this to review...). Since many of the emails I receive and send deal with information that would not be subject to release under a FOIA (e.g., emails involving personnel health issues for the employees I supervise) or involve sensitive contracting information, the review must be comprehensive to ensure that I don't improperly release either sensitive information or PII. Conservatively assuming 1 minute to review each email against the FOIA exception criteria, it would take 15 hours of dedicated effort to review these 900 emails.

I am on foreign travel to support a WGRisk meeting next week and am acting for Doug Coe tomorrow; therefore I will not be able to address this request until I return from foreign travel on April 4. Even then, it is unlikely that I will be able to apply every working minute to processing this request. Consequently, I will be unable to meet the ten working day time limit. Please advise.

Kevin

Kevin Coyne, P.E., Ph.D.
Chief, Probabilistic Risk Assessment Branch
Division of Risk Analysis, Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
(301) 251-7586 (work)
(b)(6) *(cell)*

From: Sheron, Brian
To: Dacus, Eugene
Subject: RE: House E&C request
Date: Thursday, March 24, 2011 5:44:00 PM

Call my secretary, Shirley Flory, and have her put it on my calendar.

From: Dacus, Eugene
Sent: Thursday, March 24, 2011 5:32 PM
To: Sheron, Brian
Subject: RE: House E&C request

Great. I'll get back to you as soon as I confirm with Jeff Baran

From: Sheron, Brian
Sent: Thursday, March 24, 2011 5:01 PM
To: Dacus, Eugene
Cc: Powell, Amy; Schmidt, Rebecca
Subject: RE: House E&C request

I should be available between 1pm and 3 pm.

From: Dacus, Eugene
Sent: Thursday, March 24, 2011 4:25 PM
To: Sheron, Brian
Cc: Powell, Amy; Schmidt, Rebecca
Subject: FW: House E&C request

Brian,

See trail below. Can you accommodate a call tomorrow? If so, what times work best for you?

Gene

From: Baran, Jeff [mailto:Jeff.Baran@mail.house.gov]
Sent: Thursday, March 24, 2011 4:05 PM
To: Dacus, Eugene
Subject: Re: House E&C request

Thanks, Gene. I think a brief call with Brian about SOARCA would be helpful. It would be good to get a sense of whether this is something we'd want to get a detailed briefing on down the road. Right now, I'm available anytime tomorrow if that would work for Brian.

Jeff

From: Dacus, Eugene [mailto:Eugene.Dacus@nrc.gov]
Sent: Thursday, March 24, 2011 02:50 PM
To: Baran, Jeff; Dotson, Greg; Cassady, Alison
Cc: Powell, Amy <Amy.Powell@nrc.gov>

CH/307

Subject: FW: House E&C request

Jeff,

I thought I would be able to get you the document (SOARCA) that Brian referred to in his briefing, but unfortunately, the SOARCA is still in very rough draft and the staff feels that releasing it in its current form would be too problematic. Currently, the staff doesn't have an estimate of when the SOARCA analysis will be released. Background the SOARCA process and the three plant studied is located in NUREG 1925, Rev 1, Chapter 3: Severe Accident Research and Consequence Analysis. If you have specific questions about the SOARCA and you think a call from Brian would help, let me know and I'll set it up.

http://www.internal.nrc.gov/RES/RES%20NUREG-1925_Rev_1.pdf

Gene