From: Kreuter, Jane
Sent: Monday, March 21, 2011 11:32 AM
To: LIA03 Hoc
Subject: Traveler -Emergency Contact

I need to complete the emergency contact sheet for the briefing books. Michael Scott should be picking up 2 books sometime today to take for himself and Al Blamey since they leave tomorrow, correct? Any updates? Do you want me to contact them? Thanks.

Jane A. Kreuter
U.S. Nuclear Regulatory Commission
Office of International Programs
Phone: 301-415-1780
Fax: 301-415-2395
E-Mail: Jane.Kreuter@nrc.gov

KKKK-1

From: Beall, James
To: Ruland, William
Subject: "really important coolant"?
Date: Friday, March 11, 2011 12:05:57 PM

I had sent the below to Breskovic, after he sent out a gazillion PRs. He used it a few minutes ago.

I just wonder what the "really important coolant" was!

++++++++++++

3.40am Reports indicate the situation at the **Fukushima Daiichi nuclear plant is "under control".** The World Nuclear Association has said it understands that water is now being pumped into its cooling system. Reuters has also reported the US has transported emergency coolant to the plant. US Secretary of State Hillary Clinton said:

> We just had our Air Force assets in Japan transport some really important coolant to one of the nuclear plants. You know Japan is very reliant on nuclear power and they have very high engineering standards, but one of their plants came under a lot of stress with the earthquake and didn't have enough coolant.

Read more: http://www.news.com.au/world/magnitude-quake-strikes-japan/story-e6frfkyi-1226019903430#ixzz1GJJHAoyj

From: Ruland, William
Sent: Friday, March 11, 2011 12:04 PM
To: Beall, James
Subject: RE: Japan earthquakes

It was DE last time. We, DSS, where in a small support role.

Bill

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

Bill –

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

KKKK-2

and NRC) will need to be compared to the more recent data, etc.

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

jim

福島第一原子力発電所　プラント関連パラメータ
3月27日　14:00現在

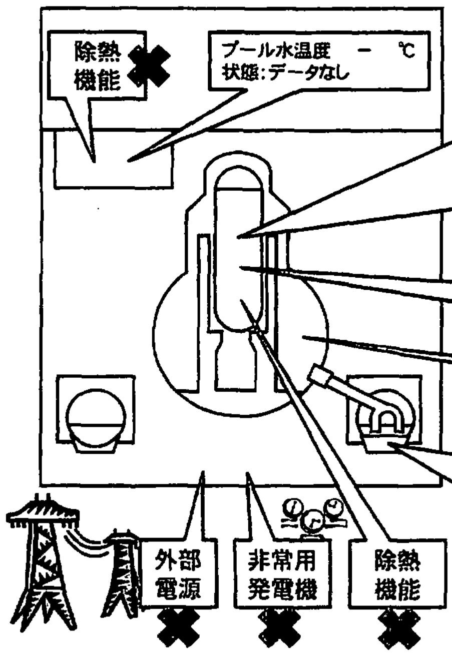
※1：計器不良
※2：データ採取対象外

号機	1u	2u	3u	4u	5u	6u
注水状況	給水ラインを用いた淡水注入中。 流量 120l/min (3/25 15:37) 仮設計器	消火系ラインを用いた淡水注入中。 流量 270~280l/min (3/26 17:22) 仮設計器	消火系ラインを用いた淡水注入中。 流量 220l/min (3/26 18:00) 仮設計器	停止中	停止中	停止中
原子炉水位	燃料域A：−1650mm 燃料域B：−1600mm (3/27 9:00現在)	燃料域A：−1200mm (3/27 9:00現在)	燃料域A：−1900mm 燃料域B：−2300mm (3/27 10:10現在)	※2	停止域 1930mm (3/27 14:00現在)	停止域 2035mm (3/27 14:00現在)
原子炉圧力	0.374MPa g (A) 0.416MPa g (B) (3/27 9:00現在)	−0.018MPa g (A) −0.020MPa g (B) (3/27 9:00現在)	0.032MPa g (A) −0.099MPa g (C) (3/27 10:10現在)	※2	0.007MPa g (3/27 14:00現在)	0.005MPa g (3/27 14:00現在)
原子炉水温度	(系統流量がないため採取不可)			※2	30.3℃ (3/27 14:00現在)	29.1℃ (3/27 14:00現在)
原子炉圧力容器温度	給水ノズル温度：224.8℃ 圧力容器下部温度：143.4℃ (3/27 9:00現在)	給水ノズル温度：123.6℃ 圧力容器下部温度 111.2℃ (3/27 9:00現在)	給水ノズル温度：13.6℃(調査中) 圧力容器下部温度：121.6℃ (3/27 10:10現在)	4u:原子炉内に発熱体（燃料）なし 5,6u:原子炉水温度にて監視中		
D/W・S/C圧力	D/W 0.270MPa abs S/C 0.270MPa abs (3/27 9:00現在)	D/W 0.110MPa abs S/C ダウンスケール(調査中) (3/27 9:00現在)	D/W 0.1076MPa abs S/C 0.1806MPa abs (3/27 10:10現在)	※2		
CAMS	D/W 3.46×10^{1}Sv/h S/C 2.22×10^{1}Sv/h (3/27 9:00現在)	D/W 4.16×10^{1}Sv/h S/C 1.41×10^{0}Sv/h (3/27 9:00現在)	D/W 3.37×10^{1}Sv/h S/C 1.31×10^{0}Sv/h (3/27 10:10現在)	※2		
D/W設計使用圧力	0.384MPa g(0.485MPa abs)	0.384MPa g(0.485MPa abs)	0.384MPa g(0.485MPa abs)	※2		
D/W最高使用圧力	0.427MPa g(0.528MPa abs)	0.427MPa g(0.528MPa abs)	0.427MPa g(0.528MPa abs)			
使用済燃料プール	※1	67℃ (3/27 9:00現在)	※1	※1	37.8℃ (3/27 14:00現在)	21.0℃ (3/27 14:00現在)
FPCスキマーサージタンクレベル	4500mm (3/27 9:00現在)	5750mm (3/27 9:00現在)	※1	5850mm (3/27 10:10 現在)	※2	
電源	外部電源受電中（P/C2C）		外部電源受電中（P/C4D）		外部電源受電中	
その他情報	・3号機 原子炉圧力容器温度について、データ採取を行い、状況推移を継続調査中。 ・2号機 S/C圧力について、状況推移を継続調査中。			共用プール： 39℃程度（3/27 08:00）		

圧力換算　ゲージ圧(MPa g)　＝　絶対圧(MPa abs)　－　大気圧(標準大気圧 0.1013 MPa)
絶対圧(MPa abs)　＝　ゲージ圧(MPa g)　＋　大気圧(標準大気圧 0.1013 MPa)

100

福島第一原子力発電所1号機の状況
（3月27日　14:00現在）



原子炉圧力A　0．475MPa※
原子炉圧力B　0．517Mpa※
状態:大きな変動なし
※:絶対圧に換算

原子炉水位A　−1650mm
原子炉水位B　−1600mm
状態:燃料頂部から上記水位が冠水していない。

原子炉水温度　−　℃
状態:データなし

原子炉圧力容器温度:
給水ノズル温度　224．8℃
圧力容器下部温度　143．4℃

原子炉格納容器圧力 0．270MPa
状態:大きな変動なし

S／P水温　−　℃
状態:データなし

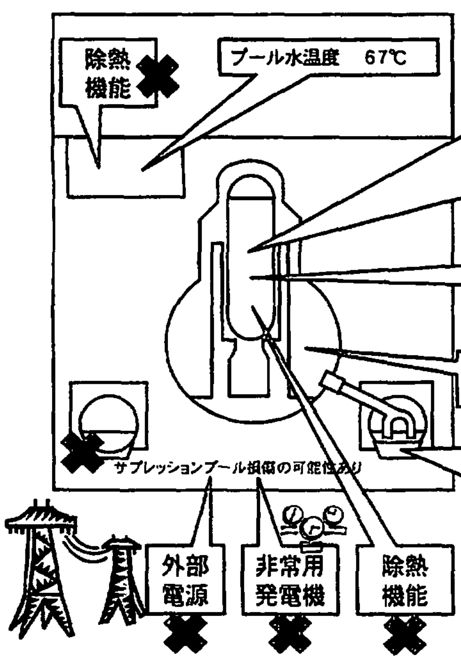
S／P圧力　0．270MPa
状態:大きな変動なし

発生後の主要なできごと

11日14:46　運転中、地震により自動停止
11日15:42　10条通報(全交流電源喪失)
11日16:36　15条事象の発生
(非常用炉心冷却装置注水不能)
12日01:20　15条事象の発生
(格納容器圧力異常上昇)
12日10:17　ベント開始
12日15:36　爆発音
12日20:20　海水及びホウ酸の炉心注入開始
23日02:33　消火系に加え、給水系を使うことにより炉心への注水量を増量
($2m^3/h \rightarrow 18m^3/h$)。9:00に給水系のみに切替($18m^3/h \rightarrow 11m^3/h$)
24日11:30　中央制御室の照明復帰
25日15:37　淡水の炉心注入開始

現状:炉心への淡水注入を継続

福島第一原子力発電所2号機の状況
（3月27日　14:00現在）



原子炉圧力A　0．083MPa※
原子炉圧力B　0．081Mpa※
状態:大きな変動なし
※:絶対圧に換算

原子炉水位A　−1200mm
状態:燃料頂部から上記水位が冠水していない。

原子炉水温度　−　℃
状態:データなし

原子炉圧力容器温度:
給水ノズル温度　123．6℃
圧力容器下部温度　111．2℃

原子炉格納容器圧力　0．110MPa
状態:大きな変動なし

S／P水温　−　℃
状態:データなし

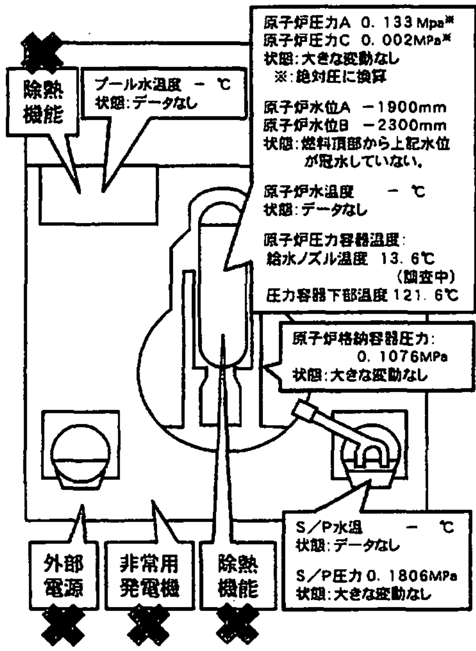
S／P圧力　−　MPa
状態:ダウンスケール(調査中)

発生後の主要なできごと

11日14:46　運転中、地震により自動停止
11日15:42　10条通報(全交流電源喪失)
11日16:36　15条事象の発生
(非常用炉心冷却装置注水不能)
13日11:00　ベント開始
14日13:25　15条事象の発生
(原子炉冷却機能喪失)
14日16:34　海水の炉心注入開始
14日22:50　15条事象の発生
(格納容器圧力異常上昇)
15日0:02　ベント開始
15日06:10　爆発音発生
15日06:20頃　サプレッションプール(圧力抑制室)損傷の可能性あり
20日15:05〜17:20　使用済燃料プール冷却系(FPC)から使用済燃料プール(SFP)に約40tの海水を注水
20日15:46　パワーセンター受電
21日18:22　白煙が発生。22日7:11にほとんど見えない程度に減少
22日16:07　SFPに約18tの海水を注水
25日10:30〜12:19　FPCからSFPに海水を注水
26日10:10　淡水の炉心注入開始
26日16:46　中央制御室の照明復帰

現状:プールへの海水及び炉心への淡水注入を継続

福島第一原子力発電所3号機の状況
（3月27日　14:00現在）



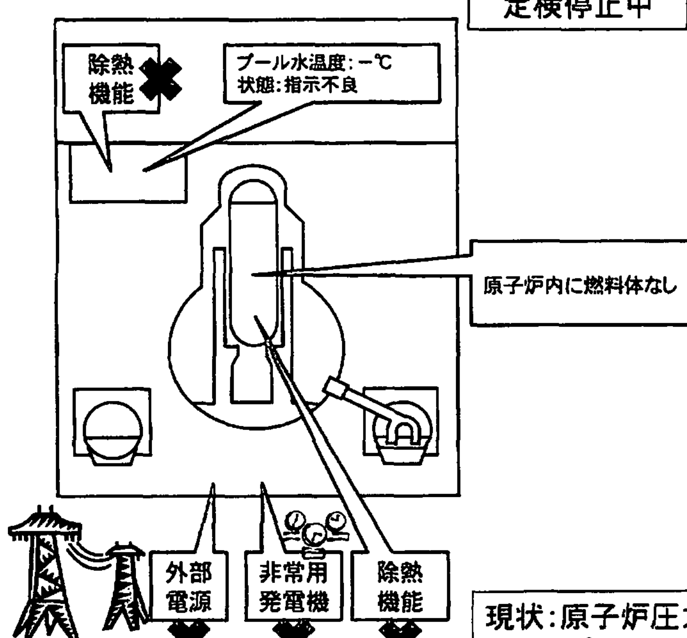
発生後の主要なできごと

11日14:46　運転中、地震により自動停止
11日15:42　10条通報（全交流電源喪失）
12日20:41　ベント開始
13日05:10　15条事象の発生（非常用炉心冷却装置注水不能）
13日08:41　ベント開始
13日13:12　海水及びホウ酸の炉心注入開始
14日05:20　ベント開始
14日07:44　15条事象の発生（格納容器圧力異常上昇）
14日11:01　爆発音
16日08:30頃　白煙が発生
17日09:48～10:01　自衛隊ヘリによる放水
17日19:05～19:15　警察の高圧放水車による散水
17日19:35～20:09　自衛隊の消防車により放水
18日14時前～14:38　自衛隊消防車6台による地上放水～14:45　米軍消防車1台による地上放水
19日0:30～01:10　東京消防庁ハイパーレスキュー隊放水
19日14:10～20日3:40　東京消防庁ハイパーレスキュー隊放水
20日 11:00　格納容器内圧力が上昇（320kPa）。その後、低下。
20日21:36～21日3:58　東京消防庁ハイパーレスキュー隊放水
21日15:55頃　灰色がかった煙が発生。17:55に煙が収まっていることを確認
22日15:10～16:00　東京消防庁ハイパーレスキュー隊及び大阪市消防局放水
22日22:46　中央制御室の照明復帰
23日11:03-13:20 使用済燃料プール冷却系(FPC)から使用済燃料プール(SFP)に約35tの海水を注水
23日16:20頃　黒煙が発生。23:30頃及び24日4:50に煙の発生が止んでいることを確認。
24日05:35～16:05　FPCからSFPに約120tの海水を注水
25日13:28～16:00　東京消防庁の支援を受けた川崎市消防局による放水
25日18:02　淡水の炉心注入開始
27日12:34～14:36 コンクリートポンプ車による放水

現状：
プールへの海水注入及び炉心への淡水注入を継続

福島第一原子力発電所4号機の状況
（3月27日　14:00現在）

定検停止中



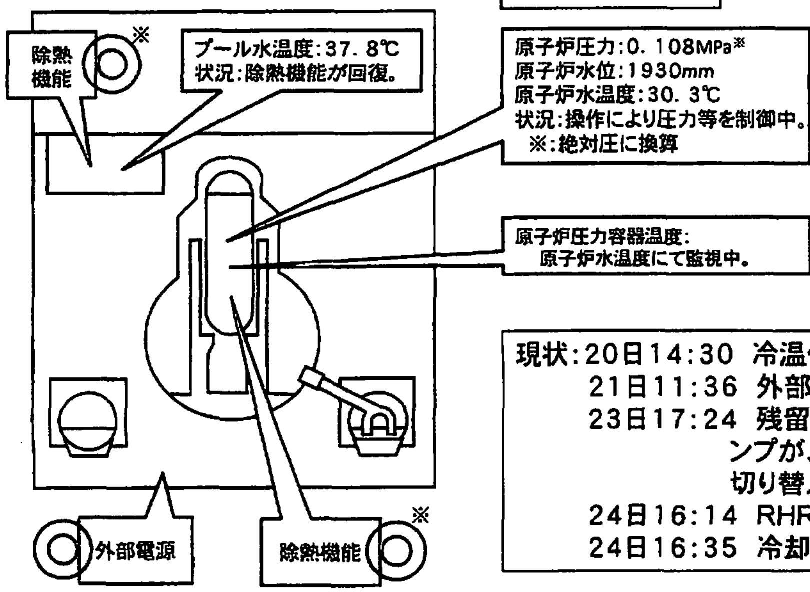
発生後の主要なできごと

地震発生時、定期検査により停止中
14日04:08　使用済燃料プール温度84℃
15日06:14　4Fの壁が一部破損の確認
15日09:38　3階部分で火災(12:25鎮火)
16日05:45　4号機で火災。事業者によると現場での火は確認できず(06:15)
20日08:21～9:40　自衛隊による使用済燃料プール（SFP）への放水
20日18:30頃 ～ 19:46　自衛隊によるSFPへの放水
21日06:37～08:41　自衛隊によるSFPへの放水
21日15:00頃　パワーセンターまでのケーブル敷設完了
22日10:35　パワーセンター受電
22日17:17～20:32　コンクリートポンプ車による放水
23日10:00～13:02　コンクリートポンプ車による放水
24日14:36～17:30　コンクリートポンプ車による放水
25日06:05～10:20　使用済燃料プール冷却系（FPC）からSFPに海水を注入
25日19:05～22:07 コンクリートポンプ車による放水

現状：原子炉圧力容器に燃料体が存在しない
プールへの海水注入を継続

福島第一原子力発電所5号機の状況
（3月27日　14:00現在）

定検停止中

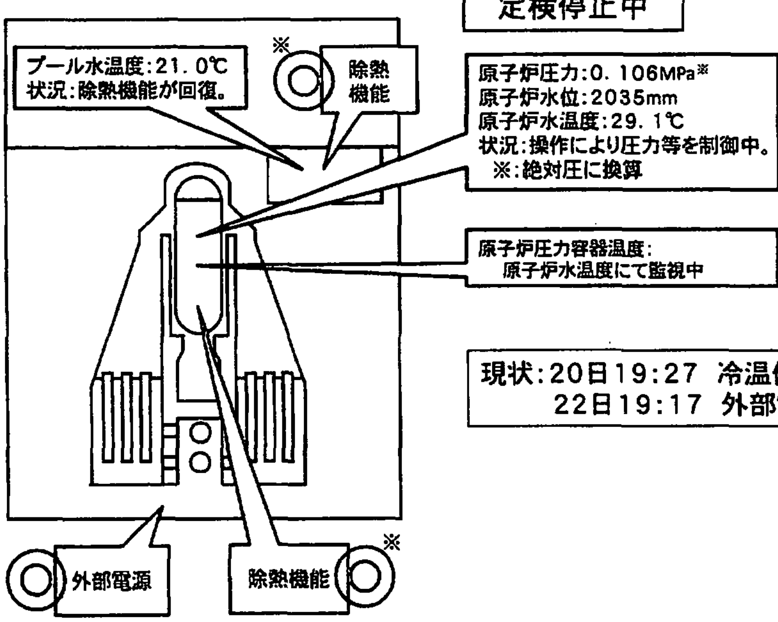


現状:20日14:30　冷温停止。
21日11:36　外部電源から受電開始。
23日17:24　残留熱除去海水系(RHRS)ポンプが、仮設から本設の電源への切り替えの際に自動停止。
24日16:14　RHRSポンプの修理完了。
24日16:35　冷却開始。

※　炉水とプール水を切替えて除熱

福島第一原子力発電所6号機の状況
（3月27日　14:00現在）

定検停止中



現状:20日19:27　冷温停止。
22日19:17　外部電源から受電開始。

※　炉水とプール水を切替えて除熱

測定場所　①事務本館北(2号機より北西約0．5キロ)　②体育館付近(MP－5東側)(2号機より西北西約0．9キロ)
③西門付近 (MP-5付近)(2号機より西約1．1キロ)　④正門付近前(MP-6付近)(2号機より西南西約1．0キロ)
⑤免震棟前(2号機より北西約0．5キロ)　⑥事務本館南側　⑦正門
MC:モニタリングカー　可搬:可搬型MP

3月27日　福島第一(1F)

測定場所		③																							
時間		12:00	12:10	12:20	12:30	12:40	12:50	13:00	13:10	13:20	13:30	13:40	13:50	14:00	14:10	14:20	14:30	14:40	14:50	15:00	15:10	15:20	15:30	15:40	15:50
MC	測定値(μSv/h)	134.6	134.6	134.4	134.3	134.4	134.0	134.0	134.0	133.9	133.8	133.6	133.6	133.4	133.2	133.2	133.1								
	中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D								
可搬	⑥本館南(μSv/h)	1,210	−	−	1,200	1,200	1,200	1,200	1,200	1,200	1,190	1,190	1,190	1,190	1,190	1,200	1,190								
	⑦正門(μSv/h)	205	−	−	207	209	209	204	205	205	203	205	205	206	204	205	201								
	③西門(μSv/h)	94	−	−	94.8	92.2	93.1	93	92.9	92.6	92	90.7	92.9	90.8	92.2	91.6	91								
風向		北西	北西	西北西	西北西	西	西北西	西北西	西北西	北西	西北西	西北西	西	西北西	西	西	西								
風速(m/s)		1.6	1.9	2.5	1.9	1.9	1.9	2.1	0.3	2.0	2.5	2.0	2.3	2.4	0.7	2.2	0.4								

測定場所		③																							
時間		16:00	16:10	16:20	16:30	16:40	16:50	17:00	17:10	17:20	17:30	17:40	17:50	18:00	18:10	18:20	18:30	18:40	18:50	19:00	19:10	19:20	19:30	19:40	19:50
MC	測定値(μSv/h)																								
	中性子																								
可搬	⑥本館南(μSv/h)																								
	⑦正門(μSv/h)																								
	③西門(μSv/h)																								
風向																									
風速(m/s)																									

測定場所		③																							
時間		20:00	20:10	20:20	20:30	20:40	20:50	21:00	21:10	21:20	21:30	21:40	21:50	22:00	22:10	22:20	22:30	22:40	22:50	23:00	23:10	23:20	23:30	23:40	23:50
MC	測定値(μSv/h)																								
	中性子																								
可搬	⑥本館南(μSv/h)																								
	⑦正門(μSv/h)																								
	③西門(μSv/h)																								
風向																									
風速(m/s)																									

/

3月27日 福島第一(1F)

測定場所 ①事務本館北(2号機より北西約0．5キロ) ②体育館付近(MP－5東側)(2号機より西北西約0．9キロ)
③西門付近 (MP-5付近)(2号機より西約1．1キロ) ④正門付近前(MP-6付近)(2号機より西南西約1．0キロ)
⑤免震棟前(2号機より北西約0．5キロ) ⑥事務本館南側 ⑦正門
MC:モニタリングカー 可搬:可搬型MP

測定場所		⑨																							
時間		0:00	0:10	0:20	0:30	0:40	0:50	1:00	1:10	1:20	1:30	1:40	1:50	2:00	2:10	2:20	2:30	2:40	2:50	3:00	3:10	3:20	3:30	3:40	3:50
MC	測定値(μSv/h)	140.3	140.3	140.2	140.1	140.3	140.3	140.3	140.2	140.1	140.1	140.0	140.0	139.9	139.7	139.7	139.7	139.7	139.6	139.4	138.3	138.3	139.2	137.7	137.5
	中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
可搬	⑥本館南(μSv/h)	1,310	–	–	1,320	–	–	1,310	–	–	1,310	–	–	1,310	–	–	1,310	–	–	1,300	–	–	1,300	–	–
	⑦正門(μSv/h)	210	–	–	214	–	–	210	–	–	210	–	–	210	–	–	211	–	–	209	–	–	212	–	–
	③西門(μSv/h)	102	–	–	99.5	–	–	101	–	–	101	–	–	98.3	–	–	99.9	–	–	100	–	–	100	–	–
風向		北西	北西	北北西	北西	北西	北西	北西	北北西	北西	北西	北北東	西	南	西	西	北西	西	西北西	北西	西	北西	西	西	西
風速(m/s)		1.1	1.0	0.6	0.5	0.5	0.8	0.7	0.7	0.8	0.6	0.4	0.3	0.5	0.5	0.4	0.5	1.4	1.6	2.0	1.5	0.9	1.2	1.5	1.4

測定場所		⑨																							
時間		4:00	4:10	4:20	4:30	4:40	4:50	5:00	5:10	5:20	5:30	5:40	5:50	6:00	6:10	6:20	6:30	6:40	6:50	7:00	7:10	7:20	7:30	7:40	7:50
MC	測定値(μSv/h)	137.5	137.5	137.4	137.5	137.4	137.3	137.1	137.2	136.9	137.0	136.7	136.7	136.6	136.6	136.6	136.2	136.4	136.2	136.3	136.2	136.1	136.0	136.0	135.8
	中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
可搬	⑥本館南(μSv/h)	1,300	–	–	1,310	–	–	1,300	–	–	1,290	–	–	1,290	–	–	1,280	–	–	1,290	–	–	1,280	–	–
	⑦正門(μSv/h)	208	–	–	208	–	–	211	–	–	208	–	–	209	–	–	210	–	–	209	–	–	211	–	–
	③西門(μSv/h)	99.8	–	–	99.2	–	–	98	–	–	98.4	–	–	98.9	–	–	97.8	–	–	98.6	–	–	98.4	–	–
風向		西	北西	南西	西	北西	北西	南	北	北東	北	北	北	東北東	北東	東北東	北北西	北西	北西	西北西	西南西	西北西	西北西	西	西
風速(m/s)		1.2	1.2	1.4	1.1	1.0	1.0	0.7	0.5	0.6	0.7	0.6	0.4	0.5	0.5	0.4	0.5	0.5	1.7	2.2	1.7	2.3	2.0	2.3	2.4

測定場所		⑨																							
時間		8:00	8:10	8:20	8:30	8:40	8:50	9:00	9:10	9:20	9:30	9:40	9:50	10:00	10:10	10:20	10:30	10:40	10:50	11:00	11:10	11:20	11:30	11:40	11:50
MC	測定値(μSv/h)	135.8	135.8	135.7	135.6	135.6	135.4	135.5	135.4	135.4	135.3	135.4	135.5	135.1	135.1	135.1	135.0	134.8	134.9	134.7	134.6	135.1	134.6	134.5	134.6
	中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
可搬	⑥本館南(μSv/h)	1,280	–	–	1,260	–	–	1,250	–	–	1,240	–	–	1,230	–	–	1,230	–	–	1,230	–	–	1,100	–	–
	⑦正門(μSv/h)	208	–	–	208	–	–	208	–	–	209	–	–	209	–	–	206	–	–	209	–	–	207	–	–
	③西門(μSv/h)	97.5	–	–	97.9	–	–	96	–	–	95	–	–	95.7	–	–	96.5	–	–	94.1	–	–	94.6	–	–
風向		北	西南西	西	西	北西	西	北	西	南西	西北西	北北西	西	西	西	西	北	北西	西	北東	西北西	北	北西	北北西	北西
風速(m/s)		2.0	1.8	2.5	2.0	1.8	2.1	2.0	2.1	2.2	1.8	1.8	0.5	1.3	1.9	1.3	1.7	1.9	1.7	1.2	1.5	1.8	1.8	2.0	1.9

測定場所　①事務本館北(2号機より北西約0．5キロ)　②体育館付近(MP－5東側)(2号機より西北西約0．9キロ)

3月26日　福島第一(1F)　③西門付近 (MP-5付近)(2号機より西約1．1キロ)　④正門付近前(MP-6付近)(2号機より西南西約1．0キロ)

⑤免震棟前(2号機より北西約0．5キロ)　⑥事務本館南側　⑦正門

MC:モニタリングカー　可搬:可搬型MP

測定場所		③																							
時間		12:00	12:10	12:20	12:30	12:40	12:50	13:00	13:10	13:20	13:30	13:40	13:50	14:00	14:10	14:20	14:30	14:40	14:50	15:00	15:10	15:20	15:30	16:40	16:50
MC	測定値(μSv/h)	146.8	146.8	146.8	146.6	146.8	146.8	146.7	146.7	146.7	146.6	147.2	147.0	146.9	146.9	146.8	146.7	146.7	146.6	146.6	146.2	146.4	146.0	146.0	146.0
MC	中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
可搬	⑥本館南(μSv/h)	1,330	－	－	1,340	－	－	1,340	－	－	1,330	－	－	1,320	－	－	1,320	－	－	1,310	－	－	1,300	－	－
可搬	⑦正門(μSv/h)	221	－	－	222	－	－	220	－	－	221	－	－	222	－	－	220	－	－	217	－	－	218	－	－
可搬	③西門(μSv/h)	欠測	－	－	欠測	－	－	欠測	－	－	欠測	－	－	欠測	－	－	欠測	－	－	欠測	－	－	98.7	－	－
風向		北	西	北西	西	北北西	北	北西	西	北北西	北西	西北西	北西	西北西	西	西北西	北西	北西	北西	北西	北西	北西	北西	北	西
風速(m/s)		2.4	3.7	3.8	4.5	3.4	3.4	3.4	4.3	3.4	3.1	3.4	3.3	3.6	3.5	3.8	3.0	2.6	2.2	2.4	2.4	3.5	2.8	2.6	1.9

測定場所		③																							
時間		16:00	16:10	16:20	16:30	16:40	16:50	17:00	17:10	17:20	17:30	17:40	17:50	18:00	18:10	18:20	18:30	18:40	18:50	19:00	19:10	19:20	19:30	19:40	19:50
MC	測定値(μSv/h)	145.9	145.8	145.8	145.6	145.4	145.4	145.3	145.2	145.2	145.0	145.0	144.6	144.6	144.7	144.4	143.9	144.1	144.2	143.9	143.8	143.6	143.5	143.3	143.4
MC	中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
可搬	⑥本館南(μSv/h)	1,300	－	－	1,300	－	－	1,290	－	－	1,300	－	－	1,290	－	－	1,300	－	－	1,310	－	－	1,300	－	－
可搬	⑦正門(μSv/h)	218	－	－	217	－	－	216	－	－	215	－	－	215	－	－	214	－	－	214	－	－	213	－	－
可搬	③西門(μSv/h)	98	－	－	98	－	－	100	－	－	98	－	－	100	－	－	99	－	－	98	－	－	100	－	－
風向		西北西	北北西	北西	西北西	北西	北西	北北西	西北西	北西	北西	北西	西北西	北西	北西	西北西	西北西	北西	北	北北東	北	北西	北北西	東	北北西
風速(m/s)		2.5	2.3	2.7	2.8	2.8	2.4	2.7	2.6	2.0	2.2	2.2	2.5	2.0	1.7	1.7	1.4	0.7	0.6	0.7	0.6	0.5	0.4	0.3	0.7

測定場所		③																							
時間		20:00	20:10	20:20	20:30	20:40	20:50	21:00	21:10	21:20	21:30	21:40	21:50	22:00	22:10	22:20	22:30	22:40	22:50	23:00	23:10	23:20	23:30	23:40	23:50
MC	測定値(μSv/h)	143.0	143.1	143.0	143.0	142.8	142.9	142.8	142.7	142.8	142.5	142.6	142.0	141.8	141.5	141.3	141.2	141.1	141.1	140.9	140.8	140.8	140.8	140.7	140.4
MC	中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
可搬	⑥本館南(μSv/h)	1,310	－	－	1,310	－	－	1,320	－	－	1,320	－	－	1,310	－	－	1,320	－	－	1,320	－	－	1,310	－	－
可搬	⑦正門(μSv/h)	212	－	－	212	－	－	212	－	－	213	－	－	211	－	－	211	－	－	213	－	－	212	－	－
可搬	③西門(μSv/h)	101	－	－	100	－	－	101	－	－	98.3	－	－	100	－	－	101	－	－	99.5	－	－	98.6	－	－
風向		西北西	西北西	西北西	西	西南西	西	西北西	西北西	西北西	西	西	西南西	西	北	北西	西南西	西	西	西北西	西北西	西	西北西	西北西	西北西
風速(m/s)		1.1	1.4	1.8	2.0	0.8	0.7	1.6	2.2	1.8	0.9	1.5	0.9	1.1	1.3	0.5	0.9	1.5	1.1	1.6	1.7	1.6	1.3	1.0	1.2

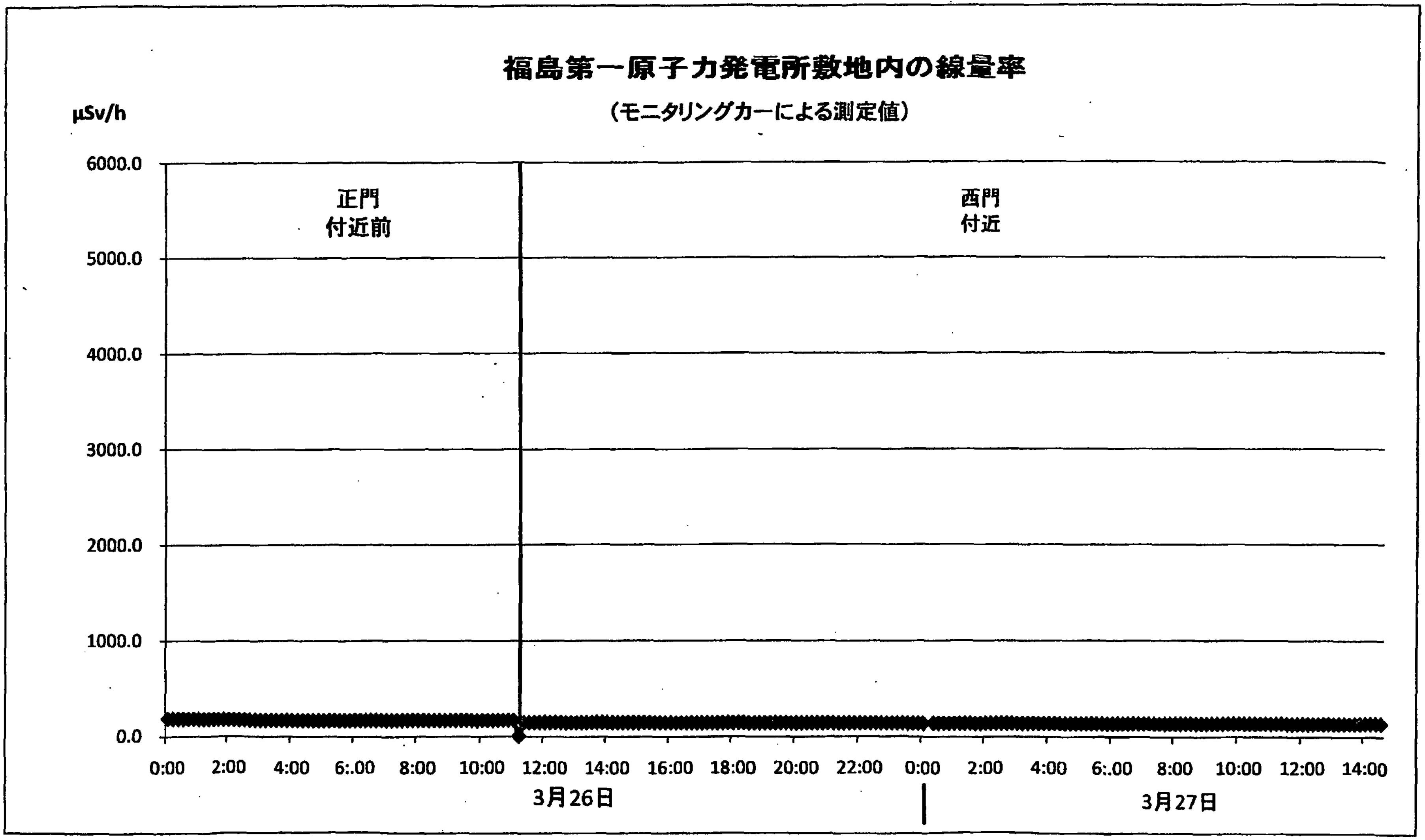
測定場所　①事務本館北(2号機より北西約0．5キロ)　②体育館付近(MP－5東側)(2号機より西北西約0．9キロ)
③西門付近 (MP-5付近)(2号機より西約1．1キロ)　④正門付近前(MP-6付近)(2号機より西南西約1．0キロ)
⑤免震棟前(2号機より北西約0．5キロ)　⑥事務本館南側　⑦正門
MC:モニタリングカー　可搬:可搬型MP

3月26日　福島第一(1F)

測定場所		④																							
時間		0:00	0:10	0:20	0:30	0:40	0:50	1:00	1:10	1:20	1:30	1:40	1:50	2:00	2:10	2:20	2:30	2:40	2:50	3:00	3:10	3:20	3:30	3:40	3:50
MC	測定値(μSv/h)	184.4	184.0	183.8	183.2	182.8	182.7	182.5	182.4	182.3	182.1	181.8	180.8	179.9	178.1	176.6	175.6	174.4	173.0	172.4	171.0	170.7	169.8	169.2	169.5
	中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
可搬	⑥本館南(μSv/h)	1,460	－	－	1,460	－	－	1,450	－	－	1,440	－	－	1,440	－	－	1,420	－	－	1,390	－	－	1,370	－	－
	⑦正門(μSv/h)	241	－	－	238	－	－	235	－	－	235	－	－	233	－	－	230	－	－	224	－	－	221	－	－
	③西門(μSv/h)	117	－	－	117	－	－	114	－	－	115	－	－	114	－	－	110	－	－	109	－	－	108	－	－
風向		北西	北西	西	北西	北北西	北北西	北西	北西	西	北西	北西	北西	北	北北西	北北西	北	北北西	北	北	北北西	北北西	北西	北西	北西
風速(m/s)		2.3	1.8	2.5	2.2	2.6	3.2	3.2	2.7	2.4	2.7	1.9	3.0	5.3	4.0	2.9	3.5	3.2	5.0	5.9	3.7	3.0	3.0	2.7	2.9

測定場所		④																							
時間		4:00	4:10	4:20	4:30	4:40	4:50	5:00	5:10	5:20	5:30	5:40	5:50	6:00	6:10	6:20	6:30	6:40	6:50	7:00	7:10	7:20	7:30	7:40	7:50
MC	測定値(μSv/h)	169.2	169.1	168.1	167.8	167.1	167.1	166.9	167.1	167.4	167.6	167.8	168.0	169.0	168.0	168.3	169.2	169.6	169.7	169.5	169.0	169.8	170.0	169.9	170.1
	中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
可搬	⑥本館南(μSv/h)	1,370	－	－	1,360	－	－	1,360	－	－	1,370	－	－	1,370	－	－	1,380	－	－	1,370	－	－	1,380	－	－
	⑦正門(μSv/h)	219	－	－	217	－	－	218	－	－	217	－	－	221	－	－	221	－	－	219	－	－	219	－	－
	③西門(μSv/h)	107	－	－	105	－	－	105	－	－	105	－	－	108	－	－	105	－	－	106	－	－	105	－	－
風向		北西	北西	北西	北西	北西	北	北西	北	北北西	北西	北西	北西	北西	西北西	北西	北西	北北西	北西	西北西	西北西	北北西	北西	北	北北西
風速(m/s)		2.6	2.8	2.6	2.3	2.7	3.2	6.1	3.4	3.0	2.7	2.7	2.9	2.5	2.7	2.7	2.5	2.2	2.4	2.3	2.6	2.8	2.3	2.9	2.7

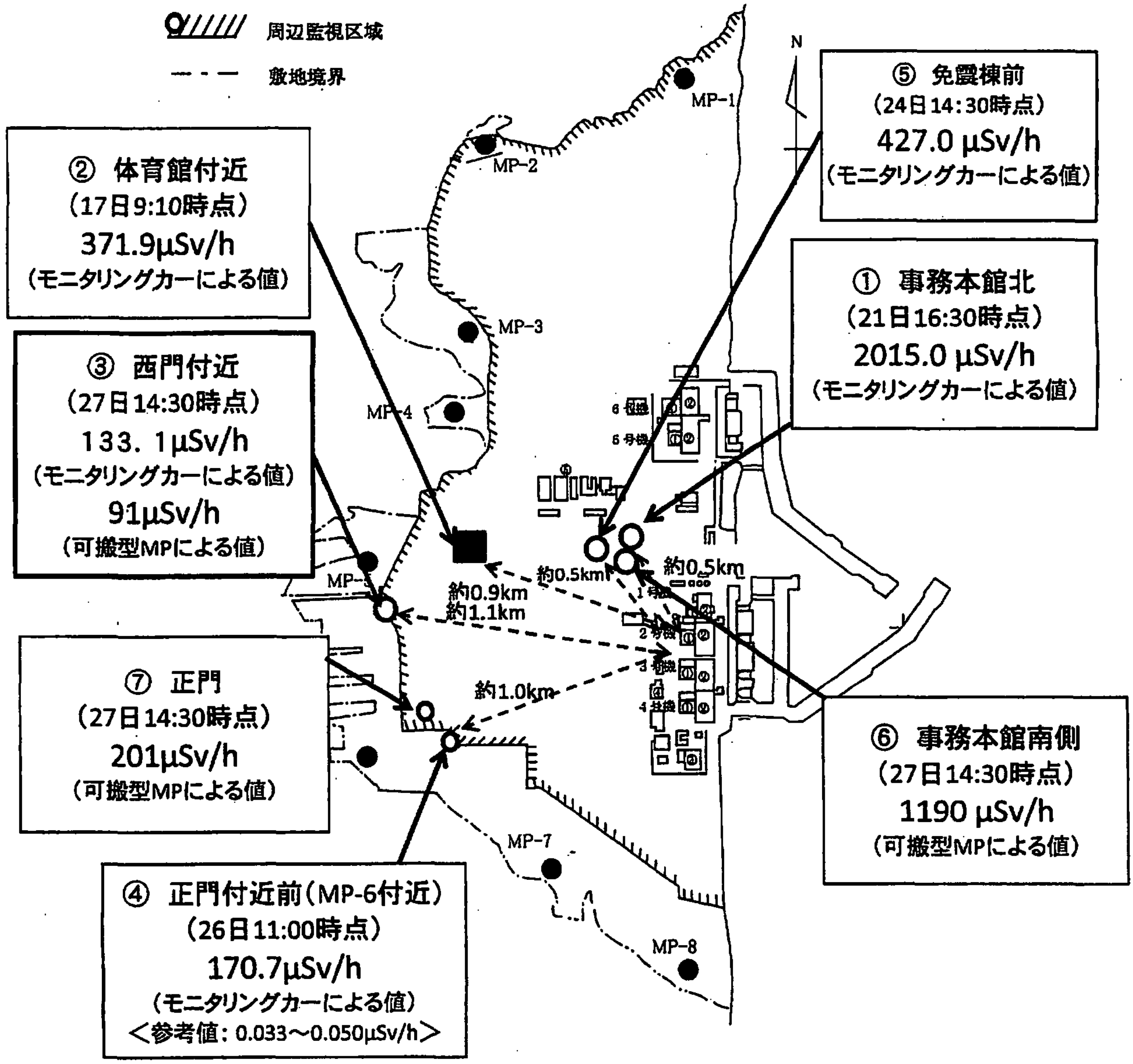
測定場所		④																				⑤			
時間		8:00	8:10	8:20	8:30	8:40	8:50	9:00	9:10	9:20	9:30	9:40	9:50	10:00	10:10	10:20	10:30	10:40	10:50	11:00	11:10	11:20	11:30	11:40	11:50
MC	測定値(μSv/h)	170.3	170.3	170.6	170.7	170.7	170.8	170.8	170.7	170.5	170.6	170.6	170.8	170.5	170.8	170.6	170.5	170.8	170.8	170.7	測定位置変更	146.7	146.7	146.6	146.9
	中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D		N.D	N.D	N.D	N.D
可搬	⑥本館南(μSv/h)	1,380	－	－	1,370	－	－	1,370	－	－	1,360	－	－	1,350	－	－	1,350	－	－	1,340		－	1,350	－	－
	⑦正門(μSv/h)	220	－	－	221	－	－	221	－	－	222	－	－	221	－	－	222	－	－	221		－	220	－	－
	③西門(μSv/h)	107	－	－	106	－	－	105	－	－	104	－	－	103	－	－	欠測	－	－	欠測		－	欠測	－	－
風向		北	北北西	北北西	北北東	北北西	北北西	北北東	北北東	北西	北北西	北	北	北北西	北西	北西	北北西	北北西	西北西	北西		北西	北北西	西	西
風速(m/s)		2.6	2.7	3.5	3.4	2.9	3.0	3.0	3.1	2.8	2.4	2.6	2.5	2.6	2.5	3.9	4.4	3.5	3.8	5.1		2.9	2.6	2.9	3.5



福島第一原子力発電所敷地内の線量率
（モニタリングカーによる測定値）
μSv/h
6000.0
5000.0
4000.0
3000.0
2000.0
1000.0
0.0
正門
付近前
西門
付近
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
3月26日
3月27日

福島第一原子力発電所

2011/3/27
17:30現在



2011/3/27 16:21

福島第二(2F)(事業者のモニタリングポスト)

3月27日																								
モニタリングポスト	12:00	12:10	12:20	12:30	12:40	12:50	13:00	13:10	13:20	13:30	13:40	13:50	14:00	14:10	14:20	14:30	14:40	14:50	15:00	15:10	15:20	15:30	15:40	15:50
MP1(μSv/h)	9.903	9.910	9.947	9.937	9.907	9.887	9.890	9.870	9.863	9.817	9.857	9.850	9.833	9.833	9.830	9.777								
MP2(μSv/h)	5.650	5.613	5.643	5.620	5.653	5.627	5.603	5.620	5.617	5.617	5.597	5.583	5.583	5.593	5.563	5.560								
MP3(μSv/h)	9.313	9.367	9.333	9.333	9.293	9.323	9.267	9.310	9.283	9.277	9.263	9.280	9.277	9.247	9.250	9.267								
MP4(μSv/h)	7.107	7.110	7.113	7.110	7.113	7.107	7.090	7.127	7.110	7.080	7.067	7.053	7.047	7.063	7.043	7.067								
MP5(μSv/h)	6.467	6.467	6.473	6.540	6.467	6.467	6.473	6.467	6.467	6.473	6.473	6.467	6.467	6.467	6.467	6.467								
MP6(μSv/h)	7.747	7.743	7.720	7.717	7.703	7.703	7.740	7.670	7.667	7.680	7.700	7.693	7.683	7.677	7.680	7.657								
MP7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測								
風向	西北西	西	北西	西	西	北西	北西	西北西	北西	西北西	北西	西北西	北西	北西	北北西	北北西								
風速(m/s)	5.8	4.8	3.3	3.6	5.9	5.2	3.6	4.6	4.7	5.8	6.9	6.6	6.5	6.5	8.1	6.6								

3月27日																								
モニタリングポスト	16:00	16:10	16:20	16:30	16:40	16:50	17:00	17:10	17:20	17:30	17:40	17:50	18:00	18:10	18:20	18:30	18:40	18:50	19:00	19:10	19:20	19:30	19:40	19:50
MP1(μSv/h)																								
MP2(μSv/h)																								
MP3(μSv/h)																								
MP4(μSv/h)																								
MP5(μSv/h)																								
MP6(μSv/h)																								
MP7(μSv/h)																								
風向																								
風速(m/s)																								

3月27日																								
モニタリングポスト	20:00	20:10	20:20	20:30	20:40	20:50	21:00	21:10	21:20	21:30	21:40	21:50	22:00	22:10	22:20	22:30	22:40	22:50	23:00	23:10	23:20	23:30	23:40	23:50
MP1(μSv/h)																								
MP2(μSv/h)																								
MP3(μSv/h)																								
MP4(μSv/h)																								
MP5(μSv/h)																								
MP6(μSv/h)																								
MP7(μSv/h)																								
風向																								
風速(m/s)																								

2011/3/27 16:21

福島第二(2F) (事業者のモニタリングポスト)

3月27日																								
モニタリングポスト	0:00	0:10	0:20	0:30	0:40	0:50	1:00	1:10	1:20	1:30	1:40	1:50	2:00	2:10	2:20	2:30	2:40	2:50	3:00	3:10	3:20	3:30	3:40	3:50
MP1(μSv/h)	10.283	10.270	10.257	10.270	10.270	10.273	10.213	10.233	10.267	10.257	10.197	10.240	10.223	10.207	10.183	10.210	10.200	10.190	10.167	10.163	10.173	10.187	10.153	10.127
MP2(μSv/h)	5.863	5.870	5.877	5.870	5.857	5.863	5.870	5.837	5.863	5.850	5.837	5.863	5.830	5.807	5.817	5.833	5.807	5.797	5.833	5.817	5.783	5.823	5.787	5.780
MP3(μSv/h)	9.780	9.783	9.780	9.743	9.730	9.740	9.753	9.690	9.730	9.713	9.737	9.753	9.650	9.727	9.690	9.680	9.687	9.643	9.657	9.677	9.643	9.657	9.633	9.640
MP4(μSv/h)	7.500	7.467	7.487	7.493	7.450	7.457	7.467	7.467	7.437	7.443	7.440	7.423	7.433	7.440	7.440	7.413	7.403	7.380	7.397	7.423	7.397	7.363	7.363	7.370
MP5(μSv/h)	6.867	6.867	6.867	6.867	6.867	6.867	6.867	6.867	6.867	6.847	6.860	6.767	6.813	6.787	6.767	6.820	6.767	6.767	6.813	6.767	6.767	6.767	6.767	6.767
MP6(μSv/h)	8.083	8.077	8.063	8.080	8.037	8.037	8.027	8.023	8.030	8.030	8.027	8.007	7.980	7.993	7.983	8.003	7.990	7.987	7.983	7.957	7.943	7.970	7.927	7.987
MP7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	北西	北西	西北西	西北西	西北西	北西	西北西	北西	西北西	西北西	北西	北西	北西	西北西	西北西	北西	西北西	北西	北西	北西	西北西	北西	北西	北北西
風速(m/s)	7.8	6.7	7.7	6.6	6.9	5.6	5.2	5.0	4.6	7.0	6.8	6.2	6.9	7.1	4.7	4.5	5.2	6.0	6.0	5.3	5.7	6.6	7.7	5.6

3月27日																								
モニタリングポスト	4:00	4:10	4:20	4:30	4:40	4:50	5:00	5:10	5:20	5:30	5:40	5:50	6:00	6:10	6:20	6:30	6:40	6:50	7:00	7:10	7:20	7:30	7:40	7:50
MP1(μSv/h)	10.133	10.133	10.127	10.113	10.097	10.137	10.117	10.093	10.040	10.087	10.083	10.070	10.073	10.080	10.073	10.073	10.007	10.013	10.027	10.027	10.033	9.993	9.993	9.983
MP2(μSv/h)	5.803	5.780	5.780	5.777	5.783	5.753	5.777	5.773	5.727	5.753	5.730	5.747	5.740	5.733	5.750	5.737	5.710	5.723	5.723	5.707	5.683	5.707	5.683	5.723
MP3(μSv/h)	9.637	9.687	9.613	9.570	9.633	9.547	9.587	9.563	9.533	9.520	9.550	9.563	9.570	9.500	9.510	9.547	9.543	9.527	9.473	9.483	9.493	9.483	9.463	9.453
MP4(μSv/h)	7.357	7.363	7.363	7.377	7.350	7.353	7.333	7.327	7.320	7.347	7.327	7.320	7.320	7.283	7.300	7.277	7.297	7.290	7.273	7.257	7.263	7.227	7.267	7.230
MP5(μSv/h)	6.773	6.767	6.767	6.767	6.713	6.747	6.720	6.767	6.667	6.700	6.713	6.740	6.667	6.673	6.673	6.667	6.667	6.673	6.667	6.673	6.667	6.673	6.673	6.667
MP6(μSv/h)	7.957	7.927	7.967	7.933	7.917	7.953	7.907	7.937	7.910	7.917	7.903	7.913	7.903	7.900	7.877	7.890	7.860	7.890	7.870	7.867	7.867	7.857	7.893	7.843
MP7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	北西	北北西	北西	北西	北西	西北西	北西	北西	北西	北西	西北西	西北西	西北西	西北西	西	西北西	西北西	西北西	西北西	西	西北西	西北西	西北西	北西
風速(m/s)	5.4	5.7	4.8	5.5	5.0	5.0	4.4	5.0	4.6	4.9	5.8	7.7	6.9	7.9	8.5	7.4	7.5	5.3	5.3	7.3	7.3	5.5	4.6	5.3

3月27日																								
モニタリングポスト	8:00	8:10	8:20	8:30	8:40	8:50	9:00	9:10	9:20	9:30	9:40	9:50	10:00	10:10	10:20	10:30	10:40	10:50	11:00	11:10	11:20	11:30	11:40	11:50
MP1(μSv/h)	9.970	9.993	9.983	9.960	9.943	9.953	9.937	9.940	9.983	9.920	9.893	9.923	9.920	9.943	9.940	9.920	9.890	9.907	9.913	9.970	10.327	9.997	9.990	9.940
MP2(μSv/h)	5.700	5.697	5.680	5.680	5.687	5.687	5.700	5.643	5.687	5.650	5.637	5.677	5.687	5.640	5.643	5.650	5.670	5.647	5.673	5.643	5.913	5.680	5.670	5.660
MP3(μSv/h)	9.440	9.440	9.453	9.470	9.440	9.467	9.413	9.410	9.433	9.407	9.420	9.410	9.407	9.367	9.397	9.363	9.390	9.360	9.360	9.397	9.360	9.363	9.327	9.313
MP4(μSv/h)	7.270	7.207	7.260	7.200	7.203	7.240	7.223	7.187	7.183	7.177	7.210	7.223	7.180	7.180	7.227	7.173	7.157	7.180	7.153	7.157	7.140	7.137	7.110	7.120
MP5(μSv/h)	6.627	6.640	6.667	6.660	6.673	6.567	6.627	6.567	6.567	6.607	6.567	6.567	6.567	6.567	6.567	6.567	6.567	6.567	6.520	6.567	6.567	6.553	6.520	6.513
MP6(μSv/h)	7.813	7.833	7.823	7.820	7.820	7.790	7.810	7.817	7.800	7.807	7.817	7.833	7.790	7.770	7.770	7.790	7.767	7.737	7.770	7.780	7.753	7.753	7.737	7.703
MP7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	北西	北北西	北北西	北北西	北西	北	北北西	北北東	北東	北北東	北北東	北東	北東	北東	北北東	北	北北西	北	北西	西北西	西北西	西北西	西北西	西北西
風速(m/s)	4.8	3.6	4.7	3.0	2.1	3.9	4.0	1.6	3.3	2.4	2.8	2.2	3.0	1.7	2.8	3.1	3.9	3.0	3.6	2.5	3.0	2.8	3.3	2.1

2011/3/27 16:21

福島第二(2F)（事業者のモニタリングポスト）

3月26日																								
モニタリングポスト	12:00	12:10	12:20	12:30	12:40	12:50	13:00	13:10	13:20	13:30	13:40	13:50	14:00	14:10	14:20	14:30	14:40	14:50	15:00	15:10	15:20	15:30	15:40	15:50
MP1(μSv/h)	10.817	10.807	10.767	10.743	10.757	10.747	10.717	10.743	10.710	10.713	10.727	10.727	10.683	10.660	10.677	10.677	10.667	10.687	10.663	10.673	10.640	10.607	10.610	10.653
MP2(μSv/h)	6.127	6.153	6.123	6.123	6.123	6.137	6.117	6.113	6.113	6.140	6.130	6.100	6.090	6.107	6.087	6.123	6.097	6.123	6.087	6.097	6.090	6.073	6.077	6.087
MP3(μSv/h)	10.157	10.200	10.173	10.170	10.190	10.170	10.187	10.147	10.123	10.170	10.130	10.153	10.110	10.117	10.123	10.080	10.113	10.093	10.103	10.140	10.077	10.073	10.083	10.030
MP4(μSv/h)	7.807	7.827	7.823	7.833	7.810	7.813	7.817	7.803	7.817	7.783	7.757	7.813	7.770	7.743	7.780	7.753	7.763	7.733	7.750	7.753	7.727	7.733	7.747	7.683
MP5(μSv/h)	7.160	7.153	7.153	7.153	7.153	7.160	7.153	7.153	7.160	7.160	7.153	7.113	7.100	7.133	7.107	7.113	7.107	7.160	7.160	7.080	7.153	7.113	7.160	7.053
MP6(μSv/h)	8.357	8.387	8.353	8.333	8.330	8.350	8.353	8.367	8.357	8.370	8.347	8.343	8.323	8.323	8.347	8.293	8.323	8.310	8.337	8.313	8.327	8.327	8.303	8.317
MP7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	4.650	欠測	欠測	欠測	欠測	欠測
風向	北北西	北西	北北西	北北西	北北西	北西	北西	北西	北北西	北西	北西	北西	北西	北西	北西	北北西	北西	北西	北西	北西	北西	北西	北西	西北西
風速(m/s)	13.8	11.1	11.2	13.7	11.6	11.7	11.0	10.5	12.0	9.9	9.4	9.5	11.2	10.2	6.6	6.9	6.7	6.8	3.8	5.1	6.2	4.5	5.5	4.4

3月26日																								
モニタリングポスト	16:00	16:10	16:20	16:30	16:40	16:50	17:00	17:10	17:20	17:30	17:40	17:50	18:00	18:10	18:20	18:30	18:40	18:50	19:00	19:10	19:20	19:30	19:40	19:50
MP1(μSv/h)	10.587	10.637	10.600	10.590	10.543	10.583	10.590	10.570	10.557	10.553	10.543	10.500	10.537	10.573	10.520	10.520	10.510	10.473	10.487	10.500	10.427	10.503	10.457	10.460
MP2(μSv/h)	6.060	6.073	6.067	6.070	6.030	6.080	6.063	6.057	6.053	6.007	6.020	6.017	6.020	6.023	6.017	5.983	6.013	5.997	6.030	5.967	6.010	6.000	5.970	5.973
MP3(μSv/h)	10.070	10.043	10.070	10.063	10.003	10.017	10.007	10.047	10.003	10.037	10.010	10.007	10.000	9.937	9.980	9.977	9.957	9.977	9.973	9.970	9.957	9.930	9.937	9.913
MP4(μSv/h)	7.717	7.723	7.723	7.700	7.700	7.690	7.697	7.703	7.707	7.690	7.690	7.657	7.643	7.663	7.667	7.663	7.627	7.643	7.623	7.623	7.637	7.623	7.610	7.593
MP5(μSv/h)	7.053	7.060	7.053	7.053	7.053	7.053	7.060	7.060	7.053	7.060	7.060	7.060	7.060	7.060	7.060	7.053	7.060	7.060	7.013	7.007	7.060	7.027	6.967	6.960
MP6(μSv/h)	8.307	8.290	8.283	8.303	8.273	8.297	8.260	8.250	8.317	8.227	8.243	8.243	8.243	8.210	8.213	8.243	8.250	8.217	8.240	8.240	8.213	8.197	8.197	8.193
MP7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	北西	北西	北西	北西	西北西	西北西	西北西	北北西	北西	北西	北北西	北北西	北北西	北西	北西	北西	西北西	西北西	北西	北西	北西	北西	北西	北西
風速(m/s)	6.6	4.4	2.3	3.7	5.4	7.4	6.9	5.0	3.6	3.3	3.3	6.6	11.1	7.9	7.6	6.2	6.9	8.6	7.2	6.5	5.3	4.4	5.6	6.1

3月26日																								
モニタリングポスト	20:00	20:10	20:20	20:30	20:40	20:50	21:00	21:10	21:20	21:30	21:40	21:50	22:00	22:10	22:20	22:30	22:40	22:50	23:00	23:10	23:20	23:30	23:40	23:50
MP1(μSv/h)	10.433	10.423	10.437	10.427	10.423	10.440	10.400	10.360	10.430	10.387	10.370	10.347	10.383	10.370	10.353	10.353	10.363	10.340	10.353	10.343	10.323	10.317	10.323	10.297
MP2(μSv/h)	5.987	5.963	5.953	5.967	5.967	5.947	5.953	5.933	5.933	5.937	5.950	5.923	5.953	5.930	5.910	5.903	5.923	5.900	5.890	5.877	5.907	5.877	5.897	5.897
MP3(μSv/h)	9.953	9.920	9.907	9.923	9.920	9.930	9.890	9.890	9.857	9.873	9.853	9.860	9.840	9.810	9.833	9.847	9.813	9.817	9.800	9.803	9.797	9.777	9.747	9.777
MP4(μSv/h)	7.627	7.577	7.613	7.607	7.597	7.590	7.610	7.570	7.620	7.540	7.567	7.530	7.550	7.560	7.540	7.517	7.513	7.530	7.513	7.513	7.523	7.517	7.510	7.493
MP5(μSv/h)	6.960	7.013	6.960	6.960	6.960	6.967	6.960	6.960	6.960	6.960	6.960	6.913	6.967	6.907	6.913	6.913	6.913	6.887	6.867	6.887	6.913	6.893	6.867	6.867
MP6(μSv/h)	8.167	8.213	8.177	8.180	8.170	8.173	8.187	8.157	8.157	8.130	8.117	8.127	8.127	8.090	8.117	8.120	8.103	8.130	8.090	8.093	8.087	8.073	8.073	8.070
MP7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	北西	北西	北西	北西	西北西	西北西	西北西	北西	西北西	北西	北西	北西	北西	西北西	西	西	西北西	西北西	西北西	西北西	西北西	西北西	西北西	西北西
風速(m/s)	6.7	5.6	5.9	5.5	6.1	6.7	7.4	7.1	8.0	8.5	7.7	6.3	5.1	5.0	5.0	6.8	7.5	8.4	9.4	8.9	8.6	7.8	7.8	9.5

2011/3/27 16:21

福島第二(2F)(事業者のモニタリングポスト)

3月26日																								
モニタリングポスト	0:00	0:10	0:20	0:30	0:40	0:50	1:00	1:10	1:20	1:30	1:40	1:50	2:00	2:10	2:20	2:30	2:40	2:50	3:00	3:10	3:20	3:30	3:40	3:50
MP1(μSv/h)	12.000	11.997	11.893	11.827	11.803	11.773	11.713	11.747	11.680	11.640	11.613	11.600	11.560	11.477	11.473	11.427	11.417	11.330	11.327	11.270	11.213	11.253	11.150	11.160
MP2(μSv/h)	6.910	6.897	6.823	6.780	6.763	6.790	6.757	6.743	6.727	6.693	6.700	6.643	6.617	6.593	6.577	6.517	6.510	6.460	6.447	6.390	6.353	6.347	6.353	6.340
MP3(μSv/h)	11.343	11.310	11.237	11.237	11.183	11.143	11.107	11.140	11.077	11.060	11.017	11.020	10.987	10.953	10.893	10.893	10.877	10.807	10.767	10.723	10.700	10.620	10.630	10.577
MP4(μSv/h)	8.537	8.567	8.523	8.480	8.477	8.460	8.430	8.413	8.393	8.413	8.393	8.343	8.363	8.320	8.313	8.280	8.230	8.200	8.163	8.150	8.120	8.070	8.113	8.063
MP5(μSv/h)	7.947	7.940	7.940	7.893	7.840	7.873	7.847	7.847	7.800	7.833	7.800	7.747	7.747	7.727	7.693	7.700	7.633	7.607	7.547	7.453	7.453	7.453	7.453	7.453
MP6(μSv/h)	9.150	9.100	9.090	9.083	9.040	9.033	9.000	8.977	8.983	8.970	8.957	8.937	8.917	8.857	8.870	8.813	8.827	8.737	8.697	8.643	8.610	8.563	8.550	8.547
MP7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北	北北西	北北西	北西	北北西	北北西	北西	北北西	北北西	北北西	北北西
風速(m/s)	8.2	8.0	8.7	8.1	8.9	7.5	8.3	8.3	8.5	8.3	9.0	9.1	8.8	9.2	8.1	8.1	6.5	9.9	8.6	9.0	9.3	9.9	10.3	10.5

3月26日																								
モニタリングポスト	4:00	4:10	4:20	4:30	4:40	4:50	5:00	5:10	5:20	5:30	5:40	5:50	6:00	6:10	6:20	6:30	6:40	6:50	7:00	7:10	7:20	7:30	7:40	7:50
MP1(μSv/h)	11.170	11.113	11.153	11.127	11.050	11.037	11.043	11.053	11.000	11.003	11.027	11.030	11.030	10.953	10.993	10.983	10.977	10.963	10.973	10.920	10.937	10.960	10.933	10.917
MP2(μSv/h)	6.330	6.303	6.290	6.283	6.263	6.243	6.277	6.250	6.213	6.263	6.283	6.247	6.247	6.243	6.237	6.227	6.237	6.267	6.227	6.227	6.257	6.237	6.237	6.217
MP3(μSv/h)	10.613	10.580	10.610	10.530	10.487	10.527	10.493	10.503	10.480	10.473	10.470	10.470	10.433	10.440	10.460	10.427	10.410	10.430	10.443	10.437	10.413	10.433	10.447	10.420
MP4(μSv/h)	8.060	8.067	8.037	8.037	8.020	8.003	7.983	7.993	8.000	8.000	7.983	7.943	7.963	7.970	8.017	7.957	7.970	7.970	7.977	7.950	7.963	7.977	7.963	7.943
MP5(μSv/h)	7.347	7.380	7.353	7.353	7.353	7.353	7.347	7.353	7.353	7.353	7.353	7.353	7.353	7.333	7.353	7.327	7.307	7.353	7.353	7.353	7.253	7.353	7.353	7.353
MP6(μSv/h)	8.547	8.547	8.520	8.497	8.477	8.483	8.447	8.460	8.443	8.453	8.463	8.477	8.433	8.443	8.447	8.437	8.437	8.497	8.467	8.467	8.453	8.403	8.453	8.433
MP7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西	北北西
風速(m/s)	10.8	9.7	9.7	10.2	9.5	10.1	9.2	9.1	9.4	8.8	8.8	10.0	8.6	8.6	9.2	9.4	9.7	8.5	8.3	7.5	7.0	6.2	5.5	6.3

3月26日																								
モニタリングポスト	8:00	8:10	8:20	8:30	8:40	8:50	9:00	9:10	9:20	9:30	9:40	9:50	10:00	10:10	10:20	10:30	10:40	10:50	11:00	11:10	11:20	11:30	11:40	11:50
MP1(μSv/h)	10.933	10.933	10.933	10.877	10.920	10.883	10.893	10.910	10.867	10.860	10.893	10.870	10.973	10.903	10.913	10.887	10.850	10.840	10.833	10.873	10.817	10.837	10.803	10.817
MP2(μSv/h)	6.217	6.230	6.213	6.223	6.233	6.220	6.203	6.203	6.183	6.220	6.223	6.217	6.240	6.190	6.183	6.190	6.190	6.177	6.180	6.160	6.173	6.167	6.133	6.163
MP3(μSv/h)	10.437	10.360	10.380	10.370	10.367	10.403	10.340	10.393	10.323	10.380	10.363	10.367	10.320	10.280	10.213	10.233	10.170	10.230	10.237	10.243	10.207	10.217	10.220	10.230
MP4(μSv/h)	7.957	7.933	7.913	7.927	7.930	7.900	7.957	7.933	7.930	7.933	7.913	7.900	7.887	7.813	7.810	7.840	7.833	7.807	7.820	7.837	7.777	7.850	7.863	7.823
MP5(μSv/h)	7.347	7.347	7.253	7.353	7.293	7.273	7.253	7.280	7.353	7.280	7.293	7.253	7.253	7.200	7.207	7.227	7.153	7.180	7.253	7.153	7.253	7.160	7.200	7.153
MP6(μSv/h)	8.420	8.433	8.427	8.440	8.460	8.467	8.433	8.433	8.417	8.427	8.413	8.460	8.437	8.353	8.317	8.337	8.320	8.337	8.340	8.333	8.300	8.357	8.370	8.353
MP7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	北北西	北北西	北北西	北	北	北	北北西	北	北	北	北	北	北	北	西北西	北西	北西	北西	北北西	北北西	北北西	北西	北西	北西
風速(m/s)	7.1	7.3	8.9	7.1	7.9	7.9	8.6	8.2	8.6	8.3	6.6	7.0	6.1	5.8	7.4	6.9	7.4	10.9	12.0	12.8	11.3	10.5	11.1	10.2

福島第二原子力発電所

2011/3/27
17:30現在

MP1:9.777μSv/h
(参考値:0.035～0.054μSv/h)

MP2:5.560μSv/h
(参考値:0.042～0.062μSv/h)

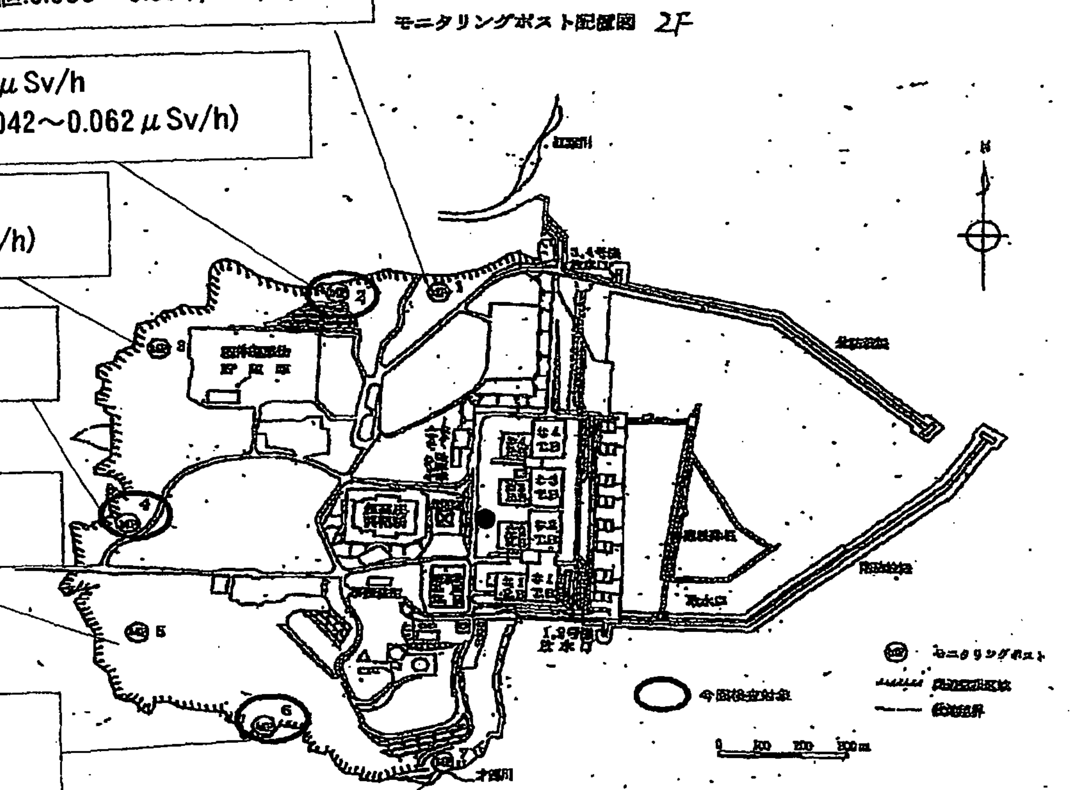
MP3:9.267μSv/h
(参考値:0.036～0.052μSv/h)

MP4:7.067μSv/h
(参考値:0.036～0.052μSv/h)

MP5:6.467μSv/h
(参考値:0.041～0.058μSv/h)

MP6:7.657μSv/h
(参考値:0.044～0.063μSv/h)

MP7：欠測
(参考値:0. 043～0. 062μSv/h)



各発電所等の環境モニタリング結果

単位：μSv/h

通常の平常値の範囲	会社名	発電所名	3月26日											
			12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
0.023～0.027	北海道電力㈱	泊発電所	0.028	0.026	0.032	0.031	0.030	0.026	0.027	0.026	0.025	0.025	0.026	0.033
0.024～0.060	東北電力㈱	女川原子力発電所	0.89	0.88	0.89	0.88	0.86	0.85	0.84	0.84	0.84	0.84	0.83	0.83
0.012～0.060		東通原子力発電所	0.02	0.019	0.018	0.017	0.017	0.018	0.019	0.028	0.021	0.018	0.019	0.019
0.033～0.050	東京電力㈱	福島第一原子力発電所※	146.8	146.7	146.9	146.6	145.9	145.3	144.5	143.9	143.0	142.8	141.8	140.9
0.036～0.052		福島第二原子力発電所	10.157	10.187	10.110	10.103	10.070	10.007	10.000	9.973	9.953	9.890	9.840	9.800
0.011～0.159		柏崎刈羽原子力発電所	0.065	0.065	0.067	0.065	0.064	0.067	0.065	0.065	0.065	0.066	0.066	0.065
0.036～0.053	日本原子力発電㈱	東海第二発電所	0.830	0.827	0.818	0.814	0.813	0.808	0.803	0.806	0.802	0.798	0.798	0.792
0.039～0.110		敦賀発電所	0.073	0.078	0.075	0.073	0.076	0.079	0.076	0.076	0.073	0.072	0.078	0.074
0.064～0.108	中部電力㈱	浜岡原子力発電所	0.079	0.078	0.078	0.078	0.078	0.078	0.078	0.078	0.078	0.078	0.079	0.078
0.0207～0.132	北陸電力㈱	志賀原子力発電所	0.033	0.032	0.032	0.033	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.033
0.028～0.130	中国電力㈱	島根原子力発電所	0.031	0.030	0.032	0.030	0.030	0.030	0.031	0.030	0.030	0.031	0.029	0.032
0.070～0.077	関西電力㈱	美浜発電所	0.072	0.074	0.073	0.073	0.074	0.075	0.073	0.080	0.074	0.072	0.076	0.072
0.045～0.047		高浜発電所	0.044	0.043	0.043	0.043	0.043	0.043	0.048	0.046	0.043	0.042	0.046	0.044
0.036～0.040		大飯発電所	0.037	0.036	0.036	0.035	0.035	0.034	0.039	0.037	0.035	0.043	0.038	0.051
0.011～0.080	四国電力㈱	伊方発電所	0.014	0.016	0.014	0.014	0.015	0.014	0.014	0.014	0.014	0.015	0.014	0.015
0.023～0.087	九州電力㈱	玄海原子力発電所	0.027	0.027	0.026	0.026	0.026	0.027	0.026	0.026	0.027	0.027	0.028	0.027
0.034～0.120		川内原子力発電所	0.038	0.037	0.037	0.037	0.034	0.037	0.040	0.040	0.039	0.04	0.039	0.036
0.009～0.069	日本原燃(株)	六ヶ所 再処理事業所	0.016	0.017	0.018	0.018	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016
0.009～0.071		六ヶ所 埋設事業所	0.020	0.021	0.023	0.022	0.020	0.020	0.020	0.020	0.021	0.020	0.020	0.020

※福島第一原子力発電所については、作業状況により若干測定時間のずれ及び測定位置の変更が生じることもございます。

通常の平常値の範囲	会社名	発電所名	3月27日											
			0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00
0.023～0.027	北海道電力㈱	泊発電所	0.029	0.026	0.026	0.025	0.025	0.025	0.025	0.025	0.026	0.026		
0.024～0.060	東北電力㈱	女川原子力発電所	0.83	0.82	0.82	0.81	0.81	0.81	0.81	0.80	0.80	0.79		
0.012～0.060		東通原子力発電所	0.018	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.018		
0.033～0.050	東京電力㈱	福島第一原子力発電所※	140.3	140.3	139.9	139.4	137.5	137.1	136.6	136.3	135.8	135.5		
0.036～0.052		福島第二原子力発電所	9.780	9.763	9.650	9.657	9.637	9.587	9.570	9.473	9.440	9.413		
0.011～0.159		柏崎刈羽原子力発電所	0.064	0.064	0.065	0.066	0.069	0.068	0.068	0.066	0.065	0.065		
0.036～0.053	日本原子力発電㈱	東海第二発電所	0.790	0.788	0.785	0.781	0.784	0.782	0.780	0.776	0.776	0.771		
0.039～0.110		敦賀発電所	0.072	0.074	0.072	0.076	0.075	0.073	0.073	0.071	0.074	0.074		
0.064～0.108	中部電力㈱	浜岡原子力発電所	0.078	0.078	0.078	0.078	0.078	0.078	0.078	0.078	0.078	0.078		
0.0207～0.132	北陸電力㈱	志賀原子力発電所	0.033	0.032	0.034	0.033	0.035	0.034	0.032	0.032	0.033	0.033		
0.028～0.130	中国電力㈱	島根原子力発電所	0.031	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030		
0.070～0.077	関西電力㈱	美浜発電所	0.073	0.074	0.074	0.078	0.074	0.071	0.073	0.071	0.074	0.073		
0.045～0.047		高浜発電所	0.043	0.044	0.046	0.044	0.044	0.043	0.044	0.043	0.043	0.043		
0.036～0.040		大飯発電所	0.051	0.049	0.042	0.045	0.041	0.047	0.039	0.035	0.035	0.034		
0.011～0.080	四国電力㈱	伊方発電所	0.014	0.014	0.015	0.014	0.014	0.014	0.014	0.014	0.015	0.014		
0.023～0.087	九州電力㈱	玄海原子力発電所	0.026	0.026	0.026	0.026	0.026	0.027	0.026	0.026	0.026	0.026		
0.034～0.120		川内原子力発電所	0.037	0.040	0.037	0.038	0.037	0.037	0.038	0.038	0.040	0.037		
0.009～0.069	日本原燃(株)	六ヶ所 再処理事業所	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016		
0.009～0.071		六ヶ所 埋設事業所	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020		

※福島第一原子力発電所については、作業状況により若干測定時間のずれ及び測定位置の変更が生じることもございます。

東京電力福島第一原子力発電所敷地内の核種分析結果

採取場所：1F南放水口付近（1～4u放水口から南側約330m地点）
採取方法：海水を汲みあげ採取
測定方法：試料500mlを福島第二に運搬し、Ge半導体検出器で測定
測定時間：1，000秒

核種	3月21日 14:30 1F南放水口付近（1～4u放水口から南側約100m地点）			3月22日 6:30 1F南放水口付近（1～4u放水口から南側約330m地点）			3月23日 8:50 1F南放水口付近（1～4u放水口から南側約330m地点）			③周辺監視区域外の水中の濃度限度 (Bq/cm³)
	①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	
Co-58	5.955E-02	3.349E-02	0.1	N.D	2.138E-02	－	5.0E-02	2.6E-02	0.1	1E+00
I-131	5.066E+00	4.245E-02	126.7	1.190E+00	2.293E-02	29.8	5.9E+00	3.6E-02	146.9	4E-02
I-132	2.136E+00	1.925E-01	0.7	1.362E+00	7.721E-02	0.5	5.4E+00	1.4E-01	1.8	3E+00
Cs-134	1.486E+00	4.030E-02	24.8	1.504E-01	1.769E-02	2.5	2.5E-01	2.7E-02	4.2	6E-02
Cs-136	2.132E-01	2.358E-02	0.7	2.350E-02	1.056E-02	0.1	2.5E-02	2.4E-02	0.1	3E-01
Cs-137	1.484E+00	4.204E-02	16.5	1.535E-01	1.626E-02	1.7	2.5E-01	2.7E-02	2.8	9E-02
Zr-95							2.3E-01	7.8E-02	0.3	9E-01
Ru-105							8.7E-01	6.2E-01	0.3	3E+00
Ru-106							3.7E-01	2.0E-01	3.7	1E-01
Te-129							4.0E+00	3.9E+00	0.4	1E+01
Te-132							4.0E-01	3.6E-02	2.0	2E-01
La-140							1.3E-02	1.0E-02	0.0	4E-01

核種	3月24日 10:25 1F南放水口付近（1～4u放水口から南側約330m地点）			3月25日 8:30 1F 南放水口付近（1～4u放水口から南側に約330m地点）			3月26日 8:20 1F 南放水口付近（1～4u放水口から南側に約330m地点）			③周辺監視区域外の水中の濃度限度 (Bq/cm³)
	①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	
Co-60				5.9E-02	2.0E-02	0.3				2. 0E-01
Mo-99				2.1E-01	1.7E-01	0.2				1. 0E+00
I-131	4.2E+00	2.3E-02	103.9	5.0E+01	6.2E-02	1250.8	3.0E+01	4.0E-02	750.0	4.0E-02
I-132	1.7E+00	4.3E-01	0.6	3.3E+00	7.7E-02	1.1	2.0E+00	6.3E-02	0.7	3.0E+00
Cs-134	4.5E-01	1.7E-02	7.4	7.0E+00	3.9E-02	117.3	4.7E+00	3.1E-02	78.3	6.0E-02
Cs-136	6.1E-02	1.7E-02	0.2	8.0E-01	3.9E-02	2.7	5.2E-01	3.1E-02	1.7	3.0E-01
Cs-137	4.4E-01	1.5E-02	4.9	7.2E+00	3.5E-02	79.6	4.8E+00	2.7E-02	53.3	9.0E-02
Tc-99m							6.8E-02	4.4E-02	0.0	4.0E+01
Te-132	8.0E-02	2.1E-02	0.4	2.2E-01	4.0E-02	1.1				2.0E-01
Ba-140				1.2E+00	1.5E-01	3.9	7.7E-01	1.2E-01	2.6	3.0E-01
La-140	2.1E-02	1.2E-02	0.1	5.8E-01	1.3E-02	1.4	3.5E-01	1.0E-02	0.9	4.0E-01

核種	3月26日　14:30 1F南放水口付近(1～4u放水口から南側約330m地点)									③周辺監視区域外の水中の濃度限度 (Bq/cm³)
	①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)							
Co-58	7.3E-02	4.7E-02	0.1							1. 0E+00
Co-60										2. 0E-01
Mo-99										1. 0E+00
I-131	7.4E+01	6.5E-02	1850.5							4.0E-02
I-132	3.8E+00	7.4E-02	1.3							3.0E+00
Cs-134	1.2E+01	4.9E-02	196.7							6.0E-02
Cs-136	1.3E+00	5.2E-02	4.2							3.0E-01
Cs-137	1.2E+01	4.9E-02	133.4							9.0E-02
Tc-99m	1.2E-01	6.0E-02	0.0							4.0E+01
Te-129	3.0E+00	2.5E+00	0.3							1.0E+01
Te-129m	1.3E+00	1.0E+00	4.3							3.0E-01
Te-132	1.0E+00	5.2E-02	5.2							2.0E-01
Ba-140	1.8E+00	2.0E-01	6.0							3.0E-01
La-140	8.7E-01	1.6E-01	2.2							4.0E-01

採取場所：1F 5～6放水口北側（5～6u放水口から北側約30m地点）
採取方法：海水を汲みあげ採取
測定方法：試料500mlを福島第二に運搬し、Ge半導体検出器で測定
測定時間：1，000秒

核種	3月23日 9:10 1F 5～6放水口北側（5～6u放水口から北側約30m地点） ①放射能濃度 (Bq/cm^3)	②検出限界濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)	3月24日 10:40 1F 5～6放水口北側（5～6u放水口から北側約30m地点） ①放射能濃度 (Bq/cm^3)	②検出限界濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)	3月25日 8:50 1F 5～6放水口北側（5～6u放水口から北側に約30m地点） ①放射能濃度 (Bq/cm^3)	②検出限界濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)	③周辺監視区域外の水中の濃度限度 (Bq/cm^3)
Co-58	5.7E-02	3.1E-02	0.1							1E+00
I-131	2.7E+00	2.5E-02	66.6	9.5E-01	1.3E-02	23.7	1.1E+01	2.3E-02	283.8	4E-02
I-132	2.9E+00	7.7E-02	1.0	4.5E-01	2.1E-01	0.2	1.9E-01	4.1E-02	0.1	3E+00
Cs-134	1.8E+00	2.4E-02	29.9	1.1E-01	9.2E-03	1.8	1.7E+00	1.9E-02	28.0	6E-02
Cs-136	2.3E-01	2.5E-02	0.8	1.1E-02	6.5E-03	0.0	2.0E-01	1.7E-02	0.7	3E-01
Cs-137	1.9E+00	2.4E-02	21.4	1.1E-01	8.7E-03	1.2	1.7E+00	1.8E-02	18.5	9E-02
Tc-99m	8.3E-02	2.5E-02	0.0				3.4E-02	2.5E-02	0.0	4E+01
Te-129	7.3E+00	3.8E+00	0.7							1E+01
Te-129m	1.3E+00	6.1E-01	4.2							3E-01
Te-132	1.6E+00	2.1E-02	7.8	1.4E-01	1.0E-02	0.7	1.3E-01	2.1E-02	0.6	2E-01
Ba-140	1.3E-01	9.4E-02	0.4				2.8E-01	7.2E-02	0.9	3E-01
La-140	5.5E-02	1.2E-02	0.1				1.3E-01	6.8E-03	0.3	4E-01

核種	3月26日 8:40 1F 5～6放水口北側（5～6u放水口から北側約30m地点） ①放射能濃度 (Bq/cm^3)	②検出限界濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)	3月26日 14:50 1F 5～6放水口北側（5～6u放水口から北側約30m地点） ①放射能濃度 (Bq/cm^3)	②検出限界濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)				③周辺監視区域外の水中の濃度限度 (Bq/cm^3)
Co-58										1.0E+00
I-131	2.9E+01	3.6E-02	725.0	1.3E+01	3.7E-02	314.3				4.0E-02
I-132	1.1E-01	5.7E-02	0.0	3.2E-01	5.9E-02	0.1				3.0E+00
I-135	1.0E+00	2.6E-01	1.3							8.0E-01
Cs-134	5.0E+00	3.1E-02	83.3	2.2E+00	3.0E-02	36.3				6.0E-02
Cs-136	5.4E-01	2.9E-02	1.8	2.5E-01	3.0E-02	0.8				3.0E-01
Cs-137	5.1E+00	2.6E-02	56.7	2.2E+00	2.9E-02	24.2				9.0E-02
Tc-99m										4.0E+01
Te-129										1.0E+01
Te-129m										3.0E-01
Te-132				6.7E-02	3.6E-02	0.3				2.0E-01
Ba-140	8.6E-01	1.2E-01	2.9	3.4E-01	1.0E-01	1.1				3.0E-01
La-140	3.2E-01	8.3E-03	0.8	1.5E-01	7.8E-03	0.4				4.0E-01

東京電力福島第二原子力発電所敷地内の核種分析結果

採取場所：2F北放水口付近(3、4号放水口付近)(1Fから約10km)
採取方法：海水をくみ上げ採取
測定方法：試料500mlをGe半導体検出器で測定
測定時間：1，000秒

核種	3月21日 23:15 2F北放水口付近(3、4号放水口付近)(1Fから約10km)			3月22日 14:28 2F北放水口付近(3、4号放水口付近)(1Fから約10km)			3月23日 13:51 2F北放水口付近(3、4号放水口付近)(1Fから約10km)			③周辺監視区域外の水中の濃度限度 (Bq/cm³)
	①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	
Te-132										3.0E+00
Co-58	5.704E-03	7.570E-03	0.0	N.D	1.526E-02	−				1.0E+00
Ru-105							3.4E-02	2.5E-02	0.01	3E+00
Ru-106										1E-01
I-131	1.085E+00	1.284E-02	27.1	1.138E+00	1.993E-02	28.5	7.4E-01	2.7E-02	18.6	4.0E-02
I-132	1.597E-01	4.392E-02	0.1	N.D	8.791E-02	−	2.0E-01	5.8E-02	0.1	3.0E+00
Cs-134	4.815E-02	9.213E-03	0.8	4.631E-02	1.350E-02	0.8	5.1E-02	2.0E-02	0.8	6.0E-02
Cs-136	6.682E-03	4.722E-03	0.0	N.D	7.849E-03	−				3.0E-01
Cs-137	5.283E-02	8.822E-03	0.6	3.962E-02	1.406E-02	0.4	5.5E-02	2.0E-02	0.6	9.0E-02

核種	3月24日 9:30 2F北放水口付近(3、4号放水口付近)(1Fから約10km)			3月25日 10:00 2F北放水口付近(3、4号放水口付近)(1Fから約10km)			3月26日 15:15 2F 北放水口付近(3,4号放水口付近)(1Fから約10km)			③周辺監視区域外の水中の濃度限度 (Bq/cm³)
	①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	
Te-132				1. 3E-02	7. 4E-03	0.004				3.0E+00
Co-58										1.E+00
Ru-105	5.6E-02	4.4E-02	0.02							3E+00
Ru-106										1E-01
I-131	1.1E+00	5.2E-02	28.4	4. 3E-01	1. 0E-02	10. 7	4. 1E-01	2. 1E-02	10.3	4E-02
I-132	1.2E-01	8.8E-02	0.04	5. 8E-02	2. 2E-02	0. 02				3E+00
Cs-134	9.9E-02	3.8E-02	1.6	2. 6E-02	7. 4E-03	0. 4	2. 6E-02	1. 8E-02	0.4	6E-02
Cs-136	6.8E-02	4.9E-02	0.2	4. 4E-03	3. 2E-03	0. 01	2. 7E-02	1. 9E-02	0.3	3E-01
Cs-137	9.4E-02	4.1E-02	1.0	3. 4E-02	5. 9E-03	0. 4				9E-02

※ ○.○E−○とは、○.○×１０ー○と同じ意味である。

採取場所:2F岩沢海岸付近(1,2号放水口から南側に約7, 000m地点)
採取方法:海水をくみ上げ採取
測定方法:試料500mlをGe半導体検出器で測定
測定時間:1, 000秒

検出核種(半減期)	3月21日 23:45 2F岩沢海岸付近(1,2号放水口から南側に約7, 000m地点)			3月22日 15:06 2F岩沢海岸付近(1,2号放水口から南側に約7, 000m地点)			3月23日 14:25 2F岩沢海岸付近(1,2号放水口から南側に約7, 000m地点)			③周辺監視区域外の水中の濃度限度 (Bq/cm^3)
	①放射能濃度 (Bq/cm^3)	②検出限界濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm^3)	②検出限界濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm^3)	②検出限界濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)	
Te-132										3.0E+00
Co-58	N.D	6.845E-03	−	N.D	1.301E-02					1.E+00
Ru-105							3.3E-02	2.8E-02	0.01	3.0E+00
Ru-106							1.2E-01	1.2E-01	1.25	1E-01
I-131	6.558E-01	1.226E-02	16.4	6.664E-01	1.862E-02	16.7	7.6E-01	2.7E-02	19.1	4.0E-02
I-132	1.205E-01	4.146E-02	0.0	N.D	7.915E-02		3.3E-01	5.3E-02	0.1	3.0E+00
Cs-134	3.110E-02	8.657E-03	0.5	3.925E-02	1.135E-02	0.7	3.3E-02	2.1E-02	0.5	6.0E-02
Cs-136	5.474E-03	4.840E-03	0.0	N.D	6.784E-03					3.0E-01
Cs-137	3.292E-02	8.303E-03	0.4	4.361E-02	1.129E-02	0.5	4.3E-02	2.1E-02	0.5	9.0E-02

核種	3月24日 8:45 2F岩沢海岸付近(1,2号放水口から南側に約7, 000m地点)(1Fから約16km)			3月25日 9:10 2F 岩沢海岸付近(1,2号放水口から南側に約7,000m地点)(1Fから約16km)			3月26日 15:50 2F 岩沢海岸付近(1,2号放水口から南側に約7,000m地点)(1Fから約16km)			③周辺監視区域外の水中の濃度限度 (Bq/cm^3)
	①放射能濃度 (Bq/cm^3)	②検出限界濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm^3)	②検出限界濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm^3)	②検出限界濃度 (Bq/cm^3)	水中濃度限度に対する割合 (①/③)	
Te-132										3.0E+00
Co-58										1.E+00
Ru-105										3.0E+00
Ru-106										1E-01
I-131	5. 0E-01	1. 0E-02	12.6	3. 7E-01	1. 0E-02	9. 2	3.0E-01	9.6E-03	7.6	4.0E-02
I-132	N.D	1.9E-02	−	1. 2E-01	2. 6E-02	0. 04				3.0E+00
Cs-134	3.5E-02	7.0E-03	0.6	2. 0E-02	6. 7E-03	0. 3	1.3E-02	7.1E-03	0.2	6.0E-02
Cs-136	5.3E-03	5.1E-03	0.02	4. 2E-03	3. 3E-03	0. 01				3.0E-01
Cs-137	3.8E-02	7.0E-03	0.4	2. 2E-02	6. 0E-03	0. 2	1.4E-02	6.8E-03	0.2	9.0E-02

※ ○.○E−○とは、○.○×１０−○と同じ意味である。

採取場所：2F富岡川河口付近（3,4u放水口から北側約2，000m地点）（IFから約8km）
採取方法：海水をくみ上げ採取
測定方法：試料500mlをGe半導体検出器で測定
測定時間：1，000秒

検出核種（半減期）	3月22日 0:38 2F富岡川河口付近（3,4u放水口から北側約2，000m地点）（IFから約8km）									③周辺監視区域外の水中の濃度限度（Bq/cm³）
	①放射能濃度（Bq/cm³）	②検出限界濃度（Bq/cm³）	水中濃度限度に対する割合（①/③）	①放射能濃度（Bq/cm³）	②検出限界濃度（Bq/cm³）	水中濃度限度に対する割合（①/③）	①放射能濃度（Bq/cm³）	②検出限界濃度（Bq/cm³）	水中濃度限度に対する割合（①/③）	
Te-132										3.0E+00
Co-58	1.028E-02	1.253E-02	0.0							1.E+00
Ru-105										3.0E+00
Ru-106										1E-01
I-131	3.211E+00	1.694E-02	80.3							4.0E-02
I-132	8.761E-01	4.236E-02	0.3							3.0E+00
Cs-134	7.535E-02	1.102E-02	1.3							6.0E-02
Cs-136	1.159E-02	7.718E-03	0.0							3.0E-01
Cs-137	7.760E-02	1.186E-02	0.9							9.0E-02

核種	①放射能濃度（Bq/cm³）	②検出限界濃度（Bq/cm³）	水中濃度限度に対する割合（①/③）	①放射能濃度（Bq/cm³）	②検出限界濃度（Bq/cm³）	水中濃度限度に対する割合（①/③）	①放射能濃度（Bq/cm³）	②検出限界濃度（Bq/cm³）	水中濃度限度に対する割合（①/③）	③周辺監視区域外の水中の濃度限度（Bq/cm³）
Te-132										3.0E+00
Co-58										1.E+00
Ru-105										3.0E+00
Ru-106										1E-01
I-131										4.0E-02
I-132										3.0E+00
Cs-134										6.0E-02
Cs-136										3.0E-01
Cs-137										9.0E-02

※　○.○E−○とは、○.○×１０−○と同じ意味である。

福島第一原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第一　事務本館北側		
	日時	3月19日	3月20日	3月21日
		11:53～12:13(放水前)	1:41～2:01	10:19～10:39
	採取方法	モニタリングカーにてダスト採取		
	風向・風速	W 4.7m/s (11:50現在)	SW 2.1m/s (1:40現在)	NW 2.6m (10:10現在)
試料測定	日時	3/19 14:12～	3/21 13:28～	3/21 13:48～
	測定方法	試料を2Fに持ち込みGe半導体型核種分析装置にて分析		
	測定時間	500s		

2. 結果

	核種	3月19日 採取分 ①放射能濃度 (Bq/cm3)	3月19日 採取分 ②検出限界濃度 (Bq/cm3)	3月19日 採取分 空気中濃度限度に対する割合(①/③)	3月20日 採取分 ①放射能濃度 (Bq/cm3)	3月20日 採取分 ②検出限界濃度 (Bq/cm3)	3月20日 採取分 空気中濃度限度に対する割合(①/③)	3月21日 採取分 ①放射能濃度 (Bq/cm3)	3月21日 採取分 ②検出限界濃度 (Bq/cm3)	3月21日 採取分 空気中濃度限度に対する割合(①/③)	③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
揮発性	I-131	5.9E-03	3.4E-05	5.94	2.3E-03	1.3E-05	2.30	1.5E-03	1.1E-05	1.52	1.0E-03
	I-132	2.2E-03	8.8E-05	0.03	ND	—	—	2.5E-04	2.7E-05	0.004	7.0E-02
	I-133	3.8E-05	2.9E-05	0.01	ND	—	—	ND	—	—	5.0E-03
	Cs-134	ND	—	—	4.0E-05	8.3E-06	0.02	3.1E-05	8.6E-06	0.016	2.0E-03
	Cs-137	ND	—	—	3.9E-05	8.4E-06	0.01	3.6E-05	7.9E-06	0.01	3.0E-03
粒子状	Co-58	ND	—	—	ND	—	—	ND	—	—	1.0E-02
	I-131	1.1E-03	1.6E-05	1.07	1.3E-03	6.8E-06	1.29	9.2E-06	5.0E-06	0.01	1.0E-03
	I-132	3.8E-04	5.0E-05	0.01	ND	—	—	1.1E-04	1.2E-05	0.00	7.0E-02
	Cs-134	2.2E-05	1.7E-05	0.01	2.8E-05	4.8E-06	0.01	3.4E-05	5.4E-06	0.02	2.0E-03
	Cs-136	ND	—	—	5.6E-06	5.4E-06	0.001	4.5E-06	3.3E-06	0.0005	1.0E-02
	Cs-137	2.4E-05	1.8E-05	0.01	2.9E-05	5.0E-06	0.01	3.8E-05	4.7E-06	0.01	3.0E-03
その他の検出核種	Ru-106	2.1E-04	2.1E-04	0.36	3.8E-05	3.4E-05	0.06	ND	—	—	6.0E-04
	Te-129	ND	—	—	ND	—	—	1.3E-03	3.8E-04	0.00	4.0E-01
	Te-129m	ND	—	—	1.4E-04	1.2E-04	0.03	ND	—	—	4.0E-03
	Te-132	6.7E-05	1.8E-05	0.01	5.1E-04	6.0E-06	0.07	3.9E-04	4.3E-06	0.06	7.0E-03
	Ce-144	ND	—	—	5.0E-03	4.6E-04	7.08	ND	—	—	7.0E-04

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。
※ ○.○E−○とは、○.○×10$^{-○}$と同じ意味である。

福島第一原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第一　正門		
	日時	3/22 1:10～1:30	3/23 2:1～2:21	3/24 5:27～5:47
	採取方法	モニタリングカーにてダスト採取		
	風向・風速	W 0.5m/s (1:10現在)	N 3.2m/s(2:00現在)	ESE 0.8m/s (5:30現在)
試料測定	日時	3/22 14:50～	3/23 14:54～	3/24 22:03～
	測定方法	試料を2Fに持ち込みGe半導体型核種分析装置にて分析		
	測定時間	500s		

2. 結果

	核種	3/22採取分			3/23採取分			3/24採取分			③放射線業務従事者の呼吸する空気中の濃度限度 (Bq/cm3)※
		①放射能濃度 (Bq/cm3)	②検出限界濃度 (Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度 (Bq/cm3)	②検出限界濃度 (Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度 (Bq/cm3)	②検出限界濃度 (Bq/cm3)	空気中濃度限度に対する割合(①/③)	
揮発性	Co-58	ND	—	—	ND	—	—	ND	—	—	1.0E-02
	I-131	2.2E-03	1.6E-05	2.24	6.7E-04	9.6E-06	0.67	1.5E-03	1.0E-05	1.49	1.0E-03
	I-132	ND	—	—	ND	—	—	ND	—	—	7.0E-02
	I-133	ND	—	—	ND	—	—	ND	—	—	5.0E-03
	Cs-134	1.1E-05	1.1E-05	0.01	2.2E-05	7.6E-06	0.01	3.2E-05	7.9E-06	0.02	2.0E-03
	Cs-137	1.3E-05	1.0E-05	0.00	2.3E-05	7.6E-06	0.01	3.1E-05	7.3E-06	0.01	3.0E-03
粒子状	Co-58	ND	—	—	5.1E-06	5.1E-06	0.00	ND	—	—	1.0E-02
	I-131	4.7E-04	7.4E-06	0.47	4.3E-04	5.0E-06	0.43	5.0E-04	4.8E-06	0.50	1.0E-03
	I-132	ND	—	—	ND	—	—	ND	—	—	7.0E-02
	Cs-134	1.6E-05	5.9E-06	0.01	1.7E-05	4.2E-06	0.01	1.1E-05	4.6E-06	0.01	2.0E-03
	Cs-136	ND	—	—	3.0E-06	2.7E-06	0.00	ND	—	—	1.0E-02
	Cs-137	1.9E-05	5.3E-06	0.01	1.3E-05	4.2E-06	0.00	1.2E-05	3.8E-06	0.00	3.0E-03
その他の検出核種	Zr-95	ND	—	—	ND	—	—	2.5E-05	6.0E-06	0.00	8.0E-02
	Te-129	ND	—	—	2.3E-01	1.2E-01	0.58	4.6E+00	9.5E-01	11.39	4.0E-01
	Te-129m	ND	—	—	ND	—	—	3.4E-04	9.9E-05	0.08	4.0E-03
	Te-132	6.7E-05	1.1E-05	0.01	4.3E-04	4.5E-06	0.06	3.6E-04	4.4E-04	0.05	7.0E-03
	Ce-144	ND	—	—	1.3E-03	3.7E-04	1.89	ND	—	—	7.0E-04

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。
※ ○.○E−○とは、○.○×10$^{-○}$と同じ意味である。

福島第一原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第一　正門		
	日時	3/25 2:01～2:21	3/26 2:00～2:20	
	採取方法	モニタリングカーにてダスト採取		
	風向・風速	ESE 0.8m/s (5:30現在)	NNW 2.9m/s (2:20現在)	
試料測定	日時	3/25 13:38～	3/26 12:24～	
	測定方法	試料を2Fに持ち込みGe半導体型核種分析装置にて分析		
	測定時間	500s		

2. 結果

	核種	3/25採取分			3/26採取分						③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)				
揮発性	Co-58	ND	-	-	ND	-	-				1.0E-02
	I-131	8.8E-04	2.1E-05	0.88	3.0E-04	7.9E-06	0.30				1.0E-03
	I-132	ND	-	-	ND	-	-				7.0E-02
	I-133	ND	-	-	ND	-	-				5.0E-03
	Cs-134	3.2E-05	1.7E-05	0.02	1.2E-05	7.2E-06	0.01				2.0E-03
	Cs-136	ND	-	-	6.2E-06	3.7E-06	0.00				1.0E-02
	Cs-137	2.4E-05	1.8E-05	0.01	8.8E-06	6.9E-06	0.00				3.0E-03
粒子状	Co-58	ND	-	-	ND	-	-				1.0E-02
	I-131	3.2E-04	1.1E-05	0.32	2.6E-04	1.1E-05	0.26				1.0E-03
	I-132	ND	-	-	ND	-	-				7.0E-02
	Cs-134	1.6E-05	9.5E-06	0.01	1.8E-05	9.8E-06	0.01				2.0E-03
	Cs-136	ND	-	-	ND	-	-				1.0E-02
	Cs-137	1.6E-05	9.2E-06	0.01	1.6E-05	1.0E-05	0.01				3.0E-03
その他の検出核種	Zr-95	ND	-	-	ND	-	-				8.0E-02
	Ru-105	3.1E-04	4.4E-05	0.00	6.0E-05	3.9E-05	0.00				8.0E-02
	Te-129	ND	-	-	5.2E-02	3.4E-02	0.13				4.0E-01
	Te-129m	ND	-	-	ND	-	-				4.0E-03
	Te-132	8.2E-05	1.0E-05	0.01	1.6E-04	6.0E-06	0.02				7.0E-03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。
※ ○.○E−○とは、○.○×10$^{-○}$と同じ意味である。

福島第二原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第二 MP－1	福島第二 MP－1	福島第二 MP－1	福島第二 MP－1
	日時	3月19日	3月19日	3月20日	3月20日
		9:15～9:25	18:18～18:28	11:27～11:37	17:10～17:20
	採取方法	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取
	風向・風速	－	－	－	－
試料測定	日時	3/19 10:39～	3/19 19:08～	3/20 16:17～	3/20 21:11～
	測定方法	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析
	測定時間	1000s	1000s	500s	500s

2. 結果

	核種	3月19日 採取分①			3月19日 採取分②			3月20日 採取分①			3月20日 採取分②			③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	
揮発性	I-131	2.7E-04	5.6E-05	0.27	2.5E-04	5.7E-05	0.25	5.3E-05	1.2E-05	0.05	2.2E-04	4.3E-05	0.22	1.0E-03
	I-132	2.4E-04	1.7E-04	0.00	1.2E-04	1.2E-04	0.00	ND	－	－	2.6E-04	2.5E-04	0.00	7.0E-02
	I-133	ND	－	－	ND	－	－	ND	－	－	ND	－	－	5.0E-03
	Cs-134	6.3E-05	5.9E-05	1.06	ND	－	－	ND	－	－	ND	－	－	2.0E-03
	Cs-136	ND	－	－	1.7E-04	1.6E-04	0.02	ND	－	－	ND	－	－	1.0E-02
粒子状	Co-58	ND	－	－	ND	－	－	ND	－	－	ND	－	－	1.0E-02
	I-131	1.4E-04	3.1E-05	0.14	1.3E-04	3.1E-05	0.13	2.6E-05	6.0E-06	0.03	ND	－	－	1.0E-03
	I-132	1.2E-04	9.0E-05	0.00	ND	－	－	ND	－	－	1.8E-03	8.9E-04	0.03	7.0E-02
	I-133	ND	－	－	2.4E-04	2.2E-04	0.05	ND	－	－	ND	－	－	5.0E-03
	Cs-134	ND	－	－	ND	－	－	ND	－	－	ND	－	－	2.0E-03
	Cs-136	ND	－	－	ND	－	－	ND	－	－	ND	－	－	1.0E-02
	Cs-137	ND	－	－	ND	－	－	ND	－	－	ND	－	－	3.0E-03
その他核種	Ru-105	ND	－	－	2.1E-04	2.0E-04	0.00	ND	－	－	ND	－	－	8.0E-02
	Te-132	ND	－	－	ND	－	－	4.2E-06	3.4E-06	0.00	ND	－	－	7.0E-03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。

※ ○.○E－○とは、○.○×$10^{-○}$と同じ意味である。

福島第二原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第二 MP－1	福島第二 MP－1	福島第二 MP－1	福島第二 MP－1
	日時	3月21日	3月21日	3月22日	3月22日
		10:40～10:50	18:11～18:19	10:02～10:10	16:43～16:51
	採取方法	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取
	風向・風速	－	－	－	－
試料測定	日時	3/21 12:15～	3/21 19:00～	3/22 11:53～	3/22 17:32～
	測定方法	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析
	測定時間	500s	500s	500s	500s

2. 結果

	核種	3月21日 採取分①			3月21日 採取分②			3/22採取分①			3/22採取分②			③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	
揮発性	Co-58	ND	－	－	2.9E-05	2.1E-05	0.00	ND	－	－	ND	－	－	4.0E-01
	I-131	2.3E-04	1.7E-05	0.23	1.6E-04	1.9E-05	0.16	1.416E-04	2.272E-05	0.14	1.349E-04	2.216E-05	0.13	1.0E-03
	I-132	2.4E-04	2.4E-05	0.003	8.1E-04	1.9E-05	0.01	ND	－	－	ND	－	－	7.0E-02
	I-133	ND	－	－	ND	－	－	ND	－	－	ND	－	－	5.0E-03
	Cs-134	ND	－	－	1.7E-05	1.7E-05	0.01	2.646E-05	1.636E-05	0.01	1.865E-05	1.747E-05	0.01	2.0E-03
	Cs-137	1.8E-05	1.3E-05	0.01	ND	－	－	2.316E-05	1.739E-05	0.01	2.146E-05	1.731E-05	0.01	3.0E-03
粒子状	Co-58	ND	－	－	1.3E-05	9.9E-06	0.00	ND	－	－	ND	－	－	1.0E-02
	I-131	1.5E-04	9.6E-06	0.151	1.2E-04	1.0E-05	0.12	6.939E-05	1.155E-05	0.07	7.919E-05	1.190E-05	0.08	1.0E-03
	I-132	2.5E-04	1.3E-05	0.004	3.9E-04	1.6E-05	0.01	ND	－	－	4.153E-05	3.357E-05	0.00	7.0E-02
	Cs-134	4.4E-05	9.3E-06	0.02	3.0E-05	1.0E-05	0.02	1.293E-05	9.476E-06	0.01	1.353E-05	9.812E-06	0.01	2.0E-03
	Cs-136	ND	－	－	ND	－	－	ND	－	－	ND	－	－	1.0E-02
	Cs-137	4.7E-05	8.0E-06	0.02	3.3E-05	9.7E-06	0.01	1.024E-05	8.838E-06	0.00	1.369E-05	8.361E-06	0.00	3.0E-03
その他核種	Ru-105	ND	－	－	1.2E-04	8.6E-05	0.00	ND	－	－	ND	－	－	8.0E-02
	Ru-106	ND	－	－	1.4E-04	7.6E-05	0.24	ND	－	－	ND	－	－	6.0E-04
	Te-129	4.5E-04	2.9E-04	0.00	9.3E-04	2.2E-04	0.00	2.316E-03	1.784E-03	0.01	ND	－	－	4.0E-01
	Te-129m	6.4E-04	2.0E-04	0.16	ND	-	-	ND	－	－	ND	－	－	4.0E-03
	Te-132	7.6E-04	6.6E-04	0.11	1.4E-03	6.8E-06	0.21	2.191E-05	1.649E-05	0.00	ND	－	－	7.0E-03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。

※ ○.○E－○とは、○.○×10$^{-○}$と同じ意味である。

福島第二原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第二 MP−1	福島第二 MP−1	福島第二 MP−1	福島第二 MP−1
	日時	3/23 9:40〜9:48	3/23 16:06〜16:14	3/24 9:47〜9:55	3/24 17:46〜17:54
	採取方法	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取
	風向・風速	−	−	−	−
試料測定	日時	3/23 15:00〜	3/23 17:38〜	3/24 10:39〜	3/25 0:40〜
	測定方法	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析
	測定時間	500s	500s	500s	500s

2. 結果

	核種	3/23採取分①			3/23採取分②			3/24採取分①			3/24採取分②			③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	
揮発性	Co-58	ND	−	−	1.460E-05	1.353E-05	0.00	ND	−	−	ND	−	−	1.0E-02
	I-131	2.7E-04	3.9E-05	0.27	2.1E-04	1.4E-05	0.21	1.9E-04	1.5E-05	0.19	1.7E-04	1.4E-05	0.17	1.0E-03
	I-132	2.8E-04	2.2E-04	0.00	2.8E-04	2.8E-05	0.00	3.0E-04	2.5E-05	0.00	ND	−	−	7.0E-02
	I-133	ND	−	−	ND	−	−	ND	−	−	ND	−	−	5.0E-03
	Cs-134	4.3E-05	3.0E-05	0.02	2.3E-05	1.2E-05	0.01	2.8E-05	1.3E-05	0.01	1.6E-05	1.2E-05	0.01	2.0E-03
	Cs-137	ND	−	−	2.0E-05	1.3E-05	0.01	3.0E-05	1.2E-05	0.01	2.9E-05	1.1E-05	0.01	3.0E-03
粒子状	Co-58	ND	−	−	ND	−	−	ND	−	−	ND	−	−	1.0E-02
	I-131	1.5E-04	2.1E-05	0.15	8.2E-05	7.9E-06	0.08	1.1E-04	7.3E-06	0.11	6.4E-05	2.1E-05	0.06	1.0E-03
	I-132	ND	−	−	2.6E-04	1.5E-05	0.00	1.7E-04	1.0E-05	0.00	ND	−	−	7.0E-02
	Cs-134	ND	−	−	1.7E-05	8.5E-06	0.01	2.1E-05	6.7E-06	0.01	ND	−	−	2.0E-03
	Cs-136	ND	−	−	ND	−	−	ND	−	−	ND	−	−	1.0E-02
	Cs-137	ND	−	−	1.7E-05	6.9E-06	0.01	2.0E-05	6.6E-06	0.01	2.1E-05	1.7E-05	0.01	3.0E-03
その他の検出核種	Ru-106	ND	−	−	8.210E-05	5.694E-05	0.14	ND	−	−	ND	−	−	6.0E-04
	Te-129	ND	−	−	9.278E-04	2.649E-04	2.320E-03	7.6E-04	1.3E-04	1.894E-03	1.4E-02	9.5E-03	0.04	4.0E-01
	Te-129m	ND	−	−	ND	−	−	5.7E-04	1.7E-04	0.14	4.6E-04	2.8E-04	0.11	4.0E-03
	Te-132	1.6E-04	2.2E-05	0.02	7.064E-04	6.527E-06	1.009E-01	5.6E-04	5.7E-06	0.08	3.5E-04	1.1E-05	0.05	7.0E-03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。

※ ○.○E−○とは、○.○×10$^{-○}$と同じ意味である。

福島第二原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第二 MP－1	福島第二 MP－1	福島第二 MP－1	福島第二 MP－1
	日時	3/25 9:41～9:48	3/25 17:32～17:40	3/26 10:52～10:59	3/26 16:22～16:29
	採取方法	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取
	風向・風速	－	－	－	－
試料測定	日時	2011/3/25 12:20～	2011/3/25 12:33～	2011/3/26 12:35～	2011/3/26 19:19～
	測定方法	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析
	測定時間	500s	500s	500s	500s

2. 結果

	核種	3/25採取分①			3/25採取分②			3/26採取分①			3/26採取分②			③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①／③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①／③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①／③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①／③)	
揮発性	Co-58	ND	－	－	ND	－	－	ND	－	－	ND	－	－	1.0E-02
	I-131	2.1E-04	3.2E-05	0.21	1.7E-04	1.3E-05	0.17	1.0E-04	1.3E-05	0.10	1.6E-04	3.4E-05	0.16	1.0E-03
	I-132	1.6E-04	1.0E-04	0.00	2.2E-04	2.0E-05	0.00	1.6E-04	2.4E-05	0.00	ND	－	－	7.0E-02
	I-133	ND	－	－	ND	－	－	ND	－	－	ND	－	－	5.0E-03
	Cs-134	6.9E-05	3.2E-05	0.03	2.6E-05	1.2E-05	0.01	1.3E-05	1.3E-05	0.01	ND	－	－	2.0E-03
	Cs-137	ND	－	－	3.5E-05	1.1E-05	0.01	1.6E-05	1.0E-05	0.01	ND	－	－	3.0E-03
粒子状	Co-58	ND	－	－	ND	－	－	ND	－	－	ND	－	－	1.0E-02
	I-131	1.0E-04	1.6E-05	0.10	6.8E-05	7.0E-06	0.07	8.4E-05	1.7E-05	0.08	8.8E-04	1.7E-04	0.88	1.0E-03
	I-132	6.0E-05	5.0E-05	0.00	1.1E-04	1.2E-05	0.00	ND	－	－	ND	－	－	7.0E-02
	Cs-134	ND	－	－	1.0E-05	6.1E-06	0.01	1.8E-05	1.6E-05	0.01	1.8E-04	1.6E-04	0.09	2.0E-03
	Cs-136	ND	－	－	ND	－	－	ND	－	－	ND	－	－	1.0E-02
	Cs-137	ND	－	－	1.1E-05	5.8E-06	0.00	1.7E-05	1.6E-05	0.01	2.1E-04	1.6E-04	0.07	3.0E-03
その他の検出核種	Ru-105	ND	－	－	7.3E-05	5.3E-05	0.00	ND	－	－	ND	－	－	8.0E-02
	Ru-106	ND	－	－	ND	－	－	ND	－	－	ND	－	－	6.0E-04
	Te-129	ND	－	－	5.7E-04	1.5E-04	0.00	5.9E-04	3.4E-04	1.475E-03	ND	－	－	4.0E-01
	Te-129m	ND	－	－	4.4E-04	1.3E-04	0.11	4.1E-04	2.4E-04	1.025E-01	ND	－	－	4.0E-03
	Te-132	1.1E-04	1.6E-05	0.02	3.9E-04	4.8E-06	0.06	2.3E-04	8.4E-06	0.03	3.5E-04	3.0E-05	0.05	7.0E-03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。
※ ○.○E－○とは、○.○×10$^{-○}$と同じ意味である。

参考

H23．3．27

福島第一　各号機T／B建屋地下階溜まり水の測定結果について

核種　（半減期）	放射性物質濃度（Bq/cm³）			
	1号機（2回目） 3/26 試料採取	2号機 3/26 試料採取	3号機（2回目） 3/26 試料採取	4号機 3/24 試料採取
	水表面線量率 60mSv/h	水表面線量率 >1,000mSv/h,	水表面線量率 750mSv/h,	水表面線量率 0.50mSv/h
Co-56　（約77日）	検出限界未満	1.6×10^{5}	検出限界未満	検出限界未満
Co-58　（約71日）	検出限界未満	検出限界未満	検出限界未満	2.7×10^{-1}
Co-60　（約5年）	検出限界未満	検出限界未満	2.7×10^{2}	検出限界未満
Mo-99　（約66時間）	検出限界未満	検出限界未満	検出限界未満	1.0×10^{0}
Tc-99m　（約6時間）	検出限界未満	8.7×10^{4}	2.2×10^{3}	6.5×10^{-1}
Ru-106　（約370日）	検出限界未満	検出限界未満	検出限界未満	3.3×10^{0}
Ag-108m　（約418年）	検出限界未満	2.5×10^{5}	検出限界未満	検出限界未満
Te-129　（約70分）	検出限界未満	検出限界未満	検出限界未満	2.6×10^{1}
Te-129m　（約34日）	検出限界未満	検出限界未満	検出限界未満	1.3×10^{1}
Te-132　（約3日）	検出限界未満	検出限界未満	検出限界未満	1.4×10^{1}
I-131　（約8日）	1.5×10^{5}	1.3×10^{7}	3.2×10^{5}	3.6×10^{2}
I-132　（約2時間）	検出限界未満	検出限界未満	検出限界未満	1.3×10^{1}
I-134　（約53分）	検出限界未満	2.9×10^{9}	検出限界未満	検出限界未満
Cs-134　（約2年）	1.2×10^{5}	2.3×10^{6}	5.5×10^{4}	3.1×10^{1}
Cs-136　（約13日）	1.1×10^{4}	2.5×10^{5}	6.5×10^{3}	3.7×10^{0}
Cs-137　（約30年）	1.3×10^{5}	2.3×10^{6}	5.6×10^{4}	3.2×10^{1}
Ba-140　（約13日）	検出限界未満	4.9×10^{5}	1.9×10^{4}	検出限界未満
La-140　（約2日）	検出限界未満	1.9×10^{5}	3.1×10^{3}	7.4×10^{-1}

以上

Scott, Michael

From: Scott, Michael
Sent: Monday, March 14, 2011 11:16 AM
To: Gibson, Kathy
Subject: RE: Casper will be in this afternoon
Attachments: image001.jpg

This is a very fluid situation. PMT is fully stood up, RST partially. Call this morning for folks with BWR severe accident background to go to Ops Cen. Jason went over. We are working on obtaining additional resources, including from labs; some may go to Japan. Will keep you posted.

From: Gibson, Kathy
Sent: Monday, March 14, 2011 10:06 AM
To: Greenwood, Carol; Scott, Michael
Subject: Re: Casper will be in this afternoon

Thanks!

Mike, do we know who all from our staff is scheduled to work in the Ops Center and what their schedules are? It seems we should have this information either from the ops center or maybe survey the BCs.

From: Greenwood, Carol
To: Gibson, Kathy; Scott, Michael
Sent: Mon Mar 14 09:57:38 2011
Subject: FW: Casper will be in this afternoon

FYI

From: Greenwood, Carol
Sent: Monday, March 14, 2011 8:35 AM
To: Bush-Goddard, Stephanie; Lewis, Doris
Subject: Casper will be in this afternoon

He worked in the OP Center yesterday from 3pm to midnight so he needs to catch up on his sleep...

Regards
Carol Greenwood
Lead Administrative Assistant
RES/DSA
U.S. Nuclear Regulatory Commission
Phone: 301-251-3319

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

KKKK-3

MRK

From: King, Mark
Subject: IOEB Clearinghouse Screening Summary for Monday, March 14, 2011
Date: Monday, March 14, 2011 2:57:22 PM

NOTE: THIS SUMMARY IS OFFICIAL USE ONLY
*****MAY CONTAIN SENSITIVE/ PROPRIETARY OR NRC INTERNAL USE ONLY INFORMATION*****
DO NOT FORWARD ANY PORTIONS OUTSIDE OF NRC WITHOUT FIRST OBTAINING PERMISSION FROM ORIGINATOR

Issues for Resolution (IFR): One (1)

1) ISSUE FOR RESOLUTION (IFR): LESSONS LEARNED FROM JAPANESE EARTHQUAKE AND TSUNAMI EVENT - (WHICH BEGAN ON MARCH 11, 2011)

Issue for resolution (IFR) screened-in based on the following LIC-401 Criteria: 1. potential safety significance based on risk or other quantitative factors
1.a risk factor—conditional core damage probability (CCDP) = 1E-6 or greater an increase in core damage probability (delta CDP) = 1E-6, or a change in large early release frequency (delta ERF) = 1E-7/yr - [this Japanese event appears to have resulted in some core damage]
1.b other quantitative significance—Reactor Oversight Process Significance Determination Process finding of white or higher (i.e., yellow, red) or **INES rating of 1 or higher**. - [this event was preliminarily rated as an **INES level 4 event** on the INES 7-point rating (user guide) and this may be revised upward].
Issue For Resolution and IFR Screen-in Document assigned to Dave Garmon.

OpE Forum Postings (COMMS): One (1)

1) POST COMM ON JAPANESE NUCLEAR PLLANT EVENTS RESULTING FROM EARTHQUAKE AND TSUNAMI EVENT (THAT BEGAN ON MARCH 11, 2011)

Post OpE COMM to the following COMM groups: ALL COMMS, AFW, CHEM/CHEM ENG, CONTAINMENT, CR HABITABILITY, DOSE, ECCS. EDG, ELECTRICAL PWR, EP, FIRE PROTECTION, FLOODING/MISSILES, FUELS, HEALTH PHYSICS, HUMAN PERF, HVAC, I&C, INSP PROGRAMS, MAT'LS/AGING, NAT. PHENOMENA, NRO, PHYS SECURITY, PUMP & VALVE, RCPB LEAKAGE, RX VESSEL/PZR, SAFETY CULTURE, SERVICE WATER/UHS, SHUTDOWN RISK, SPENT FUEL HANDL., STRUCTURAL and WORKER FATIQUE. Comm assigned to Dave Garmon.

See a preliminary **OpE COMM** that has been posted, and will be formally issued and updated as more information becomes available.

Management Requests: None

Follow-up/Other Tasks: Two (2)
[Note - The information in this part of the Summary is often preliminary in nature and is provided to help IOEB staff communicate and track noteworthy items being followed up by either the Regions or HQ staff.]

KKKK-4

1) **INES LEVEL 4 EVENT - MIYAGIKEN-OKI EARTHQUAKE – and Tsuanmi - (JAPAN)**

See preliminary INES event report for further information. This item already screened in as an IFR.

2) PNO-IV-11-001 EN 46668 - DIABLO CANYON 1, 2 - NOTICE OF UNUSUAL EVENT AS A RESULT OF A TSUNAMI WARNING IN THE AREA - UPDATED

(Updated) See PNO text: PNO-IV-11-011A; Update Diablo Canyon Power Plant Notification of Unusual Event. - ML110730377 and (the initial PNO text: ML110700503). NRC was monitoring event. See EN text: Forward to TRG Lead for Emergency Preparedness (Eric Schrader) and to TS Branch BC (Rob Elliot); assigned to Russ Haskell.

3) NRC news release links related to the Japanese earthquake and Tsunami issues:

March		
Date	**Document Number**	**Description**
03/14/2011	11-047	Japanese Government Asks for Assistance with Reactor Events; U.S. Government and NRC Preparing Response
03/13/2011	11-046	(Revised)NRC Sees No Radiation at Harmful Levels Reaching U.S. From Damaged Japanese Nuclear Power Plants
03/12/2011	11-045	NRC Experts Deploy to Japan as Part of U.S. Government Response
03/12/2011	11-044	NRC in Communication with Japanese Regulators
03/11/2011	11-043	NRC Continues to Track Earthquake and Tsunami Issues
03/11/2011	11-042	NRC Monitors Notice of Unusual Event at Diablo Canyon Power Plant, Tsunami Issues

- Info Only.

New Reactors Items: None

Research (RES) Items: None

Items Screened Out*: Three (1) - one (1) Event Notification (EN) and two (2) Preliminary Notifications (PN)

1) PNO-IV-11-001 EN 46668 - DIABLO CANYON 1, 2 - NOTICE OF UNUSUAL EVENT AS A RESULT OF A TSUNAMI WARNING IN THE AREA – UPDATED

2) PNO-IV-11-011A; Update Diablo Canyon Power Plant Notification of Unusual Event. - ML110730377

3) PNO-IV-11-011; Update Diablo Canyon Power Plant Notification of Unusual Event - ML110700503

**(i.e., Screened /reviewed against LIC-401 criteria for initiating an "Issue for Resolution" (IFR), which is IOEB's process for conducting further evaluation of an issue to determine what, if any, additional actions should be taken to communicate and organizationally learn from OpE.)*

NOTE: THIS SUMMARY IS OFFICIAL USE ONLY
*****MAY CONTAIN SENSITIVE/ PROPRIETARY OR NRC INTERNAL USE ONLY INFORMATION*****
DO NOT FORWARD ANY PORTIONS OUTSIDE OF NRC WITHOUT FIRST OBTAINING PERMISSION FROM ORIGINATOR

Attendees at Screening Meeting:

Bob Bernardo – by phone
Russ Haskell
Dave Garmon
Eric Thomas – by phone
Mary Wegner (RES) – by phone
Mark King – by phone

Satorius, Mark

From: Satorius, Mark
Sent: Tuesday, March 15, 2011 4:41 PM
To: All R3 Users
Subject: FW: IOEB Clearinghouse Screening Summary for Tuesday, March 15, 2011

Good links to info on the Japanese event at section 1).

From: King, Mark
Sent: Tuesday, March 15, 2011 1:17 PM
Subject: IOEB Clearinghouse Screening Summary for Tuesday, March 15, 2011

NOTE: THIS SUMMARY IS OFFICIAL USE ONLY
*****MAY CONTAIN SENSITIVE/ PROPRIETARY OR NRC INTERNAL USE ~~ONLY INFORMATION~~*****
DO NOT FORWARD ANY PORTIONS OUTSIDE OF NRC WITHOUT FIRST OBTAINING PERMISSION FROM ORIGINATOR

Issues for Resolution (IFR): None

OpE Forum Postings (COMMS): None

Management Requests: None

Follow-up/Other Tasks: Six (6)

[Note - The information in this part of the Summary is often preliminary in nature and is provided to help IOEB staff communicate and track noteworthy items being followed up by either the Regions or HQ staff.]

1) JAPANESE NUCLEAR EVENTS -- LINKS

The following site links provide periodic updates on the Japanese Nuclear plant responses to the March 11, 2011 earthquake and tsunami events:

Japan Nuclear Industrial Safety Agency (NISA)

International Atomic Energy Agency (IAEA)

Tokyo Electric Power Company (TEPCO)

(NRC blog and NRC Press Releases)

See special note* at the bottom of this email concerning NRC response and should you become aware of information the NRC IRC is not aware of and the actions you should take if you are asked questions by another country. – INFO ONLY.

2) LER 2982010005R00 - COOPER: STEAM EXCLUSION BARRIER DOOR BLOCKED OPEN RESULTS IN LOSS OF SAFETY FUNCTION

On November 9, 2010 a steam exclusion barrier (SEB) door in the control room was blocked open with a ladder during preventive maintenance. No compensatory measures or Technical Specification required actions were taken. The condition was identified by the NRC RI staff. The event is still being investigated. A previous similar occurrence was reported in August of 2010 when an SEB door was propped open during planned

KKKK-5

maintenance on an emergency diesel generator (EDG). This event was classified as a Safety System Functional Failure (SSFF). Pass to TRG Lead for Human Performance (Michael Boggi), and Control Room Habitability and HVAC (Nageswara Karipineni). Assigned to Jesse Robles.

3) EN 46671 - FORT CALHOUN - EXTENT OF CONDITION REVIEW REVEALS A POTENTIAL VULNERABILITY

Contact the Headquarters Operations Officer for additional details. This item was the result of an NRC inspection finding, compensatory measures have been implemented for the vulnerability. - INFO ONLY.

4) LER 2192010002R00 - OYSTER CREEK: AUTOMATIC REACTOR SCRAM DURING STARTUP DUE TO LOW MAIN CONDENSER VACUUM.

On December 23, 2010 during reactor startup, an automatic scram occurred due to low main condenser vacuum. The cause of this event was inadequate procedural compliance. The Unit Reactor Operator (URO) did not verify that the RPS low vacuum trips were cleared before exceeding 500 psig reactor pressure. The URO misinterpreted the step and verified that the turbine trips were cleared. The reactor automatically scrammed when reactor pressure reached 600 psig and the RPS Condenser Vacuum Low/Turbine Trip setpoint signal had not been cleared. EN 46507. Pass to TRG Lead for Human Performance (Michael Boggi). Assigned to Jesse Robles.

5) LER 3872010003R01 - SUSQUEHANNA 1: UNIT 1 MANUAL REACTOR SCRAM DUE TO LEAKAGE FROM THE UNIT 1 CIRCULATING WATER SYSTEM AND SUBSEQUENT FLOODING OF THE UNIT 1 CONDENSER BAY

On July 16, 2010 Susquehanna Unit 1 tripped due to a large un-isolable leak in the circulating water system. The leak was caused by an inadequate manway gasket installation. The Integrated Control System Feedwater Level Control did not respond as expected due to a higher than normal steam flow signal, which led to an increase in reactor water level. This resulted in the trip of all three Reactor Feedwater Pumps, and in the shutdown of the HPCI and RCIC systems. Reactor level and pressure was restored manually using these systems. EN 46103. An Issue for resolution was opened on this issue. Pass to TRG Lead for Flood Protection (Edward Smith), I&C (David Rahn), Electrical Power Systems (Roy Mathew), and Human Performance (Michael Boggi). Assigned to Jesse Robles.

6) LER 3872010001R00 - SUSQUEHANNA 1 & 2: SINGLE POINT VULNERABILITY WITH THE POTENTIAL TO CAUSE ISOLATIONS

On January 3, 2011 a single point vulnerability associated with the steam leak detection system was identified. The design and setpoint selection for the system Delta Temperature function could lead to isolation of the high pressure injection systems (HPCI and RCIC) and MSIVs during a sudden complete failure of the non-safety related Reactor Building HVAC heating system temperature controls during cold weather conditions. EN 46519. Add this LER to OpE COMM on related IFR. Pass to TRG Lead for I&C (David Rahn), HVAC (Nageswara Karipineni) and ECCS (Sam Miranda). Assigned to Jesse Robles.

New Reactors Items: None

Research (RES) Items: None

Items Screened Out*: Six (6) - two (2) Event Notifications (ENs) and four (4) Licensee Event Reports (LERs)

1) LER 2982010005R00 - COOPER: STEAM EXCLUSION BARRIER DOOR BLOCKED OPEN RESULTS IN LOSS OF SAFETY FUNCTION

2) EN 46671 - FORT CALHOUN - EXTENT OF CONDITION REVIEW REVEALS A POTENTIAL VULNERABILITY

3) EN 46664 - MCGUIRE 1 & 2 - FITNESS FOR DUTY - UPDATE

4) LER 2192010002R00 - OYSTER CREEK: AUTOMATIC REACTOR SCRAM DURING STARTUP DUE TO LOW MAIN CONDENSER VACUUM.

5) LER 3872010003R01 - SUSQUEHANNA 1: UNIT 1 MANUAL REACTOR SCRAM DUE TO LEAKAGE FROM THE UNIT 1 CIRCULATING WATER SYSTEM AND SUBSEQUENT FLOODING OF THE UNIT 1 CONDENSER BAY

6) LER 3872010001R00 - SUSQUEHANNA 1 & 2: SINGLE POINT VULNERABILITY WITH THE POTENTIAL TO CAUSE ISOLATIONS

**(i.e., Screened /reviewed against LIC-401 criteria for initiating an "Issue for Resolution" (IFR), which is IOEB's process for conducting further evaluation of an issue to determine what, if any, additional actions should be taken to communicate and organizationally learn from OpE.)*

Attendees at Screening Meeting:

Jesse Robles
Russ Haskell
Dave Garmon – by phone
Mary Wegner (RES) – by phone
Mark King
Ryan Craffey- NRO
Andrea Johnson – NRO

***Special Note** Related to Japanese Nuclear event response from the earthquake and tsunami of March 11, 2011.
NRC Response expectations:

The NRC is coordinating its actions with other Federal agencies as part of the U.S. government response to the events in Japan. The NRC is examining all available information as part of the effort to analyze the event and understand its implications both for Japan and the United States. The NRC's Headquarters Operations Center in Rockville, MD has been stood up since the beginning of the emergency in Japan and is operating on a 24-hour basis.

NRC Incident Responders at Headquarters have spoken with the agency's counterpart in Japan and offered the assistance of U.S. technical experts. Two officials from the NRC with expertise on boiling water nuclear reactors have deployed to Japan as part of a U.S. International Agency for International Development (USAID) team. USAID is the Federal government agency primarily responsible for providing assistance to countries recovering from disasters.

It is possible that some of us will be requested by colleagues in another country to provide technical advice and assistance during this emergency. It is essential that all such communications be handled through the NRC Operations Center. Any assistance to a foreign government or entity must be coordinated through the NRC

Operations Center and the U.S. Department of State (DOS). If you receive such a request, contact the NRC Operations Officer (301-816-5100 or via the NRC Operator) immediately.

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

From: King, Mark
Subject: IOEB Clearinghouse Screening Summary for Tuesday, March 15, 2011
Date: Tuesday, March 15, 2011 2:16:46 PM

~~NOTE: THIS SUMMARY IS OFFICIAL USE ONLY~~
*****~~MAY CONTAIN SENSITIVE/ PROPRIETARY OR NRC INTERNAL USE ONLY INFORMATION~~*****
DO ~~NOT FORWARD ANY PORTIONS OUTSIDE OF NRC WITHOUT FIRST OBTAINING PERMISSION FROM ORIGINATOR~~

Issues for Resolution (IFR): None

OpE Forum Postings (COMMS): None

Management Requests: None

Follow-up/Other Tasks: Six (6)

[Note - The information in this part of the Summary is often preliminary in nature and is provided to help IOEB staff communicate and track noteworthy items being followed up by either the Regions or HQ staff.]

1) JAPANESE NUCLEAR EVENTS -- LINKS

The following site links provide periodic updates on the Japanese Nuclear plant responses to the March 11, 2011 earthquake and tsunami events:

Japan Nuclear Industrial Safety Agency (NISA)

International Atomic Energy Agency (IAEA)

Tokyo Electric Power Company (TEPCO)

(NRC blog and NRC Press Releases)

See special note* at the bottom of this email concerning NRC response and should you become aware of information the NRC IRC is not aware of and the actions you should take if you are asked questions by another country. – INFO ONLY.

2) LER 2982010005R00 - COOPER: STEAM EXCLUSION BARRIER DOOR BLOCKED OPEN RESULTS IN LOSS OF SAFETY FUNCTION

On November 9, 2010 a steam exclusion barrier (SEB) door in the control room was blocked open with a ladder during preventive maintenance. No compensatory measures or Technical Specification required actions were taken. The condition was identified by the NRC RI staff. The event is still being investigated. A previous similar occurrence was reported in August of 2010 when an SEB door was propped open during planned maintenance on an emergency diesel generator (EDG). This event was classified as a Safety System Functional Failure (SSFF). Pass to TRG Lead for Human Performance (Michael Boggi), and Control Room Habitability and HVAC (Nageswara Karipineni). Assigned to Jesse Robles.

KKKK-6

3) EN 46671 - FORT CALHOUN - EXTENT OF CONDITION REVIEW REVEALS A POTENTIAL VULNERABILITY

Contact the Headquarters Operations Officer for additional details. This item was the result of an NRC inspection finding, compensatory measures have been implemented for the vulnerability. - INFO ONLY.

4) LER 2192010002R00 - OYSTER CREEK: AUTOMATIC REACTOR SCRAM DURING STARTUP DUE TO LOW MAIN CONDENSER VACUUM.

On December 23, 2010 during reactor startup, an automatic scram occurred due to low main condenser vacuum. The cause of this event was inadequate procedural compliance. The Unit Reactor Operator (URO) did not verify that the RPS low vacuum trips were cleared before exceeding 500 psig reactor pressure. The URO misinterpreted the step and verified that the turbine trips were cleared. The reactor automatically scrammed when reactor pressure reached 600 psig and the RPS Condenser Vacuum Low/Turbine Trip setpoint signal had not been cleared. EN 46507. Pass to TRG Lead for Human Performance (Michael Boggi). Assigned to Jesse Robles.

5) LER 3872010003R01 - SUSQUEHANNA 1: UNIT 1 MANUAL REACTOR SCRAM DUE TO LEAKAGE FROM THE UNIT 1 CIRCULATING WATER SYSTEM AND SUBSEQUENT FLOODING OF THE UNIT 1 CONDENSER BAY

On July 16, 2010 Susquehanna Unit 1 tripped due to a large un-isolable leak in the circulating water system. The leak was caused by an inadequate manway gasket installation. The Integrated Control System Feedwater Level Control did not respond as expected due to a higher than normal steam flow signal, which led to an increase in reactor water level. This resulted in the trip of all three Reactor Feedwater Pumps, and in the shutdown of the HPCI and RCIC systems. Reactor level and pressure was restored manually using these systems. EN 46103. An Issue for resolution was opened on this issue. Pass to TRG Lead for Flood Protection (Edward Smith), I&C (David Rahn), Electrical Power Systems (Roy Mathew), and Human Performance (Michael Boggi). Assigned to Jesse Robles.

6) LER 3872010001R00 - SUSQUEHANNA 1 & 2: SINGLE POINT VULNERABILITY WITH THE POTENTIAL TO CAUSE ISOLATIONS

On January 3, 2011 a single point vulnerability associated with the steam leak detection system was identified. The design and setpoint selection for the system Delta Temperature function could lead to isolation of the high pressure injection systems (HPCI and RCIC) and MSIVs during a sudden complete failure of the non-safety related Reactor Building HVAC heating system temperature controls during cold weather conditions. EN 46519. Add this LER to OpE COMM on related IFR. Pass to TRG Lead for I&C (David Rahn), HVAC (Nageswara Karipineni) and ECCS (Sam Miranda). Assigned to Jesse Robles.

New Reactors Items: None

Research (RES) Items: None

Items Screened Out*: Six (6) - two (2) Event Notifications (ENs) and four (4) Licensee Event Reports (LERs)

1) LER 2982010005R00 - COOPER: STEAM EXCLUSION BARRIER DOOR BLOCKED OPEN RESULTS IN LOSS OF SAFETY FUNCTION

2) EN 46671 - FORT CALHOUN - EXTENT OF CONDITION REVIEW REVEALS A POTENTIAL VULNERABILITY

3) EN 46664 - MCGUIRE 1 & 2 - FITNESS FOR DUTY - UPDATE

4) LER 2192010002R00 - OYSTER CREEK: AUTOMATIC REACTOR SCRAM DURING STARTUP DUE TO LOW MAIN CONDENSER VACUUM.

5) LER 3872010003R01 - SUSQUEHANNA 1: UNIT 1 MANUAL REACTOR SCRAM DUE TO LEAKAGE FROM THE UNIT 1 CIRCULATING WATER SYSTEM AND SUBSEQUENT FLOODING OF THE UNIT 1 CONDENSER BAY

6) LER 3872010001R00 - SUSQUEHANNA 1 & 2: SINGLE POINT VULNERABILITY WITH THE POTENTIAL TO CAUSE ISOLATIONS

*(i.e., Screened /reviewed against LIC-401 criteria for initiating an "Issue for Resolution" (IFR), which is IOEB's process for conducting further evaluation of an issue to determine what, if any, additional actions should be taken to communicate and organizationally learn from OpE.)

~~**NOTE: THIS SUMMARY IS OFFICIAL USE ONLY**~~
~~*****MAY CONTAIN SENSITIVE/ PROPRIETARY OR NRC INTERNAL USE ONLY INFORMATION*****~~
~~**DO NOT FORWARD ANY PORTIONS OUTSIDE OF NRC WITHOUT FIRST OBTAINING PERMISSION FROM ORIGINATOR**~~

Attendees at Screening Meeting:

Jesse Robles
Russ Haskell
Dave Garmon – by phone
Mary Wegner (RES) – by phone
Mark King
Ryan Craffey- NRO
Andrea Johnson – NRO

*__Special Note__ Related to Japanese Nuclear event response from the earthquake and tsunami of March 11, 2011.
NRC Response expectations:

The NRC is coordinating its actions with other Federal agencies as part of the U.S. government response to the events in Japan. The NRC is examining all available information as part of the effort to analyze the event and understand its implications both for Japan and the United States. The NRC's Headquarters Operations Center in Rockville, MD has been stood up since the beginning of the emergency in Japan and is operating on a 24-hour basis.

NRC Incident Responders at Headquarters have spoken with the agency's counterpart in Japan and offered the assistance of U.S. technical experts. Two officials from the NRC with expertise on boiling water nuclear reactors have deployed to Japan as part of a U.S. International Agency for International Development (USAID) team. USAID is the Federal government agency primarily responsible for providing assistance to countries recovering from disasters.

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

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

From: ET07 Hoc
Sent: Wednesday, March 16, 2011 2:23 PM
To: RMTPACTSU_ELNRC
Subject: FW: OIP document for consideration of assistance
Attachments: Proposed assistance to Japan (Rev 1 3-16-2011).doc

Jason/Mike:
Consider this a rough draft to plagiarize from as you see fit.

From: LIA02 Hoc
Sent: Wednesday, March 16, 2011 1:58 PM
To: ET07 Hoc
Cc: Ramsey, Jack
Subject: OIP document for consideration of assistance

This document has not yet been coordinated across the Ops Center teams. It is a "blue sky" think piece to start NRC thinking about what can or should be provided to assist the Japanese.

KKKK-7

3/16/2011 Rev 1 (1:30 pm)

US Nuclear Regulatory Commission Assistance to Japan

The United States Nuclear Regulatory Commission (USNRC) is proposing to offer to the Japanese Government the following types of support to assist in responding to the nuclear related events occurring in Japan. This support will be offered consistent with the appeal to Japan to accept the assistance below as shared among friends and family, not as formal U.S. Government (USG) assistance.

Upon request, the USNRC will provide

Immediate goals (to be done concurrently):

- NRC will maintain its in-country (in Japan) team to form the basis of the following proposed activities, and to eventually establish a center in Japan for implementing both mitigative, stabilizing and recovery strategies and coordination of USG and other national and multinational assistance.
- Trained U.S. health physicists (HP) to provide field radiation measurements to assist in characterizing radiation/contamination levels in the affected areas. These trained HPs will also assist in the necessary critical decontamination efforts that may be required in the contaminated area.
- Also provide HPs with capability to develop and implement a robust dosimetry program.
- The USNRC proposes to provide technical experts who have the ability to take environmental samples assess the effects of radiation to the environment.
- As the GOJ works to place the damaged reactors in a safe condition, USNRC will provide technical assistance in establishing emergency systems to provide necessary cooling, oversight, and monitoring of these units. The USNRC will coordinate with other US Government agencies to identify, locate provide and set up emergency cooling and monitoring systems.
- Assist in the U.S. Government coordination with other national and multinational assistance efforts. NRC will also provide administrative support to establish a nuclear technical support center (i.e., command and control center), at NISA, which will assist in the coordination activities.
- The USNRC will also provide assistance and outreach to the general public at large to assuage concerns.
- Project managers to help develop a strategic plan to address placing the units in stable temporary safe conditions; interim safe storage; and long-term storage.
- Provide NRC-certified design information for analogous GE plants operating in the United States to ensure that the regulator fill in gaps in technical information, which may be needed for assessment of the reactor facilities.

- *[After sand and water is dumped into the spent fuel pools, NRC will assist in assessing the criticality, the cooling and stabilization].*

Medium term goals:

- Developing the necessary computer models in core characterization and dose modeling and projection to assist in developing the strategic plan for proper shielding of the facility so that Phase 2 recovery can occur at the appropriate time.

- Support to assess structural damage to the units. This information will be used to develop the strategic plan. This will include the use of computer modeling tools to allow adequate assessment of damage to the structures (e.g., reactor vessels, critical components and spent fuel pool).

- Assist in the development and promulgation of regulatory orders (new technical specifications) to licensees to ensure that all operating units are placed in a safe and stable condition. Assist the regulator to inspect licensees' compliance with these new technical specifications.

- Train Japanese regulators and help develop a plan to do containment entries to set up necessary remote monitoring equipment to assess and monitor the damaged reactors and spent fuel pools.

- Assist Japan to develop an MC&A program to account for the material, and to physically secure the sites. Assist in the interaction with International Atomic Energy Agency safeguards inspectors as they compare their records of safeguarded material at the site with the results of the MC&A program.

Long term goals:

- Technical expertise in proper clean up and storage of damaged fuel.

- Provide ability to take and analyze core samples

From: King, Mark
Subject: IOEB Clearinghouse Screening Summary for Thursday, March 17, 2011
Date: Thursday, March 17, 2011 2:41:26 PM

NRR

NOTE: THIS SUMMARY IS OFFICIAL USE ONLY
*****MAY CONTAIN SENSITIVE/ PROPRIETARY OR NRC INTERNAL USE ONLY INFORMATION*****
DO NOT FORWARD ANY PORTIONS OUTSIDE OF NRC WITHOUT FIRST OBTAINING PERMISSION FROM ORIGINATOR

Issues for Resolution (IFR): None

OpE Forum Postings (COMMS): None

Management Requests: None

Follow-up/Other Tasks: One (1)

[Note - The information in this part of the Summary is often preliminary in nature and is provided to help IOEB staff communicate and track noteworthy items being followed up by either the Regions or HQ staff.]

1) EN 46677 - PEACH BOTTOM 2 - HIGH PRESSURE COOLANT INJECTION DECLARED INOPERABLE
See EN Text. Forward to ECCS TRG (Sam Miranda); assigned to Dave Garmon.

2) Numerous calls related to the Japanese Accident and response to questions being asked
Guidance on answering calls related to the ongoing Japan nuclear crisis. After consulting with the OEDO (communication specialist) and OPA, below is a plan for dealing with the large volume of calls NOT involving Allegations to the NRC Safety Hotline:

- **General Calls from the Public**: To the best of your ability address call using publically available information found in:
  - Q&As prepared by OPA/NRR in preparation for the Chairman's visit to Capitol Hill (EDO update expected with link to a Sharepoint site with this information should it need to be updated) and also see link: "FAQ Related to Events Occurring in Japan" that is now available on an NRR SharePoint site.
  - NRC press releases http://www.nrc.gov/reading-rm/doc-collections/news/2011/
  - NRC blog entries http://public-blog.nrc-gateway.gov/
- **Health-Related Calls**: Forward to Center for Disease Control at 1-800-CDC-INFO (1-800-232-4636) or direct caller to their specific State Health Department (see

KKKK-8

CDC map for phone numbers: http://www.cdc.gov/mmwr/international/relres.html);

- **Media-Related Calls**: Forward to OPA at 301-415-8200 or regional public affairs officer, as previously directed;

- **Useful Information and Foreign Requests for Technical Assistance**: Information that may be useful regarding this or any emergency (foreign or domestic) including suggested solutions for dealing with the emergency, and foreign requests for assistance forward to NRC Operations Center 301-415-5100, as previously directed.

Calls to the Safety Hotlines are designed to roll over to another local headquarters phone and then to the Ops Center during regular hours and go directly to the Ops Center during off hours.

Washington Post News story on the accident:
(http://www.washingtonpost.com/wp-srv/special/world/japan-nuclear-reactors-and-seismic-activity/?hpid=z3

And some Wikipedia links regarding the Japan accident
(Note: Wikipedia sources may be a somewhat questionable source because of its open forum style... but may still provide useful information).

http://en.wikipedia.org/wiki/Timeline_of_the_Fukushima_nuclear_accidents ← **Accident Timeline**

and detailed discussion

http://en.wikipedia.org/wiki/Fukushima_I_nuclear_accidents ← **Accident discussion at Dai-ichi site**

and details on the six plants themselves:

http://en.wikipedia.org/wiki/Fukushima_I_Nuclear_Power_Plant ← **Dai-ichi site info, the site #1 with six units**

New Reactors Items: None

Research (RES) Items: None

Items Screened Out*: One (1) - one (1) Event Notification (EN)

1) EN 46677 - PEACH BOTTOM 2 - HIGH PRESSURE COOLANT INJECTION DECLARED INOPERABLE

**(i.e., Screened /reviewed against LIC-401 criteria for initiating an "Issue for Resolution" (IFR), which is IOEB's process for conducting further evaluation of an issue to determine*

From: LIA11 Hoc
Sent: Saturday, March 19, 2011 10:55 PM
To: Hoc, PMT12; LIA01 Hoc; LIA06 Hoc; LIA03 Hoc; LIA08 Hoc; PMT07 Hoc; PMT03 Hoc
Subject: RE: Assitance

Kevin:

FYI – what I got from EPA...a website devoted to the emergency in Japan.

Jeff

>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

Mr. Lynch. Please access the EPA website at www.epa.gov/japan2011. Links to a Daily Data Summary, RadNet Monitoring Data and How to Access RadNet Data on EPA's Central Data Exchange and Envirofacts are provided.

From: LIA11 Hoc <LIA11.Hoc@nrc.gov>
To: Craig Benson/R9/USEPA/US@EPA, 'benson.craig@epa.gov'
Cc: LIA01 Hoc <LIA01.Hoc@nrc.gov>
Date: 03/19/2011 07:25 PM
Subject: Enquiring about RADNET monitoring following tsunami and earthquake in Japan

---

Mr. Benson:

Please forward me the latest RADNET monitoring information you have for Region 9 and send me any future monitoring information you collect. Thanks.

Jeff Lynch
NRC Operations Center
301-816-5208

From: Hoc, PMT12
Sent: Saturday, March 19, 2011 10:10 PM
To: LIA11 Hoc; LIA01 Hoc; LIA06 Hoc; LIA03 Hoc; LIA08 Hoc; Hoc, PMT12; PMT07 Hoc; PMT03 Hoc
Subject: Assitance

Can the liaison team assist in the following:

- establish communication with TEPCO through NISA to obtain regular radiological information, including offsite plume monitoring data on a routine and expedited frequency.

- contact EPA to follow up on their monitoring efforts along the western US coast line.

KKKK-9

Thanks,

Kevin

From: LIA03 Hoc
Sent: Saturday, March 19, 2011 3:13 PM
To: Fragoyannis, Nancy; Doane, Margaret; Mamish, Nader; Abrams, Charlotte; Wittick, Brian; Afshar-Tous, Mugeh; 'ShafferMR@state.gov'; Smith, Brooke; Foggie, Kirk; Bloom, Steven; Schwartzman, Jennifer; Tobin, Jennifer; Mayros, Lauren; Jones, Andrea; English, Lance; Smiroldo, Elizabeth; Young, Francis; LIA03 Hoc; Henderson, Karen
Cc: Emche, Danielle; Stahl, Eric; Dembek, Stephen; LIA03 Hoc; LIA07 Hoc
Subject: TRANSITION REPORT FOR MARCH 19, 2011/ 1500

~~OFFICIAL USE~~ ONLY

TRANSITION REPORT FOR MARCH 19, 2011 1500
Steve and Lance transitioning to Jenny T and Jill

GENERAL NOTES. (includes notes from previous updates)
1) Information pertinent to the team in Japan can be forwarded to new email group, which incorporates Dan Dorman already, "Liaison Japan," in Outlook.
2) Action: International updates must now be sent to LIA07 (to be put in the HOO Status Update) before the end of every shift as well as posted on the LT status board (different than the LT Log).
3) 11 PM – 7 AM shift is responsible for the summary call with Kirk and Brooke, scheduled daily at 5 AM EST unless rescheduled.
4) Kirk and Brooke requested that the international team to sit in on calls with the ET and Chuck to take notes and provide a short summary of what was discussed via email.
5) Reminder to include names on watch bill emails and inform Brooke and Kirk when shift changes.
6) RST needs to follow up on Crystallization issue per the 0930 conference call (see item below)
7) Prior to the 2 pm call, make sure you contact the HOOs to let them know that you are going to have the international call. Might be beneficial to establish a standing bridge.

- **Notes from Mark Shaffer.** It was determined that the IAEA Team Japan consisted of DG Amano, Khammar Mrabit and 2 rad monitoring techs, but NRC and Mark Shaffer have been unsuccessful in obtaining all of the names.

- **Two Questions From NISA**. The RST team provided answers to two questions from NISA. Response from RST team in e-mail date stamp 3/19/11 at 12:09.

- **Summary of the daily 0930 Conference Call.** Representatives from the US (OIP & RST)/UK (HSE/NII)/Canada(CNSC)/France (ASN & IRSN) Participated in the daily 0930 conference call to discuss the status of the reactors.

    1. We participated in the conference call with HSE/NII, ASN, IRSN, CNSC on dose/health physics issues. Held 9:30 daily call with UK, France and Canada. Call will continue over the weekend. Call with same countries will also occur over the weekend to discuss health physics issues on Saturday 3/19 at 1400. Due to the technical discussions recommend RST person phone in to answer technical questions.
    2. Question about the Reactor Vessel Pressure for Units 2 and 3 being lower than the Containment Vessel (Drywell) Pressure. For Unit 2, RPV pressure is 0.096/0.083 MPa and the Containment Vessel Pressure is 139 kPa. For Unit 3, RPV pressure is 0.146/0.106 MPa and the Containment Vessel Pressure is 160 kPa. Told 9:30 call we would ask the RST for explanation.

KKKK-10

3. The French had a concern about the effects of seawater on the fuel, and the possible effects of clogging of the channels.
4. There was a question from Canadians about why with all of the seawater being injected into the reactor why the water level does not appear to be going up and what is the heat removal rate?
5. The Canadians discussed an report/email which listed the total number of rods in each units pools, the number of used, new and irradiated fuel bundles. The Canadians discussed the last start up and shutdown dates. Unit 1 startup – March 20, 2010, unit 2 startup - April 20, 2010, unit 3 startup - January 20, 2010, unit 4 shutdown – November 30, 2010, unit 5 shutdown – September 16, 2010, and unit 6 shutdown – August 15, 2010.
6. There was a discussion on the 32 MOX assemblies in the unit 3 SFP and the MOX fuel assemblies placed in the unit 3 reactor vessel in September 2010. The other countries explained how they individually were evaluating and calculating the release path and dose estimates. They asked if the NRC had revised dose numbers for our source terms. Told them that we could discuss at the 1400 call today. Followed up RST member (Peter) and he was also confused on the differences in the pressures for the reactor pressure vessel and the containment. His answer was that it did not make sense either and that it might be an instrumentation issue.

- **0930 Conference Call (Update).** Received a call from the (Ali Tehrani) UK as a follow-up to the 9:30 call. They are asking about crystallization on the fuel. With the decay heat they anticipate that there will be crystallization on the surface area within a day of them starting to inject seawater, and significant clogging within 3 days. They want to know our thoughts. They also asked about where the water is going? If they continue to add water, and the water is going out the relief valve into containment, then the pressure would increase, which has not been seen. Based on email from RST01, Based on a US built BWR: Continuing to inject into RPV for this many days means: - they are not injecting at the flow rate they are claiming, - the level readings they report are inaccurate, - if they were injecting at the rate they are reporting they should have filled the RPV up to the steam lines and out any SRVs that have pneumatics and dc control power, the RPV pressure would be the shutoff head of the pumping system (at the SRVs), therefore the RPV pressures they report are inaccurate. Based on US built BWRs Informed UK and Canada of this answer at the 1400 call. The question of crystallization was asked again by the British, and along with email from Chuck Casto and the fact that TEPCO is concerned, need to followup with RST. The UK also asked if there was no power what was the fail safe condition. Action: Followup with RST on crystallization issue and the SRV fail safe condition.

- **Summary of the daily 1400 Conference Call.** Representatives from the US (OIP & PMT)/UK (HSE/NII)/Canada(CNSC) participated in the daily 1400 conference call to discuss health physic issues. UK stated that they have a two tiered system, the meteorological staff provide data to the health physics staff who determine the doses. They were using a dose fraction based on 10% from the reactor and 100% from the pond (SFP). They were using NUREG CR 6451 for information. The Canadians stated that they had gotten a worse case dose for I-131 at 10^{17} Becquerels. The UK agreed with the number and asked for the US assessment. The PMT representative (Kathy Brock) stated that we were evaluating and would email our results as soon as we were ready.

- **NRC Relief Team to Japan (Update).** Michelle Evans reported that there will be 2 additional NRC staff members leaving on Tuesday and the others on Thursday. Some of the staff members are from Region 1, Region 2 and Region 3. Started process for next staff members traveling to Japan. Sent list of names to all members of OIP. In addition, sent some additional recommendations from Michelle Evans for Checklist.

- **International request for information.** The Indonesian Embassy in Washington requested information on how we arrived at the 50-mile evacuation announcement. We provided some very basic information. They have followed up with a request for a phone call or meeting with NRC and their Minister-Counselor. Action: Call will occur at 5PM on Monday, March 21.

- **International aid/support for Japan.** IAEA and Russians have delegations in Japan. The Italians are interested in discussing what the USG is doing, and might be interested in helping in some way. We should receive more information from Roberto Ranieri soon. Spain has sent no one yet but Parliament will review and decide. South Africa and Slovenia have sent no one. And, as of today, has no plans.

- **Bechtel support possible diplomatic issue.** Sent email to Chuck and John from Tom Bergman about conference call to the position that other factors such as defense in depth, and diplomatic are causing us to rethink our decision on the Bechtel piping system for one train. Participants will be either of Chuck or John, ET, USAID, State Department (Embassy, likely Joe Young) and Naval Reactors. Call is 6 pm (ET), 7 am (Tokyo Time).

- **Use of USAid for Travel.** Contacted Joshua Batkin, Chief of Staff for the Chairman, on direction by Nader Mamish to discuss the fact that we are to use USAid and the need for a legal agreement between the NRC and USAid if we are to get additional support. Joshua Batkin said that he would make this his priority today and get back to us later today. Action: Need to followup with Joshua Batkin and report back to Nader outcome.

~~OFFICIAL USE ONLY~~

From: LIA01 Hoc
Sent: Saturday, March 19, 2011 2:01 PM
To: LIA01 Hoc; RMTPACTSU_ELNRC
Cc: LIA06 Hoc; LIA08 Hoc
Subject: RE: Teleconference Regarding Bechtel Pump Issue

Hi Joe,

To clarify, the proposed parties are NRC, USAID, State (Embassy) and Naval Reactors. The NRC representative will the ET director at the time of the call, not necessarily Mr. Wiggins.

Thanks,
Russ

From: LIA01 Hoc
Sent: Saturday, March 19, 2011 1:25 PM
To: 'RMTPACTSU_ELNRC'
Cc: LIA06 Hoc; LIA08 Hoc
Subject: Teleconference Regarding Bechtel Pump Issue

Hi Michael and Joe,

The ET director, Mr. Wiggins, has requested that USAID participate in a teleconference at 1800 EDT to discuss the issue with the Bechtel pumps and perhaps reconsider sending at least one of the pump trains.

Please let us know who from USAID will participate. We'll send the call-in information once we have it.

Thanks,
Russ

Russell Chazell
Federal Liaison

KKKK-11

From: RMTPACTSU_ELNRC <RMTPACTSU_ELNRC@ofda.gov>
Sent: Saturday, March 19, 2011 3:09 PM
To: LIA01 Hoc; LIA11 Hoc
Cc: LIA06 Hoc; LIA08 Hoc; RMTPACTSU_RM; RMTPACTSU_DMP; RMTPACTSU_DMO; LIA02 Hoc; LIA12 Hoc; LIA04 Hoc; LIA03 Hoc; McDermott, Brian; Erlanger, Craig
Subject: ACTION NEEDED: 6 PM Teleconference Re: Bechtel Pump Issue

USAID will participate in 6 pm conference call; however, they are asking for the titles (management level) and names of individuals from NRC, State (Embassy) and Naval Reactors who will be participating in call, so that they can have appropriate level of representation on call. Also, please provide me the conference bridge information at your earliest opportunity for the 6 pm call.

From: LIA01 Hoc [mailto:LIA01.Hoc@nrc.gov]
Sent: Saturday, March 19, 2011 1:25 PM
To: RMTPACTSU_ELNRC
Cc: LIA06 Hoc; LIA08 Hoc
Subject: Teleconference Regarding Bechtel Pump Issue

Hi Michael and Joe,

The ET director, Mr. Wiggins, has requested that USAID participate in a teleconference at 1800 EDT to discuss the issue with the Bechtel pumps and perhaps reconsider sending at least one of the pump trains.

Please let us know who from USAID will participate. We'll send the call-in information once we have it.

Thanks,
Russ

Russell Chazell
Federal Liaison

KKKK-12

From: Dorman, Dan
Sent: Saturday, March 19, 2011 11:12 AM
To: LIA03 Hoc
Cc: LIA02 Hoc
Subject: Re: Trip to Japan

1. Yes
2. Yes
3. No, I'm already at the airport.

Thanks to all involved for all the support putting together the package for my trip!

Dan

From: LIA03 Hoc
To: Dorman, Dan
Cc: LIA02 Hoc
Sent: Sat Mar 19 03:12:45 2011
Subject: Trip to Japan

Hi Dan,
I'm on the graveyard shift for the international team and we have some things we'd like to verify and ask you:

1. Have you received your dosimeter?
2. Have you packed a big stack of business cards?
3. Is it possible for you or do you plan to stop into headquarters prior to your flight?

Please us know at your soonest convenience. It would be great if you could stop by the Ops Center prior to departure but we understand if you are not able to do so.
Danielle

KKKK-13

From: Mamish, Nader
Sent: Saturday, March 19, 2011 1:23 PM
To: Doane, Margaret; Foggie, Kirk; Emche, Danielle; Smiroldo, Elizabeth; Ramsey, Jack
Cc: Smith, Brooke; LIA02 Hoc; LIA03 Hoc
Subject: RE: Questions from NISA

Not confusing to me and makes sense. No concerns from me.

From: Doane, Margaret
Sent: Saturday, March 19, 2011 8:48 AM
To: Mamish, Nader; Foggie, Kirk; Emche, Danielle; Smiroldo, Elizabeth; Ramsey, Jack
Cc: Smith, Brooke; LIA02 Hoc; LIA03 Hoc
Subject: Re: Questions from NISA

Agree with Nader to send to team. But, #2, as you seemed to sense, definitely could have an impact on the eventual outcome of this situation and we CANNOT make the decision. My suggestion would be that good strategy points be developed to explain how we looked at each option, the pros and cons considered and then a clear pass to them to decide. If our analysis then influences them that's their decision.
That's a little confusing, so if you need to talk, call.
Nader or Jack any concerns?
Margie

Sent from an NRC Blackberry
Margaret Doane

From: Mamish, Nader
To: Foggie, Kirk; Emche, Danielle; Smiroldo, Elizabeth; Doane, Margaret
Cc: Smith, Brooke; LIA02 Hoc; LIA03 Hoc
Sent: Sat Mar 19 08:04:40 2011
Subject: RE: Questions from NISA

Both Qs should promptly go to the RST. They will coordinate w/NRR as appropriate.

Thanks

From: Foggie, Kirk
Sent: Saturday, March 19, 2011 6:47 AM
To: Emche, Danielle; Smiroldo, Elizabeth; Doane, Margaret
Cc: Smith, Brooke; Mamish, Nader
Subject: Fw: Questions from NISA

Danielle and Elizabeth,

Please pass the first question to the appropriate ops team/s (I think PMT) for NRCJPN team meeting tomorrow. Margie- what is your recommendation for the second question, should this be passed to NRR or NRO, or do you feel this question shouldn't be answered by NRC.

Thanks.

KKKK-14

Kirk
Sent from Blackberry.

From: Nakanishi, Tony
To: Foggie, Kirk
Sent: Sat Mar 19 05:52:16 2011
Subject: Questions from NISA

Kirk,

These are my understanding of the questions from NISA:

1) US recommends use of borated water for injection. If Japan accepts the US solution, what preparations should Japan consider?

2) It appears that the US solution is based on input from Bechtel. Should Japan staff up with a Japanese engineering company or the self-defense force?

Tony

From: LIA02 Hoc
Sent: Saturday, March 19, 2011 11:13 AM
To: Dorman, Dan; LIA03 Hoc
Subject: RE: Trip to Japan

Thank you.

Steve

From: Dorman, Dan
Sent: Saturday, March 19, 2011 11:12 AM
To: LIA03 Hoc
Cc: LIA02 Hoc
Subject: Re: Trip to Japan

1. Yes
2. Yes
3. No, I'm already at the airport.

Thanks to all involved for all the support putting together the package for my trip!

Dan

From: LIA03 Hoc
To: Dorman, Dan
Cc: LIA02 Hoc
Sent: Sat Mar 19 03:12:45 2011
Subject: Trip to Japan

Hi Dan,
I'm on the graveyard shift for the international team and we have some things we'd like to verify and ask you:

1. Have you received your dosimeter?
2. Have you packed a big stack of business cards?
3. Is it possible for you or do you plan to stop into headquarters prior to your flight?

Please us know at your soonest convenience. It would be great if you could stop by the Ops Center prior to departure but we understand if you are not able to do so.
Danielle

KKKK-15

From: LIA06 Hoc
Sent: Saturday, March 19, 2011 10:55 AM
To: LIA08 Hoc
Subject: FW: Info. from NISA and JAIF
Attachments: NISA 33rd update.pdf; milk and spinach.pdf; updated jaif assessments.pdf

Liaison Team Director
U.S. Nuclear Regulatory Commission
Operations Center

-----Original Message-----
From: LIA02 Hoc
Sent: Saturday, March 19, 2011 10:28 AM
To: LIA06 Hoc
Subject: FW: Info. from NISA and JAIF

-----Original Message-----
From: Danielle Emche [mailto:danielle.emche@gmail.com]
Sent: Saturday, March 19, 2011 10:27 AM
To: LIA02 Hoc; LIA03 Hoc
Subject: Info. from NISA and JAIF

Can you forward these or print them out as you would like? I think they would be of interest to all teams including the LT. Danielle

KKKK-16

News Release

経済産業省
Ministry of Economy, Trade and Industry

March 19, 2011
Nuclear and Industrial Safety Agency

Seismic Damage Information (the 33rd Release)
(As of 13:30 March 19th, 2011)

Nuclear and Industrial Safety Agency (NISA) confirmed the current situation of Onagawa NPS, Tohoku Electric Power Co. Inc.; Fukushima Dai-ichi and Fukushima Dai-ni NPSs, Tokyo Electric Power Co. Inc. (TEPCO); Tokai Dai-ni NPS, Japan Atomic Power Co. Inc. as follows:

Major updates are as follows.

1. Nuclear Power Stations (NPS)

- Fukushima Dai-ichi NPS

<Situation of Water Spray>

Hyper Rescue Unit of Tokyo Fire Department is scheduled to carry out water spray.

Start water spray : 14:00 (to be scheduled)

< Situation of operations in the site and recovery of the power supply >

- Electric power receiving at the emergency power source transformer from the external transmission line was completed.
- The work for laying the electric cable from the facility to the load site is being carried out. (As of 13:30 March 19th)

(Attached sheet)

1. The status of operation at NPS (Number of automatic shutdown units: 10)

- Fukushima Dai-ichi NPS, TEPCO
  (Okuma Town and FutabaTown, Futaba County, Fukushima Prefecture)

(1) The status of operation

Unit 1 (460MWe):	automatic shutdown
Unit 2 (784MWe):	automatic shutdown
Unit 3 (784MWe):	automatic shutdown
Unit 4 (784MWe):	in periodic inspection outage
Unit 5 (784MWe):	in periodic inspection outage
Unit 6 (1,100MWe):	in periodic inspection outage

(2) Major Plant Parameters (12:00 March 19th)

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
Reactor Pressure*1 [MPa]	0.297(A) 0.252(B)	0.092(A) 0.078(B)	0.078(C) 0.078(B)	—	1.359	0.825
CV Pressure (D/W) [kPa]	170	135	160	—	—	—
Reactor Water Level*2 [Mm]	−1,800(A) −1,700(B)	−1,400(A) Not available(B)	−1,950(A) −2,300(B)	—	1,984	1,620
Suppression Pool Water Temperature (S/C) [℃]	—	—	—	—	—	—
Suppression Pool Pressure (S/C) [kPa]	170	down scale	down scale	—	—	—
Spent Fuel Pool Water Temperature [℃]	—	—	—	84	66.6	66.5
Time of Measurement	11:00 March 19th	11:00 March 19th	11:15 March 19th	04:08 March 14th	11:00 March 19th	11:00 March 19th

*1: Converted from reading value to absolute pressure

*2: Distance from the top of fuel

(3) Report concerning other incidents

- TEPCO reported to NISA the event in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi. (15:42 March 11th)
- TEPCO reported to NISA the event (Loss of reactor cooling function) falling under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Units 1 and 2 of Fukushima Dai-ichi. (16:36 March 11th)
- The cable for receiving electricity from the transmission line of Tohoku Electric Power Company was installed. It is scheduled to be connected to Unit 2 after the completion of discharge work. (17:30 March 17th) The content of operations for recovery of external power supply to Unit 1 to 4 (Power supply from Electric transmission grid of Tohoku Electric Power Co., and from the route via transformer sub-station of TEPCO) is being confirmed. (06:30 March 18th)

<Unit 1>

- Seawater was injected to RPV via the Fire Extinguishing System Line (Started up 11:55 March 13th)
  →Temporary interruption of the injection (01:10 March 14th)
- The sound of explosion in Unit 1 occurred. (15:36 March 12nd)
- Seawater is being injected. (12:00 March 19th)

<Unit 2>

- Water injection function was sustained. (14:00 March 13th)
- The Blow-out Panel of reactor building was opened due to the explosion of the Unit 3 reactor building. (After 11:00 March 14th)
- Reactor water level was decreasing. (13:18 March 14th) TEPCO reported to NISA the event (Loss of reactor cooling functions) falling under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness. (13:49 March 14th)
- Seawater injection to RPV was ready through the Fire Extinguishing System line. (19:20 March 14th)
- TEPCO evaluated core damage of Unit 2 was "less than 5%" (22:14 March 14th)
- Water level in RPV in Unit 2 is decreasing. (22:50 March 14th)

- A sound of explosion was made in Unit 2. As the pressure in Suppression Chamber decreased (06:10 March 15th), there was a possibility that an incident occurred in the Chamber. (06:20 March 15th).
- Seawater injection to RPV continued. (12:00 March 19th)
- Access to the substation for reserve power supply from external transmission line was completed and cable connection is under preparation. Today's work was completed. (13:30 March 19th)

<Unit 3>

- Fresh water was injected to RPV via the Fire Extinguishing System Line (FESL). (11:55 March 13th)
- Seawater was injected to RPV via FESL. (13:12 March 13th)
- Injection of seawater for Unit 1 and Unit 3 was interrupted due to the lack of seawater in pit. (01:10 March 14th)
- For Unit 3 injection of seawater into PCV was restarted (03:20 March 14th)
- The pressure in PCV of Unit 3 rose unusually. (7:44 March 14th) TEPCO reported to NISA the event (Loss of reactor cooling function) falling under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness. (7:52 March 14th)
- For Unit 3 the explosion like Unit 1 occurred around the Reactor Building (11:01 March 14th)
- The white smoke like steam generated from Unit 3. (08:30 March 16th)
- Because of the possibility that PCV of Unit 3 was damaged, the workers evacuated from the central control room of Unit 3 and 4 (common control room). (10:45 March 16th) Thereafter the operators returned to the room and restarted the operation for water injection. (11:30 March 16th)
- Seawater was discharged 4 times to Unit 3 by the helicopters of the Self-Defence Force. (9:48, 9:52, 9:58 and 10:01 March 17th)
- The riot police arrived at the site for grand discharge. (16:10 March 17th)
- The Self-Defence Force started the water spray from 19:35 March 17th.
- The water spray from the ground was carried out by the riot police (from 19:05 till 19:13 March 17th)

- The water spray from the ground was carried out by the Self-Defence Force using 5 cars (March 17th)
  (The starting time of water spray by each car: 19:35, 19:45,19:53, 20:00 and 20:07 March 17th)
- The water spray from the ground using 6 fire engines (6 tons of water per car) was carried out by the Self-Defence Force. (from before 14:00 till 14:38 March 18th)
- The water spray from the ground using a fire engine provided by the US Military was carried out. (finished at 14:45 March 18th)
- Seawater is being injected to RPV. (As of 10:00 March 19th)
- Hyper Rescue Unit (14 vehicles) arrived at the Main Gate (23:10 March 18th) and 6 vehicles of them entered the NPS in order to spray water from the ground. (23:30 March 18th)
- Hyper Rescue Unit of Tokyo Fire Department is scheduled to carry out water spray. (14:00 March 19th)

<Unit 4>

- It was confirmed that a part of wall in the operation area of Unit 4 was damaged. (06:14 March 15th)
- The fire at Unit 4 occurred. (09:38 March 15th) TEPCO reported that the fire was extinguished spontaneously. (11:00 March 15th)
- The temperature of water in the Spent Fuel Pool at Unit 4 had increased. (84 ℃ at 04:08 March 14th)
- The fire occurred at Unit 4. (5:45 March 15th) TEPCO reported that no fire could be confirmed on the ground.(06:15 March 16th)
- Because of the replacement work of the Shroud of RPV, no fuel was inside the PRV.

<Units 5 and 6>

- Emergency Diesel Generator (1 unit) for Unit 6 is operable and supplying electricity to Units 5 and 6. Water injection to the PRV and Spent Fuel Pool through MUWC is progressing.
- The second unit of Emergency Diesel Generator (A) for Unit 6 has started up. (04:22 March 19th)
- Pump for Residual Heat Removal (RHR)(C) for Unit 5 started up and cooling of Spent Fuel Storage Pool has started. (Power supply :

Emergency Diesel Generator for Unit 6) (05:00 March 19th)

<Common Spent Fuel Pool>

- It was confirmed that the water level of spent fuel pool was maintained full at after 06:00 March 18.
- As of 11:19 March 18th, the water temperature in the pool is 55℃.

- Fukushima Dai-ni NPS (TEPCO)
  (Naraha Town / Tomioka Town, Futaba County, Fukushima Prefecture.)

(1) The status of operation

Unit1 (1,100MWe): automatic shutdown, cold shut down at 17:00, March 14th

Unit2 (1,100MWe): automatic shutdown, cold shut down at 18:00, March 14th

Unit3 (1,100MWe): automatic shutdown, cold shut down at 12:15, March 12th

Unit4 (1,100MWe): automatic shutdown, cold shut down at 07:15, March 15th

(2) Major plant parameters (As of 12:00 March 19th)

	Unit	Unit 1	Unit 2	Unit 3	Unit 4
Reactor Pressure*1	MPa	0.18	0.11	0.13	0.15
Reactor water temperature	℃	37.5	34.2	27.0	31.1
Reactor water level*2	Mm	10,596	9,896	7,488	8,785
Suppression pool water temperature	℃	29	25	41	30
Suppression pool pressure	kPa (abs)	142	115	107	110
Remarks		cold shutdown	cold shutdown	cold shutdown	cold shutdown

*1:Converted from reading value to absolute pressure

*2: Distance from the top of fuel

(3) Report concerning other incidents

- TEPCO reported to NISA the event in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Unit 1 of Fukushima Dai-ni NPS. (18:08 March 11th)
- TEPCO reported to NISA the events in accordance with the Article 10 regarding Units 1, 2 and 4 of Fukushima Dai-ni NPS. (18:33 March 11th)
- TEPCO reported to NISA the event (Loss of pressure suppression function) falling under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Unit 1 of Fukushima Dai-ni NPS. (5:22 March 12th)
- TEPCO reported to NISA the event (Loss of pressure suppression function) falling under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Unit 2 of Fukushima Dai-ni NPS. (5:32 March 12th)
- TEPCO reported to NISA the event (Loss of pressure suppression function) falling under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Unit 4 of Fukushima Dai-ni NPS. (6:07 March 12th)

● Onagawa NPS (Tohoku Electric Power Co. Inc.)
(Onagawa Town, Oga County and Ishinomaki City, Miyagi Prefecture)

(1) The status of operation

Unit 1 (524MWe): automatic shutdown, cold shut down at 0:58, March 12th
Unit 2 (825MWe): automatic shutdown, cold shut down at earthquake
Unit 3 (825MWe): automatic shutdown, cold shut down at 1:17, March 12th

(2) Readings of monitoring post

Reading of monitoring post:
MP2 (Monitoring at the North End of Site Boundary)
approx. 6,500 nGy/h (19:00 March 14th)
→approx. 5,400 nGy/h (19:00 March 15th)

(3) Report concerning other incidents

- Fire Smoke on the first basement of the Turbine Building was confirmed to be extinguished. (22:55 on March 11th)
- Tohoku Electric Power Co. reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness. (13:09 March 13th)

2. Action taken by NISA

(March 11th)

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

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

16:36 TEPCO recognized the event (Loss of cooling function) in accordance with the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Units 1 and 2 of Fukushima Dai-ichi NPS. (Reported to NISA at 16:45)

18:08 Regarding Unit 1 of Fukushima Dai-ni NPS, TEPCO reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

18:33 Regarding Units 1, 2 and 4 of Fukushima Dai-ni NPS, TEPCO reported to NISA in accordance with the Article 10 of Act on Special Measures Concerning Nuclear Emergency Preparedness.

19:03 Government declared the state of nuclear emergency. (Establishment of Government Nuclear Emergency Response Headquarters and Local Emergency Response Headquarters)

20:50 Fukushima Prefecture's Emergency Response Headquarters issued a direction for the residents within 2 km radius from Unit 1 of Fukushima Dai-ichi NPS to evacuate. (The population of this area is 1,864.)

21:23 Directives from Prime Minister to the Governor of Fukushima Prefecture, the Mayor of Okuma Town and the Mayor of Futaba Town were issued regarding the event occurred at Fukushima Dai-ichi NPS, TEPCO, in accordance with the Paragraph 3, the

Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness as follows:

- Direction for the residents within 3km radius from Unit 1 to evacuate
- Direction for the residents within 10km radius from Unit 1 to stay in-house

24:00 Vice Minister of Economy, Trade and Industry, Ikeda arrived at the Local Emergency Response Headquarters

(March12th)

05:22 Regarding Unit 1 of Fukushima Dai-ni NPS, TEPCO recognized the event (Loss of pressure suppression function) to fall under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness. (reported to NISA at 06:27)

05:32 Regarding Unit 2 of Fukushima Dai-ni NPS, TEPCO recognized the event (Loss of pressure suppression function) to fall under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

05:44 Residents within 10km radius from Unit 1 of Fukushima Dai-ichi NPS shall evacuate by the Prime Minister Direction.

06:07 Regarding of Unit 4 of Fukushima Dai-ni NPS, TEPCO recognized the event (Loss of pressure suppression function) to fall under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

06:50 In accordance with the Paragraph 3, the Article 64 of the Nuclear Regulation Act, the order was issued to control the internal pressure of the Containment Vessel of Units 1 and 2 of Fukushima Dai-ichi NPS.

07:45 Directives from Prime Minister to the Governor of Fukushima Prefecture, the Mayors of Hirono Town, Naraha Town , Tomioka Town and Okuma Town were issued regarding the event occurred at Fukushima Dai-ni NPS, TEPCO, pursuant to the Paragraph 3, the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness as follows:

- Direction for the residents within 3km radius from Fukushima Dai-ni NPS to evacuate

- Direction for the residents within 10km radius from Fukushima Dai-ni NPS to stay in-house

17:00 TEPCO reported to NISA the event (Unusual increase of radiation dose at the site boundary) falling under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.

17:39 Prime Minister directed evacuation of the residents within the 10 km radius from Fukushima-Dai-ni NPS

18:25 Prime Minister directed evacuation of the residents within the 20km radius from Fukushima Dai-ichi NPS

19:55 Directives from Prime Minister was issued regarding seawater injection to Unit No.1 of Fukushima Dai-ichi NPS.

20:05 Considering the Directives from Prime Minister and pursuant to the Paragraph 3, the Article 64 of the Nuclear Regulation Act, order was issued to inject seawater to Unit 1 of Fukushima Dai-ichi NPS.

20:20 At Unit 1 of Fukushima Dai-ichi NPS, seawater injection started.

(March 13th)

05:38 TEPCO reported to NISA the event (Total loss of coolant injection function) falling under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Unit 3 of Fukushima Dai-ichi NPS. Recovering efforts by TEPCO of the power source and coolant injection function and work on venting are under way.

09:01 TEPCO reported to NISA the event (Unusual increase of radiation dose at the site boundary) falling under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.

09:08 Pressure suppression in the Containment Vessel and fresh water injection started at Unit 3 of Fukushima Dai-ichi NPS.

09:20 The Pressure Vent Valve of Unit 3 of Fukushima Dai-ichi NPS was opened.

09:30 The order was issued for the Governor of Fukushima Prefecture, the Mayors of Okuma Town, Futaba Town, Tomioka Town and Namie Town in accordance with the Act on Special Measures Concerning Nuclear Emergency Preparedness on the contents of radioactivity

decontamination screening.

09:38 TEPCO reported to NISA that Unit 1 of Fukushima Dai-ichi NPS reached a situation specified in the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

13:09 Tohoku Electric Power Co. reported to NISA that Onagawa NPS reached a situation specified in the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

13:12 Fresh water injection was switched to seawater injection at Unit 3 of Fukushima Dai-ichi NPS.

14:36 TEPCO reported to NISA the event (Unusual increase of radiation dose at the site boundary) falling under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.

(March 14th)

01:10 Seawater injection at Unit 1 and Unit 3 of Fukushima Dai-ichi NPS were temporarily interrupted due to the lack of seawater in pit.

03:20 Seawater injection at Unit 3 of Fukushima Dai-ichi NPS was restarted.

04:40 TEPCO reported to NISA the event (Unusual increase of radiation dose at the site boundary) falling under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.

05:38 TEPCO reported to NISA the event (Unusual increase of radiation dose at the site boundary) falling under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.

07:52 TEPCO reported to NISA the event (Unusual rise of the pressure in PCV) falling under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Unit 3 of Fukushima Dai-ichi NPS.

13:25 Regarding Unit 2 of Fukushima Dai-ichi NPS, TEPCO recognised the event (Loss of cooling function) to fall under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness.

22:13 TEPCO reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness

regarding Fukushima Dai-ni NPS.

22:35 TEPCO reported to NISA the event (Unusual increase of radiation dose at the site boundary) falling under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.

(March 15th)

00:00: The acceptance of experts from IAEA was decided. NISA agreed to accept the offer of dispatching of the expert on NPS damage from IAEA considering the intention by Mr. Amano, Director General of IAEA. Therefore, the schedule of expert acceptance will be planned from now on according to the situation.

00:00: NISA also decided the acceptance of experts dispatched from NRC.

07:21 TEPCO reported to NISA the event (Unusual increase of radiation dose at the site boundary) falling under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.

07:24 Incorporated Administration Agency, Japan Atomic Energy Agency (JAEA) reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding, Nuclear Fuel Cycle Engineering Laboratories, Tokai Research and Development Centre.

07:44 JAEA reported to NISA in accordance with the Article 10 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Nuclear Science Research Institute.

08:54 TEPCO reported to NISA the event (Unusual increase of radiation dose at the site boundary) falling under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.

10:30 According to the Nuclear Regulation Act, Minister of Economy, Trade and Industry issued the directives as follows.

For Unit 4: To extinguish fire and to prevent the occurrence of re-criticality

For Unit 2: To inject water to reactor vessel promptly and to vent Drywell.

10:59 Considering the possibility of lingering situation, it is decided that the function of the Local Emergency Response Headquarter is moved to the Fukushima Prefectural Office.

11:00 Prime Minister directed the in-house stay area.
In-house stay was additionally directed to the residents in the area from 20 km to 30 km radius from Fukushima Dai-ichi NPS considering in-reactor situation.

16:30 TEPCO reported to NISA the event (Unusual increase of radiation dose at the site boundary) falling under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.

22:00 According to the Nuclear Regulation Act, Minister of Economy, Trade and Industry issued the following directive.
For Unit 4: To implement the injection of water to the Spent Fuel Pool.

23:46 TEPCO reported to NISA the event (Unusual increase of radiation dose at the site boundary) falling under the Article 15 of the Act on Special Measures Concerning Nuclear Emergency Preparedness regarding Fukushima Dai-ichi NPS.

(March 18th)

13:00 Ministry of Education, Culture, Sports, Science and Technology decided to reinforce the nation-wide monitoring survey in the emergency of Fukushima Dai-ichi and Dai-ni NPS.

15:55 TEPCO reported to NISA Accidents and Failures with regard to Fukushima Dai-ichi Unit 1,2,3&4 (Leakage of the radioactive materials inside of the reactor building to non-controlled area) pursuant to the Paragraph 3, the Article 62 of the Nuclear Regulation Act.

16:48 JAPCO reported to NISA Accidents and Failures with regard to Tokai Unit 2 (Failure of the seawater pump moter of the emergency diesel generator 2C) pursuant to the Paragraph 3, the Article 62 of the Nuclear Regulation Act.

< Possibility on radiation exposure (As of 08:00 March 19th) >

<Exposure of residents>

(1) Including the evacuees from Futaba Public Welfare Hospital to Nihonmatsu City Fukushima Gender Equality Centre as the result of measurement of 133 persons at the Centre, 23 persons counted more than 13,000 cpm were decontaminated.

(2) The 35 residents transferred from Futaba Public Welfare Hospital to Kawamata Town Saiseikai Kawamata Hospital by private bus arranged by Fukushima Prefecture were judged to be not contaminated by the Prefectural Response Centre.

(3) As for the about 100 residents in Futaba Town evacuated by bus, the results of measurement for 9 of the 100 residents were as follows. The evacuees were divided into two groups which joined later to Nihonmatsu City Fukushima Gender Equality Centre.

No. of Counts	No. of Persons
18,000cpm	1
30,000-36,000cpm	1
40,000cpm	1
little less than 40,000cpm*	1
very small counts	5

*(These results were measured without shoes, though the first measurement exceeded 100,000cpm)

(4) The screening was started at the Off site Center in Okuma Town from March 12th to 15th. 162 people received examination until now. At the beginning, the reference value was set at 6,000cpm. 110 people were at the level below 6,000 cpm and 41 people were at the level of 6,000 cpm or more. When the reference value was increased to 13,000 cpm afterward, 8 people were at the level below 13,000 cpm and 3 people are at the level of 13,000 cpm or more.

The 5 out of 162 people examined were transported to hospital after being decontaminated.

(5) The Fukushima Prefecture carried out the evacuation of patients and

personnel of the hospitals located within 10km area. The screening of all the members showed that 3 persons have the high counting rate. These members were transported to the secondary medical institute of exposure. As a result of the screening on 60 fire fighting personnel involved in the transportation activities, the radioactivity higher than twice of the back ground was detected on 3 members even after decontamination and all the 60 members were decontaminated.

<Exposure of workers>

(1) As for the 18 workers conducting operations in Fukushima Dai-ichi NPS, results of measurements are as follows;

One worker: 106.3 mSv. At the level of exposure no internal exposure and medical treatment was not required.

Other workers: No threat of internal exposure and no medical treatment needed.

(2) The 6 out of 7 people working at the time of explosion at the Unit 3 of Fukushima Dai-ichi NPS injured and were conscious. The detailed measurement data are not available.

<Others>

(1) Fukushima Prefecture has started the screening from 13 March at two health office in the prefecture. It is undertaken rotating the evacuation sites, and at 12 health offices (set up permanently), etc. The results of screening are being totalled up.

(2) 5 members of Self-Defence Force who worked for water supply in Fukushima Dai-ichi NPS were exposed. After the work (March 12th), 30,000 cpm was counted by the measurement at Off site Centre. The counts after decontamination were between 5,000 and 10,000 cpm. One member was transferred to National Institute of Radiological Science. No other exposure of the Self-Defence Force member was confirmed at the Ministry of Defence.

(3) As for policeman, the decontaminations of two policemen were confirmed by the National Police Agency. Nothing unusual was reported.

<Direction of administrating stable Iodine during evacuation>

On March 16th, the Local Emergency Response Headquarter issued "the direction to administer the stable Iodine during evacuation from the evacuation area (20 km radius)" to the Prefecture Governors and the heads of cities, towns and villages (Tomioka town, Hutaba town, Okuma town, Namie town, Kawauchi village, Naraha town, Minamisouma city, Tamura city, Kazurao village, Hirono town, Iwaki city and Iidate village).

<Situation of the injured (As of 08:00 March 19th)>

1. Injury due to earthquake
   - Two employees (slightly)
   - Two subcontract employees (one fracture in both legs)
   - Two missing (TEPCO's employee, missing in the turbine building of Unit 4)
   - One emergency patient (According to the local prefecture, one patient of cerebral infarction was transported by the ambulance).
   - Ambulance was requested for one employee complaining the pain at left chest outside of control area (conscious).
   - Two employees complaining discomfort wearing full-face mask in the main control room were transported to the industrial doctor of Fukushima Dai-ni NPS.

2. Injury due to the explosion of Unit 1 of Fukushima Dai-ichi NPS
   - Four employees were injured at the explosion and smoke of Unit 1 around turbine building (out of control area) and were examined by Kawauchi clinic.

3. Injury due to the explosion of Unit 3 of Fukushima Dai-ichi NPS
   - Four TEPCO's employees
   - Three subcontractor employees
   - Four members of Self-Defence Force (one of them was transported to National Institute of Radiological Sciences considering internal possible exposure. The examination resulted in no internal exposure. The member was discharged from the institute on March 16th.)

4. Other injuries

- A person who visited the clinic in Fukushima Dai-ni NPS from a transformer sub-station, claiming of a stomachache, was transformed to a clinic in Iwaki city, because the person was not contaminated.

<Situation of Resident Evacuation (As of 08:00 March 19th)>

At 11:00 March 15th, Prime Minister directed in-house stay to the residents in the area from 20 km to 30 km radius from Fukushima Dai-ichi NPS. The directive was conveyed to Fukushima Prefecture and related municipalities.

Regarding the evacuation as far as 20-km from Fukushima Dai-ichi NPS and 10-km from Fukushima Dai-ni, necessary measures have already been taken.

- The in-house stay in the area from 20 km to 30 km from Fukushima Dai-ichi NPS is made fully known to the residents concerned.
- Cooperating with Fukushima Prefecture, livelihood support to the residents in the in-house stay area are implemented.

(Contact Person)
Mr. Toshihiro Bannai
Director, International Affairs Office, NISA/METI
Phone:+81-(0)3-3501-1087

Earthquake Report – JAIF

No.14

"Chief cabinet secretary Edano's press briefing on radiation detected from food collected in Fukushima's neighboring areas"

The following is the summary of the chief cabinet secretary Edano's press briefing held at 16:00, March 19, 2011, on the consequence of the Fukushima #1 NPS.

・Reports were made by the related authorities that radiation exceeding the government-set radiation level was detected from the sampled milk in Fukushima Prefecture and the 6 samples of spinach in neighboring Ibaraki Prefecture. The limits are stipulated as provisional regulation values under the national Food Sanitation Law.

・At the Ministry of Health, Labor and Welfare and the Prefectural governments, monitoring and analysis will be conducted on the detected samples identifying where the food were collected and bound to be shipped. The national government will consider on taking necessary actions including ban on the product shipment and/or setting limits to the food intake, on assumption that these radiation detections are associated with the Fukushima NPS.

・These radiation limits have been set in accordance with International Committee on Radiation Protection's recommendations. The limits are provisional regulation values based on the amount of food concerned in case that these would be continued to taken in all through one's life. The radiation measured from the samples pose no immediate threat to health. For reference, the radiation detected in the milk, even if taken in all through a year, is just equivalent to radiation dose of one-time conduct of CT scanning. The radiation detected from the spinach is equivalent to one-fifth of one-time CT scanning.

・The point where the milk was collected in the Fukushima Prefecture is more 30km distance from the Fukushima #1 NPS. The radiation-detected spinach was collected in Ibaraki Prefecture, neighboring to the south of the Fukushima Prefecture. The prefectural boundary is 65 km distant from the NPS.

End

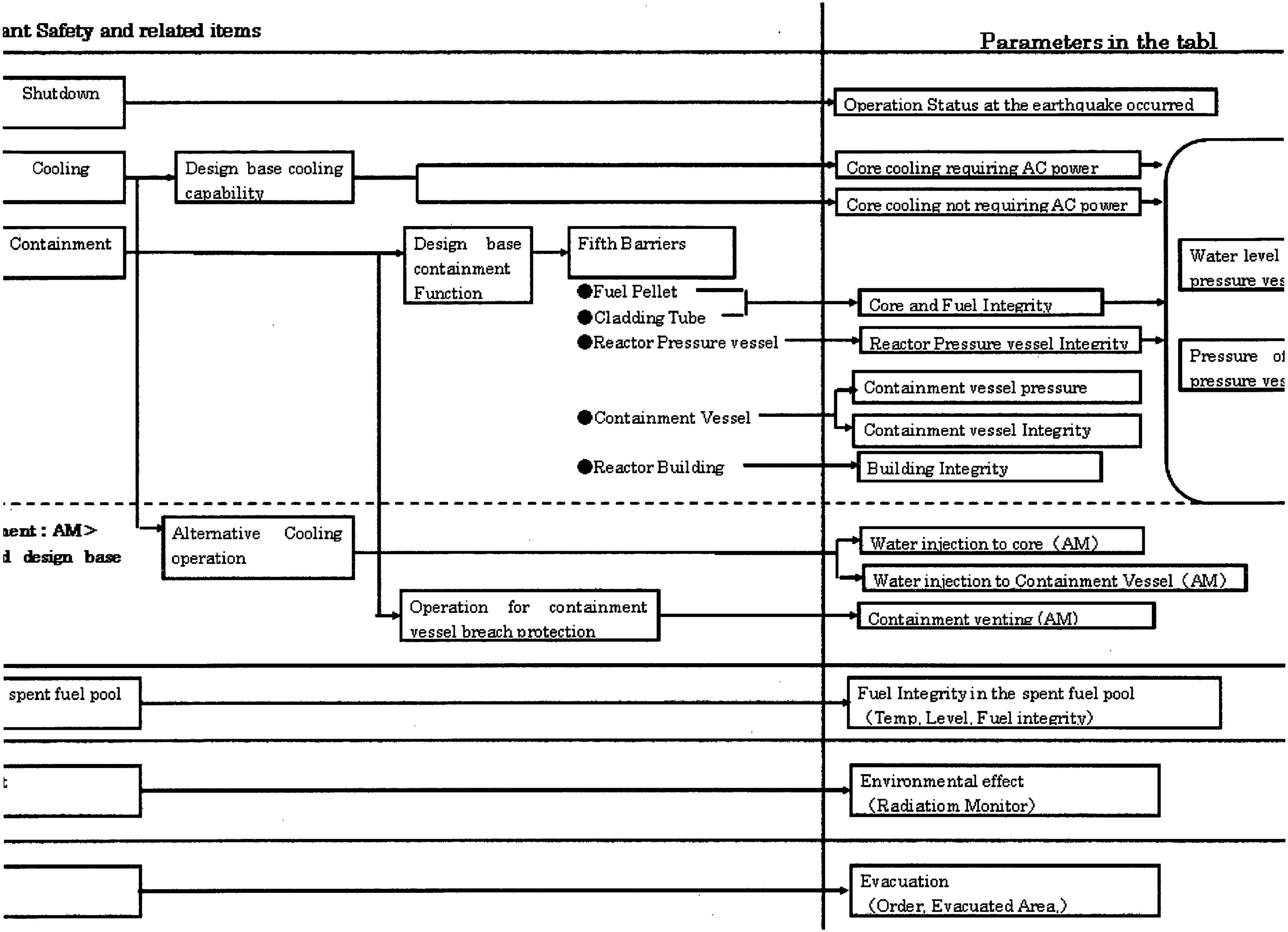
	Not Damaged	Damage Suspected	Might be "Not damaged"	Not Damaged	Not Damaged
er	Not Functional	Not Functional	Not Functional	Not necessary	Not necessary
power	Not Functional	Not Functional	Not Functional	Not necessary	Not necessary
	Severely Damaged	Slightly Damaged	Severely Damaged	Severely Damaged	Open a vent hole on the r hydrogen explosion
ssure Vessel	Fuel exposed partially or fully	Fuel exposed partially or fully	Fuel exposed partially or fully	Safe	Safe
ure Vessel	Stable	Unknown	Stable	Safe	Safe
	Unknown	Low	Low	Safe	Safe
ent Management)	Continuing (Seawater)	Continuing(Seawater)	Continuing(Seawater)	Not necessary	Not necessary
t Vessel (AM)	Continuing(Seawater)	to be decided(Seawater)	Continuing(Seawater)	Not necessary	Not necessary
	Temporally stopped	Temporally stopped	Temporally stopped	Not necessary	Not necessary
pool	Water injection to be considered	(No info)	Water level low, Water Injection continue	Water level low, Preparing Water Injection Hydrogen from the pool exploded	Pool Temp. <u>High, but decreasing</u>
	The West Gate: <u>313.1</u> μ Sv/h at <u>11:30</u>, Mar. 19 North of Service Building: <u>2972.0</u> μ Sv/h at <u>19:00</u>, Mar. 19				
	20km from NPS * People who live between 20km to 30km from the Fukushima #1NPS are to stay indoors.				
	Level 5	Level 5	Level 5	Level 3	—
	Immediate threat is damage of the fuels in the fuel pool outside the containment vessel. The operation for filling the pool with water has been conducted Unit-3. Unit-3 is now in operation to fill the water for <u>more than</u> 7 hours from about 14:00 March 19. Unit-4 is now in preparation for filling the water. Attempting to receive external power supply, TEPCO is laying a power cable between the transmission line. <u>The line to Unit-1 and 2 was connected, and are scheduled tommorrow.</u> Unit 3 to 6 are scheduled to be connected until March 20.				

	Fukushima Daini Nuclear Power Station			
	1	2	3	4
ut (MW)	1100 / 3293			
	BWR-5	BWR-5	BWR-5	BWR-5
uake occurred	In Service -> Automatic Shutdown			
	All the units are in cold shutdown.			
	Level 3	Level 3	—	Level 3
	Unit-1, 2, 3 & 4, which were in full operation when the earthquake occurred, all shutdown automatically. External power supply was available after the quake. While injecting water into the reactor pressure vessel using make-up water system, TEPCO recovered the core cooling function and made the unit into cold shutdown state one by one. Latest Monitor Indication: 15.9 μ Sv/h at 12:00, Mar. 17 at NPS border Evacuation Area: 10km from NPS			

	Onagawa Nuclear Power Station		
	1	2	3
uake occurred	In Service -> Automatic Shutdown		
	All the units are in cold shutdown.		
	Unit-1, 2 & 3 all shutdown automatically when the earthquake occurred. Unit-2 & 3 were then led into cold shutdown state. Unit-2, which had just started operation after planned outage, got into cold shutdown immediately.		

	Tokai Daini
uake occurred	In Service -> Automatic Shutdown
	In cold shutdown.
	Tokai Daini NPP, which was in full operation when the earthquake occurred, shutdown automatically. Core cooling function was gotten into service after external power supply

nment". Then we create the chart. The following diagram is to show the correspondence relation of these parameters in the table to nuclear power plant safety.



rge is scheduled to start in the afternoon.
shima Dai-ichi 6 supply power to Unit 5 and 6.
ɛr circulation in the spent fuel pools of Unit 5.
ıtion in the spent fuel pools of Unit 6.(not cooling)

ns

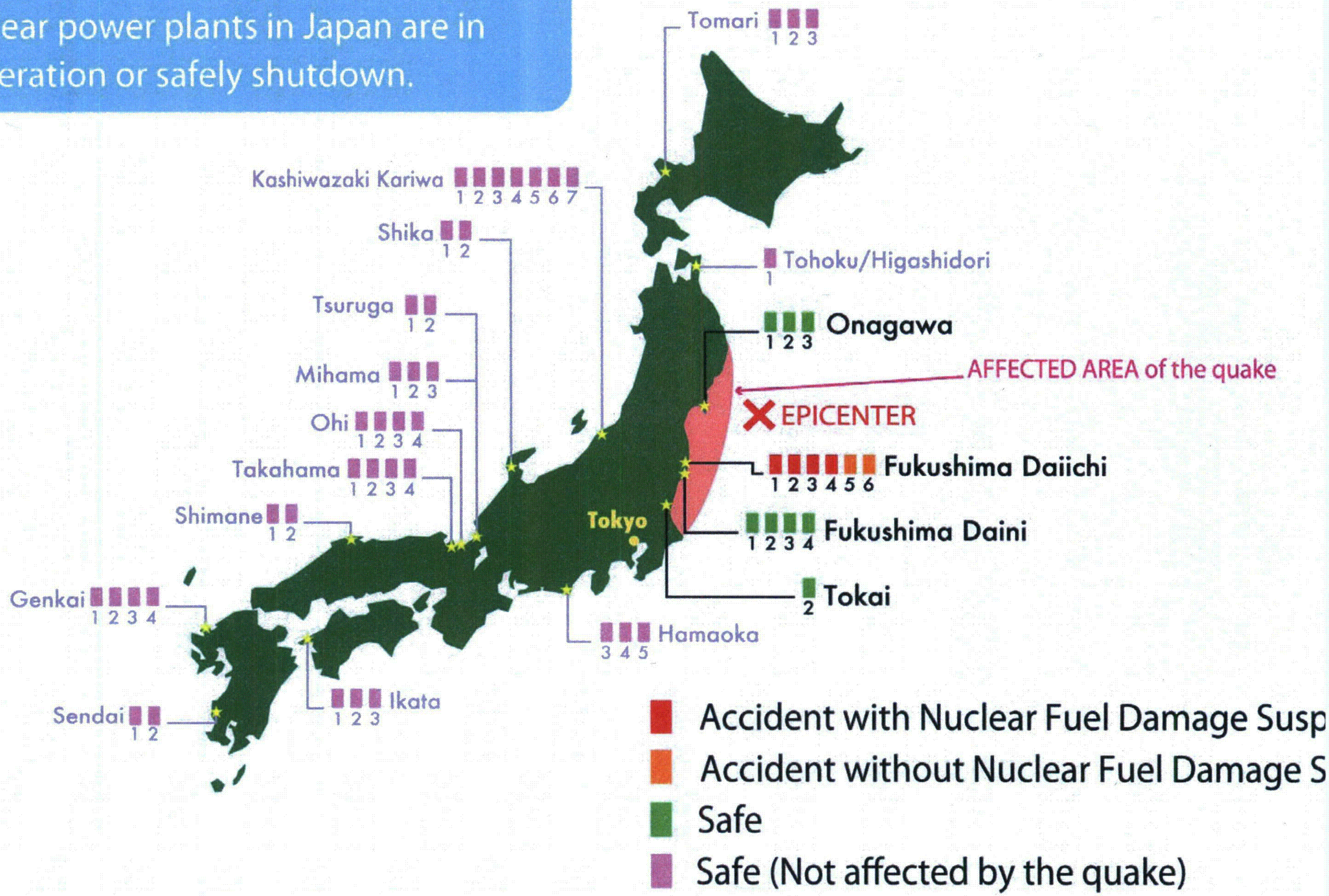
	Unit 1	Unit 2	Unit 3	Unit 4	
	11th 15:42 Report IAW Article 10* (Loss of power)	11th 15:42 Report IAW Article 10* (Loss of power)	11th 15:42 Report IAW Article 10* (Loss of power)	14th 04:08 Water temperature in Spent Fuel Storage Pool increased at 84℃	Water tempe is increasing
cerning Nuclear	11th 16:36 Event falling under Article 15* occured (Incapability of water injection by core cooling function)	11th 16:36 Event falling under Article 15* occurred (Incapability of water injection by core cooling function)	13th 05:10 Event falling under Article 15* occurred (Loss of reactor cooling functions)	15th 09:38 Fire occurred on 3rd floor (extinguished spontaneously)	18th Vent hc rooftop for av
	12th 00:49 Event falling under Article 15* occured (Abnormal rise of CV pressure)	14th 13:25 Event falling under Article 15* occurred (Loss of reactor cooling functions)	13th 08:41 Start venting	16th 05:45 Fire occurred (extinguished spontaneously)	19th 05:00 R restarted.
	12th 14:30 Start venting	14th 16:34 Seawater injection to RPV	13th 13:12 Seawater injection to RPV		
	12th 15:36 Hydrogen explosion	14th 22:50 Report IAW Article 15* (Abnormal rise of CV pressure)	14th 07:44 Event falling under Article 15* occurred (Abnormal rise of CV		
	12th 20:20 Seawater injection to RPV	15th 00:00 Start venting	14th 11:01 Hydrogen explosion		
		15th 06:10 Sound of explosion, Supression Pool damaged	15th 10:22 Radiation dose 400mSv/h		
		15th 08:25 White smoke reeked	16th 06:40, 08:47 Radiaton dose 400mSv/h		
			16th 08:34, 10:00 White smoke reeked		
			17th 09:48 Water discharge by SDF helicopters		
			17th 19:05 Water discharge by riot police (once)		
			17th 19:35 Water discharge by SDF (5 times)		
			18th 14:00 Water discharge by SDF		
			18th 14:42 Water discharge by TEPCO using US forces' water cannon truck (once)		
			19th 00:30 Ground-based water discharge by Tokyo Fire Department(～		
			19th P.M. Ground-based water discharge will restart		
	External power supply of Unit-1 and 2 are scheduled to be connected until March 19.		External power supply of Unit 3 to 6 are scheduled to be connected until Ma		
	Water level (19th 03:30) (A) -1750mm (B) -1750mm	Water level (19th 03:30) -1400mm	Water level (19th 06:10) (A) -1200mm, (B) -2300mm	Water temperature of SF Storage Pool Unmesurable (since 14th 04:08)	Water tempe (18th 22:00) Unit 5 67.6' Unit 6 65.0'
	Reactor pressure (19th 03:30) (A) 0.205MPaG, (B) 0.155MPaG	Reactor pressure (19th 03:30) (A) -0.005MPaG, (B) -0.018MPaG	Reactor pressure (19th 06:10) (A) 0.005MPaG, (B) 0.045MPaG		
	CV pressure (19th 03:30) Unmesurable (14th 10:30-)	CV pressure (19th 03:30) 0.135MPaabs	CV pressure (19th 06:10) 0.045MPaabs		

2, 4 have been recovered from a event falling under Article 15*)

n
ɛncy was decleared (Fukushima Dai-ni NPS)
ɛncy was decleared (Fukushima Dai-ichi NPS)

Status of the Nuclear Power Plants after the Earthquake

ery efforts and measures have been taken at
ukushima Daiichi nuclear power plants.
ther nuclear power plants in Japan are in
rmal operation or safely shutdown.



From: LIA02 Hoc
Sent: Saturday, March 19, 2011 9:27 PM
To: LIA03 Hoc
Subject: Japan checklist
Attachments: Travel to Japan Checklist.doc

KKKK-17

International Travel Checklist

Pre-Travel Activities	
	Completed
1. **Passport: Make sure either personal or official passport is valid for at least 6 months after the date of completion of the trip, if you're traveling with USAID, a visa is not required.**	
2. **Ascertain any health immunization recommendations:** Contact the NRC Health Unit (415-8400) to consult on possible medical issues and precautions, including the possibility of getting recommended inoculations or other medications and educational materials. Travelers can check recommended immunizations and other health advisories at http://www.cdc.gov/travel/.	
3. **Obtain international Blackberry – Contact Karen Jackson at 415-6398**	
4. **Country clearance cable information** **Format:** Format is available at OIP SharePoint (http://portal.nrc.gov/OCM/ip/travel/default.aspx) Complete the requested items. Place of Birth should be exactly the same as shown in your passport. Include your security clearance information.	
5. **Obtain dosimetry and KI tablets. In order to get dosimeter, traveler needs to contact a Radiation Safety Officer. Contact Undine Shoop at 301-415-2063 or your Regional RSO.**	
6. **USAID Needs the following information (send to: RMTPACTSU ELNRC@ofda.gov, or phone:** (202) 236-6417, 202-712-4383**):** For anyone deploying to Japan we (the NRC USAID reps will need the following): Full Name Home Address SSN Passport # Date and Place of Birth Issue Date of Passport Expiration Date of Passport Place of Passport Issuance Finally, since the Travel Authority will be USAID we need the following Banking information: Account Name Account Number Routing Number	

7. Receive Cultural Briefing by OIP – Contact Nader Mamish 301-415-3244 to arrange.	
8. Recommend contact with EAP – Available 27/7 at 1-800-869-0276	
9. Recommended Business Attire – Normal attire in Japan is business and ties are worn all the time. Higher end business casual would also be acceptable in some situations.	
10. Business cards – Contact your office secretary.	

From: LIA07 Hoc
Sent: Saturday, March 19, 2011 6:16 AM
Subject: USNRC Earthquake-Tsunami Update - 0600 EDT (March 19, 2011)
Attachments: USNRC Earthquake-Tsunami Update.031911.0600EDT.pdf

Attached, please find an 0600 EDT March 19, 2011 status update from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami.

Please note that this information is ~~"Official Use Only"~~ and is only being shared within the federal family.

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

Thanks,
Christine

Christine A. Steger
US Nuclear Regulatory Commission
Christine.Steger@nrc.gov
LIA07.HOC@nrc.gov (Operations Center)

KKKK-18

From: Emche, Danielle
Sent: Saturday, March 19, 2011 6:23 PM
To: LIA03 Hoc
Subject: Re: NISA EOC answers- NEW #2!

Jenny-
From the turnover, Lance and Steve were supposed to follow-up on business cards for kirk, brooke, and Tony nakanisha (Maybe 20 or 30 each). Adm staff outside of ET said they could do it but it I didn't see it in the from Lance and Steve. Do you know if they completed this and NRC sent them "next day" to the embassy? If not, can you pursue with admin staff, or at least make sure it gets back in your turnover for the next shift? Ideally they could arrive by Monday in tokyo. By the way, the cards should have the bb numbers in Japan listed.
Danielle
Sent from an NRC BlackBerry.

----- Original Message -----
From: LIA03 Hoc
To: Emche, Danielle
Sent: Sat Mar 19 16:51:33 2011
Subject: FW: NISA EOC answers- NEW #2!

Sorry, forgot to cc you!

-----Original Message-----
From: LIA03 Hoc
Sent: Saturday, March 19, 2011 4:51 PM
To: Foggie, Kirk; Smith, Brooke
Subject: FW: NISA EOC answers- NEW #2!

Kirk,
Margie edited the answer to #2, what do you think?

-Jenny

-----Original Message-----
From: Doane, Margaret
Sent: Saturday, March 19, 2011 4:44 PM
To: LIA03 Hoc
Subject: Fw: NISA EOC answers

Here it is.

Sent from an NRC Blackberry
Margaret Doane

----- Original Message -----
From: Foggie, Kirk
To: Emche, Danielle

KKKK-19

Cc: Ramsey, Jack; Smith, Brooke; Doane, Margaret; Mamish, Nader
Sent: Sat Mar 19 16:39:37 2011
Subject: Re: NISA EOC answers

Got it. Thanks.
Sent from Blackberry.

----- Original Message -----
From: Emche, Danielle
To: Foggie, Kirk
Cc: Ramsey, Jack; Smith, Brooke; Doane, Margaret; Mamish, Nader
Sent: Sat Mar 19 14:59:44 2011
Subject: NISA EOC answers

Kirk, see answers below. For number 2, I suggested the text in parentheses as a way to recognize other options. Let me know how you think number 2 should be stated and we can clear it with the ET if you think its necessary.

1. US recommends use of borated water for injection. If Japan accepts the US solution, what preparations should Japan consider?

- If possible, pH should be maintained within 5-7.5 to minimize corrosion of metallic components
  - o trisodium phosphate can be used to increase the pH, if necessary
  - o POLYBOR may be an alternative to boric acid, requiring less powder to achieve similar boron concentration

2. *It appears that the US solution is based on input from* Bechtel. *Should Japan staff up with a Japanese company or the* self-defense force?

- It is NRC's understanding that, if needed, the alternative cooling system designed by Bechtel will be accepted by the Japan Ministry of Defense upon arrival at Yokota. After receipt of the equipment, the Ministry of Defense will manage logistics, including transportation of the equipment to the site and coordination of engineering with GE-Hitachi and TEPCO for purposes of minimizing radiation dose to workers. NRC recognizes that NISA may be aware of other systems and methods to coordinate possible receipt. If NISA would like to discuss other factors to consider, please let us know.

Danielle
Sent from an NRC BlackBerry.

From: Foggie, Kirk
Sent: Saturday, March 19, 2011 4:57 PM
To: LIA03 Hoc; Smith, Brooke; Doane, Margaret; Mamish, Nader
Subject: Re: NISA EOC answers- NEW #2!

Don't state that we know this option will work (timely and effective part) and mention NISA as possibly having alternative answers.

Got it. Thanks.

Kirk
Sent from Blackberry.

----- Original Message -----
From: LIA03 Hoc
To: Foggie, Kirk; Smith, Brooke
Sent: Sat Mar 19 16:51:00 2011
Subject: FW: NISA EOC answers- NEW #2!

Kirk,
Margie edited the answer to #2, what do you think?

-Jenny

-----Original Message-----
From: Doane, Margaret
Sent: Saturday, March 19, 2011 4:44 PM
To: LIA03 Hoc
Subject: Fw: NISA EOC answers

Here it is.

Sent from an NRC Blackberry
Margaret Doane

----- Original Message -----
From: Foggie, Kirk
To: Emche, Danielle
Cc: Ramsey, Jack; Smith, Brooke; Doane, Margaret; Mamish, Nader
Sent: Sat Mar 19 16:39:37 2011
Subject: Re: NISA EOC answers

Got it. Thanks.
Sent from Blackberry.

----- Original Message -----
From: Emche, Danielle

KKKK-20

To: Foggie, Kirk
Cc: Ramsey, Jack; Smith, Brooke; Doane, Margaret; Mamish, Nader
Sent: Sat Mar 19 14:59:44 2011
Subject: NISA EOC answers

Kirk, see answers below. For number 2, I suggested the text in parentheses as a way to recognize other options. Let me know how you think number 2 should be stated and we can clear it with the ET if you think its necessary.

1. US recommends use of borated water for injection. If Japan accepts the US solution, what preparations should Japan consider?

- If possible, pH should be maintained within 5-7.5 to minimize corrosion of metallic components
  - trisodium phosphate can be used to increase the pH, if necessary
  - POLYBOR may be an alternative to boric acid, requiring less powder to achieve similar boron concentration

2. It appears that the US solution is based on input from Bechtel. Should Japan staff up with a Japanese company or the self-defense force?

- It is NRC's understanding that, if needed, the alternative cooling system designed by Bechtel will be accepted by the Japan Ministry of Defense upon arrival at Yokota. After receipt of the equipment, the Ministry of Defense will manage logistics, including transportation of the equipment to the site and coordination of engineering with GE-Hitachi and TEPCO for purposes of minimizing radiation dose to workers. NRC recognizes that NISA may be aware of other systems and methods to coordinate possible receipt. If NISA would like to discuss other factors to consider, please let us know.

Danielle
Sent from an NRC BlackBerry.

From: Carter, Mary
Sent: Saturday, March 19, 2011 3:41 PM
To: LIA02 Hoc; LIA06 Hoc; LIA03 Hoc; Mamish, Nader
Cc: Matheson, Mary
Subject: suggestions for travel to Japan
Attachments: travel fron U.S. to Japan.docx

Here are some flight schedules for travel to Japan. All are govt. contract flights.

I hope this helps.

Mary

Mary Faith Carter
Office of International Programs
U. S. Nuclear Regulatory Commission
e-mail:mary.carter@nrc.gov
ph:301-415-2331
fax:301-415-2395

KKKK-21

Travel from the U.S. to Japan

Here are some suggested routings between the U.S. and Tokyo. The suggestions are all on the contract carries, however, other American carriers offer competitive government fares that are non-contract. You may find other flights that suit gthe traveler's needs.

Fares from the U.S. to Asia are trans-Pacific (nonstop flights to Japan are trans-Pacific fares.) Although it is possible to travel via the Atlantic, the travel time is longer and the cost is higher.

Washington-Tokyo transportation between Washington and Tokyo

United offers a government business fare as well as a government contract fare
Other American flag carriers offer competitive government fares

Through March 25, 2011
United 897 Washington Dulles-Tokyo Narita 1:22p 4:35p+1
Elapsed time 14hr 13 min

March 26, 2011 only
United 803 Washington Dulles-Tokyo Narita 1:22p 4:35p+1
Elapsed time 14hr 13 min

Effective, March 27, 2011
United 803 Washington Dulles-Tokyo Narita 12:21p #:10p+1
Elapsed time 13hr 49min

Tokyo-Washington

Through March 26, 2011
United 898 Tokyo Narita-Washington Dulles 4:10p 3:38p
Elapsed time 12hr 28min

Effective March 27, 2011
United 898 Tokyo Narita-Washington Dulles 4:10p 3:38p
Elapsed time 12hr 37min

Region I transportation between Philadelphia and Tokyo

Philadelphia-Tokyo
American offers a government business fare as well as a government contract fare.
Other American flag carriers offer competitive government fares

American 323 Philadelphia Dallas/Ft Worth 6;15a 9:00a
Elapsed time 3hr 50min
American 61 Dallas/Ft Worth-Tokyo Narita 10:10a 1:30p+1
Elapsed 13hr 25min
or
American 323 Philadelphia Dallas/Ft Worth 6;15a 9:00a
Elapsed time 3hrs 45min
American 61 Dallas/Ft Worth-Tokyo Narita 10:10a 1:30p+1
Elapsed time 3hr 20min

Tokyo-Philadelphia
American offers a government business fare as well as a government contract fare.
Other American flag carriers offer competitive government fares

American 176 Tokyo Narita-Dallas/Ft. Worth 12:05p 9:20a
Elapsed time 11hr 15min
American 446 Dallas-Ft/Worth-Philadelphia 11:15a 3:25p
Elapsed time 3hr 10min
Or
American 154 Tokyo Narita-Chicago O'Hare 6:05p 3:40p
Elapsed time 11hr 35min
American 408 Chicago O'Hare-Philadelphia 5:40p 8:35p
Elapsed time 1hr 55min

Region II **transportation between Atlanta and Tokyo**
Atlanta-Tokyo
American offers a government business fare as well as a government contract fare.
Other American flag carriers offer competitive government fares

American 1673 Atlanta-Dallas/ft Worth 9:15a 10:45a
Elapsed time 2hrs 30 min
American 61 Dallas/Ft Worth-Tokyo Narita 10:10a 1:30p+1
Elapsed time 3hr 20min

Tokyo-Atlanta

American 176 Tokyo Narita-Dallas/Ft. Worth 12:05p 9:20a
Elapsed time 11hr 15min
American 1472 Dallas/Ft. Worth-Atlanta 11:35a 2:40p
Elapsed time 2hrs 5min

Region III **transportation between Chicago and Tokyo**
Chicago-Tokyo

American offers a government business fare as well as a government contract fare. Other American flag carriers offer competitive government fares

American 153 Chicago O'Hare-Tokyo 11:15a 2:15p+1
Elapsed time 13hrs

Tokyo-Chicago
American 154 Tokyo Narita-Chicago O'Hare 6:05p 3:40p
Elapsed time 11hr 35min

Region IV transportation between Dallas/Ft. worth and Tokyo
Dallas/Ft Worth -Tokyo
American offers a government business fare as well as a government contract fare. Other American flag carriers offer competitive government fares

American 61 Dallas/Ft Worth-Tokyo Narita 10:10a 1:30p+1
Elapsed 13hr 25min
or
American 61 Dallas/Ft Worth-Tokyo Narita 10:10a 1:30p+1
Elapsed time 3hr 20min

Tokyo-Dallas/Ft. Worth
American 176 Tokyo Narita-Dallas/Ft. Worth 12:05p 9:20a
Elapsed time 11hr 15min
or
American 60 Tokyo Narita-Dallas/Ft. Worth 6:05p 3:35p
Elapsed time 11hr 30min

From: LIA02 Hoc
Sent: Saturday, March 19, 2011 10:33 PM
To: LIA03 Hoc
Subject: FW: draft transition report

Added text to interagency call information. Thx Jill

From: LIA03 Hoc
Sent: Saturday, March 19, 2011 10:24 PM
To: LIA02 Hoc
Subject: draft transition report

~~OFFICIAL USE ONLY~~

TRANSITION REPORT FOR MARCH 19, 2011 2300
Jenny T and Jill transitioning to Charlotte and Jen

GENERAL NOTES. (includes notes from previous updates)
1) Information pertinent to the team in Japan can be forwarded to new email group, which incorporates Dan Dorman already, "Liaison Japan," in Outlook.
2) Action: International updates must now be sent to LIA07 (to be put in the HOO Status Update) before the end of every shift as well as posted on the LT status board (different than the LT Log).
3) 11 PM – 7 AM shift is responsible for the summary call with Kirk and Brooke, scheduled daily at 5 AM EST unless rescheduled.
4) Kirk and Brooke requested that the international team to sit in on calls with the ET and Chuck to take notes and provide a short summary of what was discussed via email.
5) Reminder to include names on watch bill emails and inform Brooke and Kirk when shift changes.
6) RST needs to follow up on Crystallization issue per the 0930 conference call (see item below)
7) Prior to the 2 pm call, make sure you contact the HOOs to let them know that you are going to have the international call. Might be beneficial to establish a standing bridge.

- **Notes from Mark Shaffer.** It was determined that the IAEA Team Japan consisted of DG Amano, Khammar Mrabit and 2 rad monitoring techs, but NRC and Mark Shaffer have been unsuccessful in obtaining all of the names.

- **Two Questions From NISA**. The RST team provided answers to two questions from NISA. Response from RST team in e-mail date stamp 3/19/11 at 12:09. Margie has revised the answers which were re-sent to Brooke and Kirk around 16:00.

- **0930 Conference Call (Update).** Received a call from the (Ali Tehrani) UK as a follow-up to the 9:30 call. They are asking about crystallization on the fuel. With the decay heat they anticipate that there will be crystallization on the surface area within a day of them starting to inject seawater, and significant clogging within 3 days. They want to know our thoughts. They also asked about where the water is going? If they continue to add water, and the water is going out the relief valve into containment, then the pressure would increase, which has not been seen. Based on email from RST01, Based on a US built BWR: Continuing to inject into RPV for this many days means: - they are not injecting at the flow rate they are claiming, - the level readings they report are inaccurate, - if they were injecting at the rate they are reporting they should have filled the RPV up to the steam lines and out any SRVs that have pneumatics and dc control power, the RPV pressure would be the shutoff head of the pumping system

KKKK-22

(at the SRVs), therefore the RPV pressures they report are inaccurate. Based on US built BWRs Informed UK and Canada of this answer at the 1400 call. The question of crystallization was asked again by the British, and along with email from Chuck Casto and the fact that TEPCO is concerned, need to follow-up with RST. The UK also asked if there was no power what was the fail safe condition. Action: Followup with RST on crystallization issue and the SRV fail safe condition.

- **NRC Relief Team to Japan (Update).** Michelle Evans reported that there will be 2 additional NRC staff members leaving on Tuesday and the others on Thursday. Some of the staff members are from Region 1, Region 2 and Region 3. Started process for next staff members traveling to Japan. Sent list of names to all members of OIP. Checklist has been updated to include additional items as well as contact numbers. This document was sent to the relief team 3/19 at approximately 20:00, LIA02 and LIA03 should expect questions from team members. Action: New team members should be added to Liaison Japan group.

- **International request for information.** The Indonesian Embassy in Washington requested information on how we arrived at the 50-mile evacuation announcement. We provided some very basic information. They have followed up with a request for a phone call or meeting with NRC and their Minister-Counselor. Action: Call will occur at 5PM on Monday, March 21.

- **International aid/support for Japan.** IAEA and Russians have delegations in Japan. The Italians are interested in discussing what the USG is doing, and might be interested in helping in some way. We should receive more information from Roberto Ranieri soon. Spain has sent no one yet but Parliament will review and decide. South Africa and Slovenia have sent no one. And, as of today, has no plans. The Swiss regulator (as a part of the Swiss government team) has sent one person to do radiation monitoring and transmit the results.

- **18:00 Teleconference involving Bechtel support .** Participants were TeamJapan (C. Casto and J. Monninger), Embassies of Japan and Australia, ET room and USAID. Cost initially discussed was $750,000. Current cost approximately $9.6B. Apparent miscommunication between Bechtel and NRC regarding cost. USAID originally green lighted the delivery based upon the initial cost of $750,000 then halted action based upon new estimated cost of 9.6B. On the call, USAID informed everyone that this was NOT coming out of their funding that it would be coming from DOD. Per Kathleen Martin at USAID is that DOD paycom has authorized up to 10B for delivery of the requested pumps. Therefore, officials were attempting to confirm DOD funding and provide flight authorization for the first pump which is partially loaded in Perth, Australia. The thought now is to authorize the delivery of the first pump, which is staged and partially loaded on a plane in Perth and put the remaining pumps in stand-by pending need determination from the Japanese. Per NRC at HOC Japan stated they would accept the pumps and put them into secondary or tertiary use at the site. GEH also agreed to assemble and test the pumps at their location in Japan before they are dispatched to Fukushima Dai-ichi. All offers for providing equipment appears to be on hold until DoD can confirm payment.

- **Use of USAid for Travel.** Contacted Joshua Batkin, Chief of Staff for the Chairman, on direction by Nader Mamish to discuss the fact that we are to use USAid and the need for a legal agreement between the NRC and USAid if we are to get additional support. Joshua Batkin has worked it through Steve and Jim who are interacting directly with USAID, he will let us know if there is anything additional needed from us.

- **Business Cards for TeamJapan.** Brooke, Kirk and Tony have requested an additional supply of business cards be provided to them. The ADM desk has generated the cards requested but FedEx wouldn't be able to get them out until Monday with delivery Tuesday so the best bet may be to send them with Mike Scott (RES) departing on Tuesday March 22. Action: Decision needs to be made on Sunday to FedEx the cards (provide to ADM for shipment) or send them with Mr. Scott on Tuesday, cards are on LIA03 desk.

- **.21:30 Interagency Call.** No call tomorrow night (3/20), next one will be 3/21 at 21:30 EST. Based upon information from the Task Force conference call, Chuck Casto had just returned from a meeting with TEPCO and TEPCO was very interested in getting the robots and helicopter from Lockhead Martin. They requested that the specs for these items be forwarded to them as soon as possible. Based upon information from DOS earlier in the call DDTC was working to expedite the licensing for these items in the event they were requested and the passports for Lockhead Martin personnel to accompany the helicopter. Update on the Bechtel trains in Perth for Japan – DOD Paycom has confirmed payment and flight is being prepared. The flight is estimated to arrive late or overnight Japan time on Sunday. One train of pumps and valves is being provided on this flight with a decision on supplying the remaining trains to be determined later based upon need by Japan.

- **Radiological Data Request.** NRC PMT room requested that we ask NISA to connect with TEPCO regarding getting updated radiological information including offsite plume monitoring data on a routine and expedited frequency. This request was sent to Danielle (Emche) to engage with her NISA counterpart if appropriate. Action: The answer to this request should be communicated to the PMT room.

-

OFFICIAL USE ONLY

From: LIA02 Hoc
Sent: Saturday, March 19, 2011 7:21 PM
To: LIA03 Hoc
Subject: FW: 6PM Teleconference Synopsis

From: LIA02 Hoc
Sent: Saturday, March 19, 2011 7:18 PM
To: Smith, Brooke; Foggie, Kirk
Cc: Shaffer, Mark; Doane, Margaret; Mamish, Nader
Subject: 6PM Teleconference Synopsis

Hi Brooke and Kirk,

Thought you might like a synopsis of the 6pm teleconference regarding the Bechtel pumps that are staged in Perth, Australia.

Issue: Cost initially discussed was $750,000. Current cost approximately $9.6B. Apparent miscommunication between Bechtel and NRC regarding cost. USAID originally green lighted the delivery based upon the initial cost of $750,000 then halted action based upon new estimated cost of 9.6B. On the call, USAID informed everyone that this was NOT coming out of their funding that it would be coming from DOD. Per Kathleen Martin at USAID is that DOD paycom has authorized up to 10B for delivery of the requested pumps. Therefore, officials were attempting to confirm DOD funding and provide flight authorization for the first pump which is partially loaded in Perth, Australia. The thought now is to authorize the delivery of the first pump, which is staged and partially loaded on a plane in Perth and put the remaining pumps in stand-by pending need determination from the Japanese. Per NRC at HOC Japan stated they would accept the pumps and put them into secondary or tertiary use at the site. GEH also agreed to assemble and test the pumps at their location in Japan before they are dispatched to Fukushima Dai-ichi. Chuck Casto and John Monninger were both on the conference call. I am sure they can provide you with additional details if you require them.

Best,

Jill

KKKK-23

From: LIA08 Hoc
Sent: Saturday, March 19, 2011 10:22 PM
To: Hoc, PMT12
Cc: LIA11 Hoc; LIA01 Hoc; LIA06 Hoc; LIA03 Hoc; PMT07 Hoc; PMT03 Hoc
Subject: RE: Assitance

Hey Kevin,
Thanks for stopping by earlier. We will pursue. As I indicated earlier, I have low expectations the TEPCO will be responsive to the request for a communications link. Nevertheless, we shall try.
Rani

From: Hoc, PMT12
Sent: Saturday, March 19, 2011 10:10 PM
To: LIA11 Hoc; LIA01 Hoc; LIA06 Hoc; LIA03 Hoc; LIA08 Hoc; Hoc, PMT12; PMT07 Hoc; PMT03 Hoc
Subject: Assitance

Can the liaison team assist in the following:

- establish communication with TEPCO through NISA to obtain regular radiological information, including offsite plume monitoring data on a routine and expedited frequency.
- contact EPA to follow up on their monitoring efforts along the western US coast line.

Thanks,

Kevin

KKKK-24

From: Emche, Danielle
Sent: Saturday, March 19, 2011 10:19 PM
To: LIA03 Hoc
Subject: Re: Request to establish TEPCO connection through NISA for rad info

Hi Jenny,
Are you asking me what I think? I don't recall this, is it new? Maybe you want to give me a call.

Danielle
Sent from an NRC BlackBerry.

From: LIA03 Hoc
To: Emche, Danielle
Sent: Sat Mar 19 22:16:41 2011
Subject: FW: Request to establish TEPCO connection through NISA for rad info

Danielle,
Is this possible? I'm not sure if you need/want to contact Margie/Nader about this topic before you interact with NISA.

Thanks!
-Jenny

From: Hoc, PMT12
Sent: Saturday, March 19, 2011 10:10 PM
To: LIA11 Hoc; LIA01 Hoc; LIA06 Hoc; LIA03 Hoc; LIA08 Hoc; Hoc, PMT12; PMT07 Hoc; PMT03 Hoc
Subject: Assitance

Can the liaison team assist in the following:

- establish communication with TEPCO through NISA to obtain regular radiological information, including offsite plume monitoring data on a routine and expedited frequency.
- contact EPA to follow up on their monitoring efforts along the western US coast line.

Thanks,

Kevin

KKKK-25

From: Dembek, Stephen
Sent: Sunday, March 20, 2011 10:15 PM
To: LIA02 Hoc
Cc: Mamish, Nader; LIA03 Hoc; Dembek, Stephen
Subject: RE: NRC Travelers to Japan

USAID has been handling the arrangements for us. We've run into a financing issue with USAID, but they said they'd still make the travel arrangements for us.

I'll check on Monday to verify this is still correct.

I'll also have to get back to you regarding using eTravel.

Steve D.

From: LIA02 Hoc
Sent: Sunday, March 20, 2011 3:41 PM
To: Dembek, Stephen
Cc: Mamish, Nader; LIA03 Hoc
Subject: NRC Travelers to Japan

Hi Steve –

We've been getting requests from the next NRC travelers to Japan concerning travel arrangements. Do you know who will be responsible for making their flight/hotel arrangements? In addition, do you know if they have to submit an authorization through eTravel?

Any insights are greatly appreciated.

Thanks,
Eric

KKKK-26

From: LIA02 Hoc
Sent: Sunday, March 20, 2011 7:32 PM
To: PMT01 Hoc; Hoc, PMT12
Cc: LIA03 Hoc
Subject: FW: TEPCO Earthquake Information Update on March 20: Fukushima-Daiichi Radiation Monitoring Data
Attachments: image002.gif; image003.gif; 201100321 0400am Radiation Data.xls

This just in...

From: Hidehiko Yamachika [mailto:yamachika-hidehiko@jnes-usa.org]
Sent: Sunday, March 20, 2011 7:30 PM
To: LIA02 Hoc; LIA02 Hoc
Cc: aono-kenjiro@jnes-usa.org; Michael W. Chinworth
Subject: FW: TEPCO Earthquake Information Update on March 20: Fukushima-Daiichi Radiation Monitoring Data

FYI
This is from TEPCO Washington.

From: 松尾 建次 [mailto:matsuo.kenji@wash.tepco.com] **On Behalf Of** matsuo.kenji@tepco.co.jp
Sent: Sunday, March 20, 2011 7:18 PM
To: matsuo.kenji@tepco.co.jp
Subject: TEPCO Earthquake Information Update on March 20: Fukushima-Daiichi Radiation Monitoring Data

TEPCO Earthquake Information Update on March 20: Fukushima-Daiichi Radiation Monitoring Data

Dear Friends,

Attached a file compiled radiation monitoring data from March 11 to March 21 at 4:00 am.
The original data is updated on the following TEPCO web site (but in Japanese):

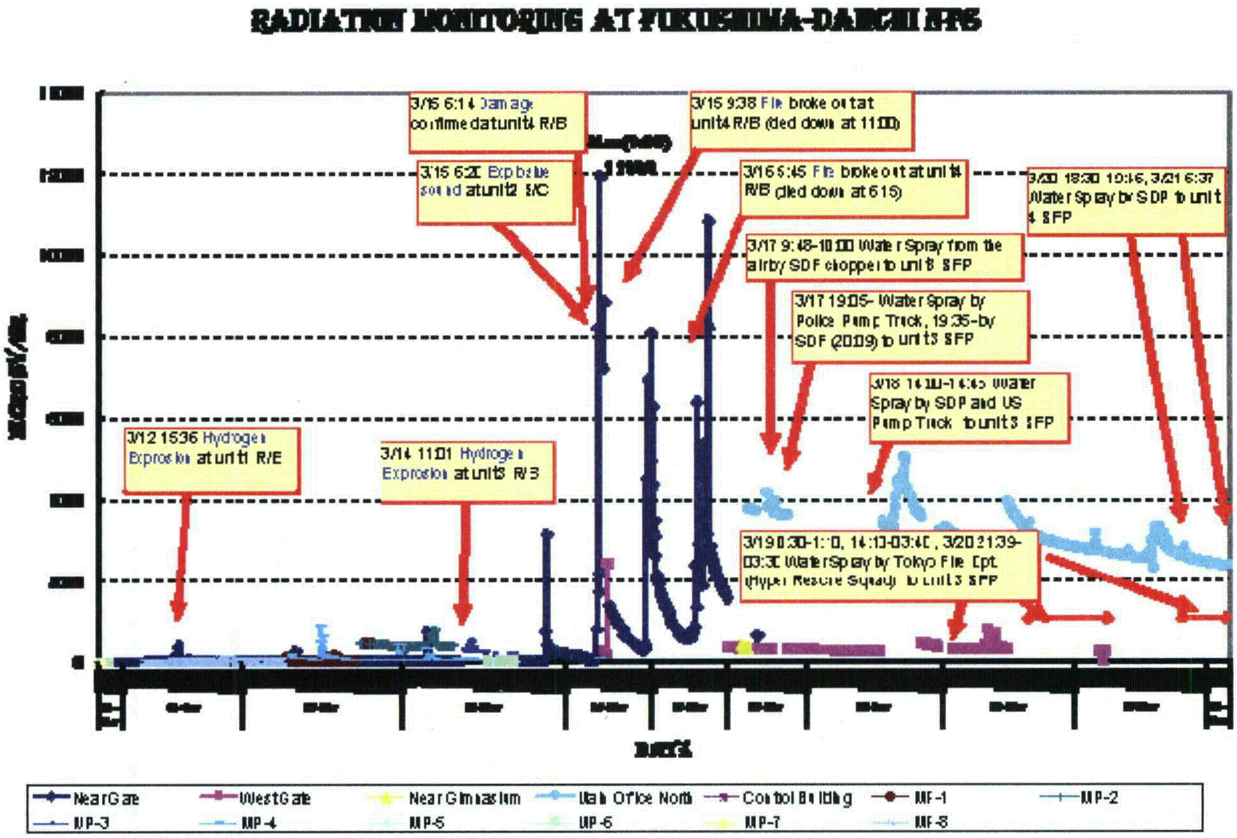
Fukushima-Daiichi NPS
http://www.tepco.co.jp/nu/f1-np/press_f1/2010/2010-j.html

Fukushima-Daini NPS
http://www.tepco.co.jp/nu/f2-np/press_f2/2010/2010-j.html

KKKK-27

Contacts:

TEPCO Washington Office 202-457-0790
Kenji Matsuo, Director and General Manager
Yuichi Nagano, Deputy General Manager,
Masayuki Yamamoto, Manager, Nuclear Power Programs



Fukushima-Daiichi

Date	Time	Gamma Radiation :maicro SV/hr					
		Near Gate	West Gate	Near Gimnasi	Main Office Nc	Control Buildir	MP-1
11-Mar	17:30			0.049			
	17:40	0.056					
	17:50						0.064
	18:45						
	19:00						
	19:10						
	19:15						
	19:20						
	19:52						
	20:00						
	20:10						
	20:20						
	21:30	0.062					
	21:40	0.061					
	21:50	0.061					
	22:00	0.059					
	22:10	0.060					
	22:20	0.062					
	22:30	0.060					
	22:40	0.060					
	22:50	0.059					
	23:00	0.060					
	23:10	0.063					
	23:20	0.060					
	23:40	0.063					
	23:50	0.059					
12-Mar	0:00	0.060					
	0:10	0.062					
	0:20	0.065					
	0:30	0.064					
	0:40	0.063					
	1:40	0.068					
	1:50	0.066					
	2:00	0.068					
	2:10	0.064					
	2:20	0.067					
	2:30	0.065					
	2:40	0.066					
	2:50	0.065					
	3:00	0.069					
	3:10	0.066					
	3:20	0.069					
	3:30	0.068					
	3:40	0.066					
	3:50	0.064					
	4:00	0.069					
	4:40	0.866					
	4:50	1.002					

5:00	1.307
5:10	1.590
6:25	
6:30	3.290
6:40	4.920
7:35	
7:40	
7:45	
7:50	4.970
7:55	
8:00	4.890
8:05	
8:10	5.080
8:15	
8:20	4.770
8:25	
8:30	
8:35	
8:40	4.560
8:45	
8:50	4.870
9:10	
9:15	
9:20	
9:25	
9:30	5.160
9:35	
9:40	
9:45	
9:50	5.030
9:55	
10:00	5.280
10:05	
10:10	6.650
10:15	
10:20	180.200
10:25	
10:30	385.500
10:35	
10:40	162.900
10:45	
10:50	7.040
11:00	6.690
11:10	6.320
11:20	9.430
11:30	35.770
11:40	12.530
11:50	17.100
12:00	23.210
12:05	
12:10	48.230
12:15	

12:20	11.560
12:25	
12:30	5.780
12:40	5.620
12:50	5.480
13:00	5.390
13:10	5.310
13:20	10.900
13:30	
13:40	4.782
13:50	4.820
13:55	3.130
14:00	4.600
14:10	7.300
14:20	10.900
14:30	9.983
14:40	8.860
14:50	7.720
15:00	6.950
15:10	6.990
15:20	5.590
15:30	5.490
15:40	8.230
15:50	5.311
16:00	5.290
16:10	3.640
16:20	3.430
16:30	3.320
16:40	3.250
16:50	3.250
19:25	
19:50	23.900
20:00	2.740
20:10	3.210
20:20	3.190
20:30	3.160
20:40	
20:50	
21:00	
21:10	
21:20	
21:30	
21:40	
21:50	2.958
22:00	2.985
22:10	21.620
22:20	2.910
22:30	2.920
22:35	
22:40	2.850
22:50	3.140
23:00	3.330

	23:10	3.290
	23:20	3.270
	23:30	3.090
	23:40	3.210
	23:50	3.070
13-Mar	0:00	3.160
	0:10	3.291
	0:20	3.016
	0:30	3.146
	0:40	3.181
	0:50	3.177
	1:00	3.201
	1:10	3.207
	1:20	3.163
	1:30	3.127
	1:40	3.329
	1:50	3.125
	2:00	3.186
	2:10	3.116
	2:20	3.214
	2:30	3.164
	2:40	3.129
	2:50	3.104
	3:00	3.574
	3:10	3.978
	3:20	3.236
	3:30	3.103
	3:40	3.392
	3:50	3.186
	4:00	3.039
	4:10	3.564
	4:20	3.150
	4:30	3.122
	4:40	3.256
	4:50	3.104
	5:00	3.204
	5:10	3.360
	5:20	3.472
	5:30	3.817
	5:40	3.224
	5:50	3.192
	6:00	3.467
	6:10	3.188
	6:20	3.160
	6:30	3.625
	6:40	3.092
	6:50	3.006
	7:00	3.652
	7:10	3.415
	7:20	3.325
	7:30	3.530
	7:40	3.413

7:50	7.227	
8:00	3.510	
8:10	3.166	100.000
8:20		100.000
8:30	14.730	80.000
8:40	16.030	80.000
8:50	15.900	90.000
9:00	10.240	37.000
9:10	175.000	30.000
9:20	281.700	27.000
9:30	26.000	25.000
9:40		25.000
9:50		23.000
10:00	6.512	23.000
10:10	6.372	23.000
10:20	8.265	20.000
10:30	6.755	19.000
10:40	6.020	19.000
10:50	6.038	19.000
11:00	5.766	18.000
11:10	5.610	18.000
11:20	5.998	18.000
11:30	7.888	17.000
11:40	6.837	17.000
11:50	6.617	17.000
12:00	5.545	17.000
12:10	5.537	18.000
12:20	5.316	18.000
12:30	5.495	17.000
12:40	5.266	17.000
12:50	5.369	17.000
13:00	4.953	17.000
13:10	4.794	17.000
13:20	4.907	17.000
13:30	4.852	16.000
13:40	4.833	16.000
13:50	4.965	24.000
14:00	21.880	21.000
14:10	39.710	21.000
14:20	57.630	21.000
14:30	17.610	32.000
14:40	10.050	52.000
14:50	10.850	35.000
15:00	8.311	52.000
15:10	5.717	100.000
15:20	4.717	24.000
15:30	4.461	34.000
15:40	4.360	24.000
15:50	5.469	30.000
16:00	5.154	31.000
16:10	4.555	45.000
16:20	4.336	150.000

16:30	4.277	46.000
16:40	4.235	60.000
16:50	4.224	30.000
17:00	4.301	120.000
17:10	4.213	62.000
17:20	4.640	45.000
17:30	5.171	36.000
17:40	5.898	40.000
17:50	5.953	35.000
18:00	5.382	35.000
18:10	5.168	30.000
18:20	5.250	27.000
18:30	4.883	26.000
18:40	4.980	25.000
18:50	4.831	25.000
19:00	5.224	25.000
19:10	5.007	23.000
19:20	4.709	22.000
19:23		
19:30	4.622	20.000
19:31		
19:40	4.844	26.000
19:41		
19:50	5.557	24.000
19:51		
20:00	5.721	24.000
20:01	43.200	
20:10	4.471	
20:11		
20:20	4.521	
20:21		
20:30	4.427	
20:31		
20:40	4.454	440.000
20:41		
20:50	4.377	
20:51		440.000
21:00	4.371	
21:01		
21:10	4.480	440.000
21:11		
21:20	4.463	
21:21		
21:30	4.552	
21:31		
21:40	4.785	
21:41		
21:50	4.626	
21:51		
22:00	4.636	
22:01		
22:10	4.622	

	22:11	
	22:20	5.417
	22:21	
	22:30	4.645
	22:31	
	22:40	4.622
	22:41	
	22:50	4.632
	22:51	
	23:00	4.668
	23:01	
	23:10	4.700
	23:11	
	23:20	4.647
	23:21	
	23:30	4.610
	23:31	
	23:40	4.828
	23:41	
	23:50	4.868
	23:51	
14-Mar	0:00	4.855
	0:01	
	0:10	4.529
	0:11	
	0:20	4.582
	0:21	
	0:30	4.469
	0:31	
	0:40	4.450
	0:41	
	0:50	4.442
	0:51	
	1:00	4.447
	1:01	
	1:10	4.426
	1:11	
	1:20	4.281
	1:21	
	1:30	4.321
	1:31	
	1:40	4.322
	1:41	
	1:50	4.371
	1:51	
	2:00	4.356
	2:10	4.594
	2:20	751.200
	2:30	433.000
	2:40	420.000
	2:50	66.270
	3:00	65.520

3:10	45.500
3:20	15.430
3:30	18.990
3:40	14.990
3:50	10.320
4:00	10.070
4:10	6.706
4:20	7.748
4:30	7.710
4:40	7.045
4:50	6.900
4:51	
5:00	6.650
5:01	
5:10	6.516
5:11	
5:20	6.735
5:21	
5:29	
5:30	6.494
5:40	6.410
5:41	
5:50	6.340
5:41	
6:00	5.144
6:01	
6:10	5.021
6:11	
6:20	5.032
6:21	
6:30	4.920
7:53	
8:07	
8:19	
8:30	
8:31	
8:40	
8:41	
8:50	
9:00	
9:10	
9:12	
9:20	
9:25	
9:30	
9:40	
9:43	
9:50	
9:53	
10:00	
10:05	
10:10	

10:11	
10:20	
10:27	
10:30	
10:35	
10:40	
10:41	
10:50	
10:51	
11:37	50.387
11:44	19.600
12:06	10.816
12:21	10.650
12:34	
12:46	
12:52	
13:04	
13:10	12.000
13:12	
13:15	13.000
13:20	15.000
13:25	14.000
13:28	
13:30	13.000
13:35	13.000
13:40	11.000
13:45	12.000
13:50	13.000
13:55	15.000
14:02	
14:14	
14:30	
14:26	
14:58	
15:09	
15:16	
15:23	
15:30	
15:38	
16:02	
16:10	
17:00	8.100
17:10	8.100
17:20	7.275
17:30	7.605
17:40	7.620
17:50	8.044
18:00	7.637
18:10	7.037
18:20	7.177
18:30	8.047
18:40	10.400

	18:46	10.100
	19:00	7.700
	19:10	7.800
	19:20	7.700
	19:30	8.900
	19:40	7.600
	19:50	5.500
	20:00	5.400
	20:10	5.400
	20:20	5.400
	20:30	5.400
	20:40	5.400
	20:50	5.800
	20:55	5.000
	21:00	5.800
	21:05	5.800
	21:10	6.000
	21:15	5.800
	21:20	6.000
	21:25	6.800
	21:30	29.700
	21:35	760.000
	21:37	3130.000
	22:15	431.700
	22:20	336.600
	22:25	301.900
	22:35	326.200
	22:40	293.700
	22:45	271.700
	22:50	267.000
	22:55	263.000
	23:00	252.700
	23:05	242.800
	23:10	235.300
	23:15	231.500
	23:20	227.000
	23:25	216.000
	23:30	216.000
	23:35	211.300
	23:40	205.600
	23:45	201.700
	23:50	196.200
	23:55	192.300
15-Mar	0:00	188.900
	0:05	185.000
	0:10	181.000
	0:15	177.300
	0:20	175.800
	0:25	173.300
	0:30	168.000
	0:35	164.900
	0:40	164.400

0:45	167.600	
0:50	164.300	
0:55	151.700	
1:00	150.300	
1:05	147.100	
1:20	137.800	
1:30	135.500	
1:40	130.400	
1:50	123.300	
2:00		
2:10	114.100	
2:20	111.400	
2:30	109.600	
2:40	105.400	
3:10	94.300	
3:20	92.800	
3:40	87.000	
4:00	81.900	
4:20	77.600	
4:40	73.600	
5:00	70.000	
5:20	67.400	
5:40	65.700	
6:00	73.200	
8:20	807.700	
8:31	8217.000	
8:40	1726.000	
8:50	2208.000	
9:00	11930.000	
9:15		
9:20		
9:35	7241.000	
10:15	8837.000	
11:40		253.800
11:45		162.400
12:05		2431.000
12:15		2434.000
12:25	1407.000	
12:35	1325.000	
12:45	1267.000	
12:55	1216.000	
13:00	1191.000	
13:10	1148.000	
13:20	1100.000	
13:30	1068.000	
13:40	1014.000	
13:50	969.900	
14:00	928.200	
14:10	903.900	
14:20	874.400	
14:30	855.500	
14:40	821.300	

	14:50	673.800
	15:00	649.000
	15:10	628.500
	15:20	613.800
	15:30	596.400
	15:40	566.900
	15:50	544.900
	16:00	531.600
	16:10	513.200
	16:20	502.600
	16:30	489.800
	16:40	473.000
	16:50	460.300
	17:00	449.400
	17:10	437.500
	17:30	423.500
	18:00	401.700
	18:30	403.000
	19:00	353.800
	19:30	343.300
	20:00	347.000
	20:30	311.300
	21:00	298.800
	21:30	282.600
	22:00	313.200
	22:30	431.800
	23:00	4548.000
	23:10	6960.000
	23:15	2761.000
	23:20	3648.000
	23:25	4976.000
	23:30	8080.000
	23:35	6308.000
16-Mar	0:00	4351.000
	0:10	3504.000
	0:20	3108.000
	0:30	2609.000
	1:00	2159.000
	1:10	2021.000
	1:20	1937.000
	1:30	1805.000
	1:40	1708.000
	1:50	1628.000
	2:00	1552.000
	2:10	1522.000
	2:20	1453.000
	2:30	1386.000
	2:40	1357.000
	2:50	1316.000
	3:00	1267.000
	3:30	1159.000
	4:00	1047.000

4:30	975.300
5:00	918.200
5:30	868.000
6:00	884.000
6:30	848.400
6:40	837.000
6:50	815.900
7:00	808.800
7:10	670.300
7:20	661.800
7:30	651.100
7:40	644.000
7:50	636.800
8:00	627.500
8:10	620.600
8:20	613.900
8:30	606.600
8:40	600.400
8:50	593.400
9:00	587.600
9:10	582.700
9:20	582.400
9:30	582.300
9:40	641.800
9:50	700.600
10:00	810.300
10:10	908.500
10:20	2399.000
10:30	1361.000
10:45	6400.000
10:54	2300.000
10:55	2900.000
11:00	3391.000
11:10	2720.000
11:20	1900.000
11:30	5350.000
11:40	2633.000
11:50	2578.000
12:00	4418.000
12:10	3138.000
12:20	3261.000
12:30	10850.000
12:40	8234.000
12:50	2851.000
13:00	2672.000
13:10	2538.000
13:20	2430.000
13:30	2331.000
13:40	2257.000
13:50	2182.000
14:00	2122.000
14:10	2059.000

	14:20	2002.000			
	14:30	1937.000			
	14:40	1888.000			
	14:50	1835.000			
	15:00	1788.000			
	15:10	1752.000			
	15:20	1697.000			
	15:30	1664.000			
	15:40	1629.000			
	15:50	1591.000			
17-Mar	0:30		351.400		
	0:50		350.100		
	1:00		350.000		
	1:30		348.200		
	2:00		345.900		
	2:30		344.800		
	3:00		344.600		
	3:30		341.700		
	4:00		340.800		
	4:30		339.400		
	5:00		338.300		
	5:30		336.100		
	6:00		334.700		
	6:30		333.800		
	7:00		314.500		
	7:30		313.500		
	7:50			381.300	
	8:00			379.000	
	8:30			373.000	
	8:40			372.500	
	8:50			372.700	
	9:00			373.700	
	9:10			371.900	
	9:30				3786.000
	9:40				3782.000
	9:50				3763.000
	10:00				3759.000
	10:10				3755.000
	10:20				3754.000
	10:30				3750.000
	10:40				3753.000
	10:50				3743.000
	11:00	647.300			
	11:10	646.200			
	11:15		313.100		
	11:20		312.500		
	11:30		312.300		
	12:00		311.000		
	12:30		310.700		
	13:00		309.700		
	13:10		309.300		
	13:20		309.100		

	13:30		4175.000
	13:40		4165.000
	14:00		3810.000
	14:10	311.100	
	14:30	310.300	
	15:00	309.100	
	15:30	309.700	
	15:50		3700.000
	16:00		3698.000
	16:10		3695.000
	16:15		3961.000
	17:00		3976.000
	17:10		3675.000
	17:20		3672.000
	17:30		3667.000
	17:40		3639.000
	17:50		3650.000
	18:00		3649.000
	18:10		3641.000
	18:20		3645.000
	18:30		3643.000
	18:40		3638.000
	18:50		3638.000
	19:00		3630.000
	19:10		3626.000
	20:40	292.200	
	21:00	291.900	
	21:10	291.700	
	21:20	291.300	
	21:30	291.200	
	21:40	291.100	
	21:50	290.900	
	22:00	290.400	
	22:10	290.400	
	22:20	289.900	
	22:30	289.700	
	22:40	289.600	
	22:50	289.500	
	23:00	289.000	
	23:10	289.000	
	23:20	288.800	
	23:30	288.700	
	23:40	287.800	
	23:50	288.900	
18-Mar	0:00	287.000	
	0:10	287.300	
	0:20	286.600	
	0:30	286.400	
	0:40	286.300	
	0:50	286.000	
	1:00	285.600	
	1:10	285.500	

1:20	285.200
1:30	284.900
1:40	284.600
1:50	284.400
2:00	284.000
2:10	283.700
2:20	283.700
2:30	283.500
2:40	283.000
2:50	282.900
3:00	282.600
3:10	282.000
3:20	282.000
3:30	281.600
3:40	281.500
3:50	281.200
4:00	281.100
4:10	280.900
4:20	280.700
4:30	280.200
4:40	280.000
4:50	279.800
5:00	279.400
5:10	279.300
5:20	279.000
5:30	278.900
5:40	278.900
5:50	277.100
6:00	274.000
6:10	274.000
6:20	273.800
6:30	274.100
6:40	272.700
6:50	273.400
7:00	272.400
7:10	271.700
7:20	271.600
7:30	271.400
7:40	271.100
7:50	271.200
8:00	270.500
8:10	270.300
8:20	269.900
8:30	269.900
8:40	269.800
8:50	269.200
9:00	268.700
9:10	267.600
9:20	268.900
9:30	267.500
9:40	267.000
9:50	266.900

10:00	266.700	
10:10	266.400	
10:20	266.100	
10:30	265.700	
10:40	265.400	
10:50	264.800	
11:00	265.000	
11:10	264.400	
11:20	264.500	
11:30	264.100	
11:40	264.400	
11:50	263.400	
12:00	263.500	
12:10	263.100	
12:20	262.900	
12:30	236.300	
12:40	264.300	
12:50	261.300	
13:00	262.000	
13:10	261.900	
13:20	262.700	
13:30	264.100	
13:50		3484.000
14:00		3414.000
14:10		3382.000
14:15		3371.000
14:20		3362.000
14:25		3357.000
14:30		3352.000
14:35		3342.000
14:40		3348.000
14:45		3357.000
14:50		3339.000
14:55		3346.000
15:00		3345.000
15:10		3368.000
15:20		3582.000
15:30		4075.000
15:40		3823.000
15:50		4396.000
16:00		4485.000
16:10		4352.000
16:20		4535.000
16:30		4419.000
16:40		4277.000
16:50		4735.000
17:00		5055.000
17:10		5033.000
17:20		4952.000
17:30		4251.000
17:40		4182.000
17:50		4090.000

	18:00		4084.000
	18:10		4069.000
	18:20		4069.000
	18:30		3922.000
	18:40		3885.000
	18:50		3832.000
	19:00		3788.000
	19:10		3745.000
	19:20		3728.000
	19:30		3699.000
	19:40		3669.000
	19:50		3634.000
	20:00		3611.000
	20:10	447.600	
	20:20	441.200	
	20:30	434.500	
	20:40	429.200	
	20:50	423.900	
	21:00	419.100	
	21:10	414.200	
	21:20	409.400	
	21:30	405.200	
	21:40	401.600	
	21:50	397.800	
	22:00	393.900	
	22:10	389.200	
	22:20	385.900	
	22:30	382.900	
	22:40	379.600	
	22:50	375.900	
	23:00	373.600	
	23:10	371.200	
	23:20	368.900	
	23:30		3254.000
	23:40		3256.000
	23:50		3244.000
19-Mar	0:00		3229.000
	0:10		3224.000
	0:20		3219.000
	0:30		3231.000
	0:40		3342.000
	0:50		3284.000
	1:00		3248.000
	1:10		3279.000
	1:20		3247.000
	1:30		3195.000
	1:40		3188.000
	1:50		3181.000
	2:00	313.700	
	2:10	312.200	
	2:20	311.100	
	2:30	310.000	

2:40	309.100
2:50	308.600
3:00	306.900
3:10	306.000
3:20	305.100
3:30	304.300
3:40	303.600
3:50	303.100
4:00	301.700
4:10	301.300
4:20	300.500
4:30	299.200
4:40	299.200
4:50	298.500
5:00	297.500
5:10	296.400
5:20	295.800
5:30	295.100
5:40	295.400
5:50	294.300
6:00	293.800
6:10	293.600
6:20	292.600
6:30	292.300
6:40	291.500
6:50	290.900
7:00	290.600
7:10	289.800
7:20	289.100
7:30	288.900
7:40	288.600
7:50	287.200
8:00	399.000
8:10	830.800
8:20	670.600
8:30	431.900
8:40	390.500
8:50	522.500
9:00	364.500
9:10	336.500
9:20	323.800
9:30	425.200
9:40	657.300
9:50	358.300
10:00	346.100
10:10	341.200
10:20	338.400
10:30	334.300
10:40	330.200
10:50	327.100
11:00	322.600
11:10	319.800

11:20	315.100	
11:30	313.100	
11:40		3954.000
11:50		3901.000
12:00		3882.000
12:10		3828.000
12:20		3802.000
12:30		3749.000
12:40		3704.000
12:50		3655.000
13:00		3629.000
13:10		3594.000
13:20		3565.000
13:30		3529.000
13:40		3491.000
13:50		3473.000
14:00		3443.000
14:10		3417.000
14:20		3396.000
14:30		3375.000
14:40		3348.000
14:50		3340.000
15:00		3279.000
15:10		3281.000
15:20		3229.000
15:30		3194.000
15:40		3474.000
15:50		3167.000
16:00		3165.000
16:10		3137.000
16:20		3135.000
16:30		3126.000
16:40		3111.000
16:50		3089.000
17:00		3078.000
17:10		3071.000
17:20		3058.000
17:30		3051.000
17:40		3033.000
17:50		3024.000
18:00		3020.000
18:10		3007.000
18:20		3002.000
18:30		2998.000
18:40		2992.000
18:50		2978.000
19:00		2972.000
19:10		2965.000
19:20		2961.000
19:30		2957.000
19:40		2946.000
19:50		2941.000

	20:00		2937.000
	20:10		2931.000
	20:20		2924.000
	20:30		2917.000
	20:40		2912.000
	20:50		2909.000
	21:00		2906.000
	21:10		2900.000
	21:20		2895.000
	21:30		2891.000
	21:40		2883.000
	21:50		2880.000
	22:00		2880.000
	22:10		2876.000
	22:20		2855.000
	22:30		2854.000
	22:40		2847.000
	22:50		2844.000
	23:00		2841.000
	23:10		2836.000
	23:20		2828.000
	23:30		2828.000
20-Mar	0:00		2821.000
	0:10		2814.000
	0:20		2808.000
	0:30		2805.000
	0:40		2803.000
	0:50		2791.000
	1:00		2797.000
	1:10		2794.000
	1:20		2793.000
	1:30		2788.000
	1:40		2785.000
	1:50		2781.000
	2:00		2778.000
	2:10		2773.000
	2:20		2771.000
	2:30		2767.000
	2:40		2764.000
	2:50		2761.000
	3:00		2759.000
	3:10		2745.000
	3:20		2745.000
	3:30		2741.000
	3:40		2758.000
	3:50		3185.000
	4:00		2939.000
	4:10		2771.000
	4:20		2743.000
	4:30		2739.000
	4:40	273.200	
	4:50	271.800	

5:00	271.200	
5:10	27.900	
5:20	270.400	
5:30	269.800	
5:40	269.500	
5:50		2683.000
6:00		2679.000
6:10		2679.000
6:20		2677.000
6:30		2677.000
6:40		2654.000
6:50		2664.000
7:00		2661.000
7:10		2661.000
7:20		2659.000
7:30		2652.000
7:40		2653.000
7:50		2637.000
8:00		2630.000
8:10		2629.000
8:20		2627.000
8:30		2625.000
8:40		2619.000
8:50		2617.000
9:00		2614.000
9:10		2614.000
9:20		2608.000
9:30		2623.000
9:40		2661.000
9:50		2742.000
10:00		2726.000
10:10		2608.800
10:20		2605.000
10:30		2596.000
10:40		2589.000
10:50		2583.000
11:00		2579.000
11:10		2578.000
11:20		2569.000
11:30		2571.000
11:40		2562.000
11:50		2564.000
12:00		2559.000
12:10		2558.000
12:20		2552.000
12:30		2551.000
12:40		2551.000
12:50		2550.000
13:00		2567.000
13:10		2588.000
13:20		2660.000
13:30		2593.000

13:40	2654.000
13:50	2741.000
14:00	2768.000
14:10	2999.000
14:20	2323.000
14:30	3056.000
14:40	3202.000
14:50	3346.000
15:00	3054.000
15:10	3071.000
15:20	3342.000
15:30	3337.000
15:40	3003.000
15:50	3046.000
16:00	3171.000
16:10	2940.000
16:20	2851.000
16:30	2830.000
16:40	2960.000
16:50	2839.000
17:00	2773.000
17:10	2763.000
17:20	2758.000
17:30	2729.000
17:40	2715.000
17:50	2707.000
18:00	2693.000
18:10	2680.000
18:20	2673.000
18:30	2658.000
18:40	2651.000
18:50	2658.000
19:00	2623.000
19:10	2683.000
19:20	2614.000
19:30	2602.000
19:40	2595.000
19:50	2632.000
20:00	2828.000
20:10	2704.000
20:20	2682.000
20:30	2586.000
20:40	2552.000
20:50	2550.000
21:00	2542.000
21:10	2537.000
21:20	2532.000
21:30	2518.000
21:40	2517.000
21:50	2510.000
22:00	2506.000
22:10	2503.000

	22:20	2492.000
	22:30	2487.000
	22:40	2485.000
	22:50	2483.000
	23:00	2475.000
	23:10	2469.000
	23:20	2462.000
	23:30	2455.000
	23:40	2457.000
	23:50	2453.000
21-Mar	0:00	2452.000
	0:10	2449.000
	0:20	2444.000
	0:30	2439.000
	0:40	2438.000
	0:50	2433.000
	1:00	2431.000
	1:10	2429.000
	1:20	2426.000
	1:30	2421.000
	1:40	2401.000
	1:50	2398.000
	2:00	2396.000
	2:10	2392.000
	2:20	2389.000
	2:30	2385.000
	2:40	2383.000
	2:50	2380.000
	3:00	2378.000
	3:10	2375.000
	3:20	2372.000
	3:30	2370.000
	3:40	2366.000
	3:50	2364.000
	4:00	2362.000

							Neutron Radiation :maicro SV/h				
MP-2	MP-3	MP-4	MP-5	MP-6	MP-7	MP-8	Near Gate	MP-1		MP-3	MI
				0.056							
					0.057						
			0.055								
		0.059									
	0.059										
				0.057							
				0.060							
				0.059							
				0.067							
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				
							less than 0.001				

	less than 0.001
1.210	
1.530	less than 0.001
	less than 0.001
2.470	
2.560	
2.570	
2.500	less than 0.001
2.500	
2.420	less than 0.001
2.430	
	less than 0.001
2.400	
2.370	less than 0.001
2.380	
2.360	
2.400	
2.340	less than 0.001
2.510	
	less than 0.001
2.680	
2.770	
2.550	
2.590	
2.610	less than 0.001
2.590	
2.620	
2.640	
2.610	less than 0.001
2.620	
4.500	less than 0.001
4.560	
4.610	less than 0.001
4.250	
	less than 0.001
4.750	
9.140	less than 0.001
24.100	
	less than 0.001
16.900	
6.650	less than 0.001
5.160	less than 0.001
4.860	less than 0.001
5.220	less than 0.001
5.030	less than 0.001
3.800	less than 0.001
4.050	less than 0.001
5.320	less than 0.001
8.800	
	less than 0.001
11.700	

4.130	less than 0.001
3.830	
3.580	less than 0.001
3.600	less than 0.001
3.520	less than 0.001
3.660	less than 0.001
3.740	less than 0.001
	less than 0.001
2.330	
2.310	less than 0.001
2.810	less than 0.001
2.110	less than 0.001
3.020	less than 0.001
3.800	less than 0.001
3.490	less than 0.001
3.330	less than 0.001
3.500	less than 0.001
3.500	less than 0.001
3.330	less than 0.001
3.230	less than 0.001
3.210	less than 0.001
3.330	less than 0.001
2.190	less than 0.001
2.220	less than 0.001
2.200	less than 0.001
2.180	less than 0.001
2.120	less than 0.001
2.060	less than 0.001
3.780	less than 0.001
80.000	
	less than 0.001
10.000	less than 0.001
10.000	less than 0.001
10.000	less than 0.001
	less than 0.001
5.000	
6.000	
80.000	
80.000	
70.000	
80.000	
50.000	
70.000	less than 0.001
70.000	less than 0.001
	less than 0.001
	less than 0.001
4.870	less than 0.001
4.700	
4.120	less than 0.001
4.350	less than 0.001
4.300	less than 0.001

	less than 0.001
	less than 0.001
4.500	less than 0.001
	less than 0.001
	less than 0.001
5.000	less than 0.001
4.700	less than 0.001
4.500	less than 0.001
4.500	less than 0.001
5.000	less than 0.001
4.500	less than 0.001
5.500	less than 0.001
4.500	less than 0.001
5.000	less than 0.001
5.500	less than 0.001
5.000	less than 0.001
5.000	less than 0.001
5.500	less than 0.001
5.000	less than 0.001
4.500	less than 0.001
4.500	less than 0.001
4.500	less than 0.001
4.500	less than 0.001
	less than 0.001
	less than 0.001
	less than 0.001
	less than 0.001
5.000	less than 0.001
5.100	less than 0.001
5.200	less than 0.001
5.000	less than 0.001
5.500	less than 0.001
5.000	less than 0.001
5.000	less than 0.001
4.500	less than 0.001
5.000	less than 0.001
5.000	less than 0.001
4.600	less than 0.001
5.000	0.00
4.500	0.00
5.200	0.00
5.600	less than 0.001
5.900	less than 0.001
5.700	less than 0.001
5.700	0.00
5.700	0.00
5.700	0.00
7.700	less than 0.001
8.500	0.00
5.600	less than 0.001
	less than 0.001

	less than 0.001
	less than 0.001
	less than 0.001
	less than 0.001
	less than 0.001
	less than 0.001
	less than 0.001
143.500	less than 0.001
137.800	less than 0.001
76.900	less than 0.001
70.300	less than 0.001
66.800	
64.700	
62.900	less than 0.001
61.100	less than 0.001
61.800	less than 0.001
58.000	less than 0.001
56.800	less than 0.001
55.400	0.00
54.300	less than 0.001
53.300	less than 0.001
53.700	less than 0.001
51.300	less than 0.001
50.000	less than 0.001
49.400	less than 0.001
48.700	less than 0.001
47.800	less than 0.001
47.100	less than 0.001
46.300	less than 0.001
49.700	less than 0.001
45.200	less than 0.001
44.600	less than 0.001
44.000	less than 0.001
43.500	less than 0.001
42.900	less than 0.001
44.000	less than 0.001
905.100	less than 0.001
499.300	less than 0.001
646.000	less than 0.001
135.400	less than 0.001
129.900	less than 0.001
133.000	less than 0.001
169.000	less than 0.001
58.700	less than 0.001
54.300	less than 0.001
54.000	less than 0.001
51.800	less than 0.001
56.500	less than 0.001
76.100	less than 0.001
107.100	less than 0.001
58.000	less than 0.001
57.600	less than 0.001

	71.500	less than 0.001
	57.200	less than 0.001
	100.100	less than 0.001
	79.400	less than 0.001
	60.800	less than 0.001
	57.000	less than 0.001
	52.300	less than 0.001
	56.800	less than 0.001
	52.300	less than 0.001
	50.100	less than 0.001
	49.400	less than 0.001
	48.600	less than 0.001
	47.900	less than 0.001
	47.300	less than 0.001
	46.700	less than 0.001
	46.100	less than 0.001
	46.300	less than 0.001
		less than 0.001
	44.800	
		less than 0.001
	44.400	
		less than 0.001
	44.000	
		less than 0.001
	43.800	
		less than 0.001
450.000		less than 0.001
	42.800	
450.000		less than 0.001
	42.500	
		less than 0.001
	42.600	
		less than 0.001
	42.000	
		less than 0.001
	41.700	
440.000		less than 0.001
	41.300	
		less than 0.001
	41.000	
440.000		less than 0.001
	40.800	
440.000		less than 0.001
	40.600	
440.000		less than 0.001
	40.300	
440.000		less than 0.001
	40.100	
430.000		less than 0.001
	39.800	
430.000		less than 0.001

	39.700	
430.000		less than 0.001
	40.400	
430.000		less than 0.001
	39.300	
430.000		less than 0.001
	39.100	
420.000		less than 0.001
	38.900	
420.000		less than 0.001
	38.700	
420.000		less than 0.001
	39.000	
420.000		less than 0.001
	38.300	
410.000		less than 0.001
	38.200	
	420.000	less than 0.001
	38.100	
410.000		less than 0.001
	37.900	
410.000		less than 0.001
	38.200	
	410.000	less than 0.001
38.400		
410.000		less than 0.001
	37.700	
410.000		less than 0.001
	37.500	
410.000		less than 0.001
	37.300	
410.000		less than 0.001
	37.000	
410.000		less than 0.001
	38.000	
410.000		less than 0.001
	36.900	
410.000		less than 0.001
	36.700	
410.000		less than 0.001
	36.500	
410.000		less than 0.001
	36.400	
410.000		less than 0.001
	38.300	
410.000	36.400	less than 0.001
410.000	36.500	less than 0.001
410.000	44.600	less than 0.001
440.000	319.300	less than 0.001
650.000	189.700	less than 0.001
490.000	86.900	less than 0.001
480.000	144.200	less than 0.001

650.000		129.800	less than 0.001
650.000		123.900	less than 0.001
720.000		112.900	less than 0.001
600.000		73.600	less than 0.001
680.000		70.000	less than 0.001
820.000		68.800	less than 0.001
450.000		54.700	less than 0.001
430.000		47.600	less than 0.001
420.000		50.000	less than 0.001
420.000		42.900	less than 0.001
420.000			
		40.600	
400.000			less than 0.001
		39.900	
420.000			less than 0.001
		39.000	
420.000			less than 0.001
		41.300	
		41.300	
400.000			less than 0.001
420.000			less than 0.001
		38.300	
400.000			less than 0.001
		38.100	
400.000			less than 0.001
		37.900	
			less than 0.001
		37.800	
			less than 0.001
		37.400	
			less than 0.001
		69.000	
		40.000	
		39.000	
	287.200		
		75.000	
	274.000		
		40.000	
	268.000		0.00
	304.800		
	443.700		0.00
	518.700		0.00
	481.000		0.00
		87.083	
	339.400		0.00
	293.700		0.00
		48.899	
	274.900		0.00
		43.256	
	269.400		0.00
		41.998	
	266.800		0.00

	41.533			
265.400				0.00
	40.694			
261.600				0.00
	40.155			
261.900				0.00
	39.716			
261.000				0.00
	39.406			
				0.00
				0.00
				0.00
				0.00
			4.226	0.00
		6.860		0.00
	31.530			0.00
229.700				
	34.200			0.00
		6.377		0.00
			3.650	0.00
		6.088		0.00
	29.800			0.00
231.100				0.00
	31.300			0.00
		6.200		
			3.900	0.00
		6.000		0.00
	29.600			0.00
226.200				0.00
	30.400			0.00
		5.900		0.00
			3.700	0.00
				0.00
				0.00
				less than 0.001
				less than 0.001
				less than 0.001
				less than 0.001
				less than 0.001
				less than 0.001
				less than 0.001
				less than 0.001
				less than 0.001

less than 0.001
less than 0.001
less than 0.001
less than 0.001
less than 0.001
less than 0.001
less than 0.001
less than 0.001
less than 0.001
less than 0.001
less than 0.001
less than 0.001
less than 0.001
less than 0.001
0.01
0.00
0.00
less than 0.001
less than 0.001
less than 0.001
less than 0.001
less than 0.001
less than 0.001
less than 0.001
less than 0.001
less than 0.001
less than 0.001

	less than 0.01
	0.02
	0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
58.000	
50.000	
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01
	less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

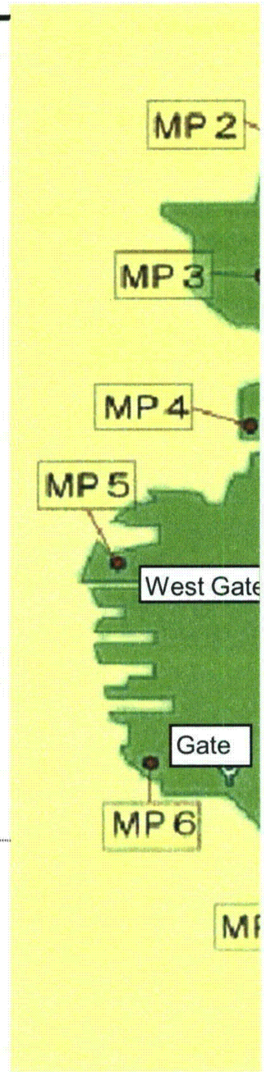
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01
less than 0.01

r MP-5	MP-6	MP-	MP-8	Wind	Velocity m/s	Note
						1F-1 Vent 14:30- Explosion
				NE	0.4	
				NW	0.5	
				ENE	0.4	
				N	0.4	
				ENE	0.6	
				NE	0.5	
				NNW	0.5	
				N	0.6	
				W	0.7	
				N	0.8	
				WNW	0.4	
				N	0.3	1F-3 Vent 9:20-
				N	0.4	
				NNE	0.4	
				SE	0.5	
				NE	2.0	
				NE	1.8	
				ENE	0.9	
				ENE	1.1	
				NNW	0.6	
				WSW	0.8	
				SW	0.7	
				WSW	0.7	
				NW	1.0	
				NNW	0.9	
				NNW	1.4	
				NNW	2.0	
				NW	1.7	
				W	0.9	
				W	1.0	
				W	0.6	
				WSW	0.5	
				NNW	0.4	
				NE	0.5	



W	0.5
WSW	0.2
WNW	0.7
S	1.1
SE	0.9
SW	0.9
S	1.2
S	2.0
S	1.6
SE	2.5
SSE	2.8
S	1.9
SE	2.2
SE	2.0
N	1.8
N	2.0
N	1.7
SW	1.6
SW	2.7
NE	2.2
E	1.6
SW	2.0
NW	2.7
N	2.3
W	1.9

NW	2.2
SE	1.8
S	2.0
SW	1.7
E	1.7
S	2.6
E	2.6
SE	3.5
E	2.9
SSE	3.3
SSE	3.3
SSE	3.3
S	2.7
S	2.7
S	3.4
SSW	2.7
S	2.5
SSW	3.2
S	2.5
S	3.0
S	2.6
SSE	2.3
SSE	2.4
SSE	2.4
S	2.2
SSW	2.4
SSW	1.9
W	0.5
NW	0.4
W	0.3
W	0.5
SW	0.6
SW	0.5
NW	0.4
SW	0.4
W	0.4
W	0.4
W	0.3
S	0.4
N	0.4

NW	0.4
W	0.4
W	0.5
W	0.4
NW	0.5
NE	0.3
NNW	0.4
W	0.4
S	0.4
WNW	0.6
NW	0.6
SE	0.5
NW	0.4
W	0.4
NE	0.6
NE	0.5
W	0.5
W	0.5
WNW	0.4
WE	0.5
S	0.6
SW	0.7
S	0.7
S	1.2
SE	1.5
SSE	2.0
S	1.6
SW	1.2
S	0.8
SW	1.2
S	1.3
SSW	1.3
S	0.6
W	1.2
NNE	0.7
N	0.8
N	0.7
W	0.3
NW	0.6
W	0.6
SE	0.5
S	0.6
S	0.9
S	1.1
SSW	0.9
W	0.8
SSW	1.3
WNW	1.6
N	0.9
N	0.9
MW	0.9
NW	0.9

NW	0.4
S	0.4
E	0.5
E	0.5
SSE	1.6
SE	1.4
SE	2.0
SSE/ENE	2.4/0.5
E/WNW	1.5/0.8
SSW/WNW	1.4/1.8
N/NW	1.5/1.8
NW	2.3
NW	2.7
NW	3.1/2.6
NW	3.2/2.9
NNW/NW	4.2/2.3
N/NW	2.8/2.4
N/NW	3.3/2.8
NNW/NW	3.3/2.7
SE/NW	3.3/2.2
S/NNW	2.4/2.3
NW	2.8/2.5
NW	2.7/2.1
W/WNW	2.7/3.1
NNW/NW	2.5/2.4
E/NW	2.4/1.6
W/NW	2.2/1.3
S/NW	2.1/2.9
N/NW	2/2.3
SSW/NW	2.1/2.8
W/NNW	2.1/1.9
NW/NNW	2.1/2.3
SSW/WNW	2.6
S/WNW	2.7/2.5
SW/WNW	1.6/1.7
NNW/NW	2.2/1.6
SE/ENE	1.7/1.5
S	2.6/0.6
SSE/ESE	2.1/0.7
SSE/S	2.5/0.6
SSE	2.2/0.5
SE/SSE	1.6/0.7
SSE	2.0
SW/SSE	1.3/0.8
SSE/WNW	1.6/2.3
SSE/WNW	1.6/1.1
NW/ENE	2.0/2.1
WNW/ENE	1.5/1.1
SE/SSE	2.3/0.7
SE/SSE	2.2/0.7
S	1.8/0.4
S/SSE	1.8/0.4

SE/SSE	1.1/0.5
S/SSW	1.0/0.4
S/SE	1.0/0.5
SSW/SW	1.5/0.4
S/SW	1.8/0.4
SSE/WSW	0.6/0.5
NNW/SE	0.5/0.4
W/NNW	0.6/0.5
W/NNW	0.5/0.4
NW	0.6
NW/NNW	0.8/0.6
NW/NNE	0.9/0.3
NW/NNW	1.1/0.3
NW/N	1.3/0.3
NNW/NW	1.2/0.6
NW/NNW	1.0/0.5
W/NW	0.8/0.3
NW	0.8
NW	0.4
SW	0.8
WNW	0.4
W	0.6
N	0.3
W	0.5
NNW	0.5
NW	0.6
NW	0.5
SW	0.3
NW	0.6
NW	0.2
NNE	0.3
W	0.5
WNW	0.4
WNW	0.7
N	0.4
WNW	0.6
NNE	0.3
MW	0.8
N	0.4
N	0.5
N	0.4
N	0.5
NNW	0.4
W	0.5
NNW	0.3
S	0.3
NW	0.4
NW	0.3
N	0.3
N	0.3
NNE	0.3
W	0.5

NNW	0.3
N	0.3
NNW	0.5
WNW	0.4
ESE	0.3
NE	0.5
NNW	0.4
NW	0.4
N	0.5
N	0.5
NNW	0.3
N	0.7
NNW	0.3
N	0.3
NNW	0.4
WSW	0.6
ENE	0.4
W	0.4
NNW	0.3
W	0.5
NNW	0.3
W	0.5
NW	0.3
W	0.5
NW	0.3
W	0.4
N	0.3
N	0.4
NNW	0.3
W	0.4
N	0.5
S	0.5
SW	0.3
S	0.5
NNW	0.3
NW	0.4
NNE	0.3
S	0.3
SE	0.3
WNW	0.6
NW	0.3
WNW	0.6
NW	0.6
WNW	0.7
NNE	0.5
SE/E	0.7/0.4
NE/ESE	0.7/0.4
NW/NNW	0.5/0.4
S/NNW	0.4
SW/NNW	0.5/0.3
ENE/N	0.7/0.2
W/N	0.5/0.4

W/WNW	0.5/0.3
W/NNE	0.5/0.4
SE/WNW	0.4/0.3
S/W	0.4/0.5
S/NW	0.2/0.3
N/NNE	0.3/0.4
WNW/NNW	0.6/0.5
N/NW	0.9/0.5
ESE	0.6
NNW	0.7/0.4
N	0.8
NNW	0.6
SW	0.5
NNW	0.5
W	0.4
NW	0.3
SE	0.5
ENE	0.3
WNW	0.4
WSW	0.4
W	0.4
WNW	0.5
NW	0.3
N	0.5
WNW	0.5
N	0.6
W	0.5
NNW	0.3
SW	0.4
WSW	0.6
NW	0.4
W	0.5
WNW	1.3
WNW	1.0
W	1.3
W	0.8
W	0.7
W	0.8
SSW	0.8
SSW	1.2
WNW	1.1
SE	1.1
S	0.8
SSW	0.5
S	1.0
S	1.0
SW	0.8
SSW	1.2
WNW	1.1
SW	1.3
NW	1.8
SW	1.3

NNW	2.1
SW	1.2
NW	2.5
W	1.2
NW	3.7
W	1.1
NW	3.0
SSW	0.8
NNW	2.9
NNW	1.9
WNW	0.9
NW	3.1
N	2.3
WSW	3.2
SE	3.1
SW	2.4
N	2.7
NNW	1.0
N	2.3
NW	2.6
NW	2.6
N	2.2
N	3.6
N	2.2
NNE	2.6
WNW	3.2
NNW	3.8
WNW	3.6
WNW	3.2
NNE	2.1
WNW	2.5
NW	3.1
WNW	2.7
W	2.8
SW	1.7
W	1.9
W	1.2
S	1.3
NW	1.1
SSE	1.2
E	0.8

S	1.3
SE	0.7
SE	0.8
S	0.6
N	0.6
W	0.7
E	0.8
N	0.7
NW	0.8
WNW	1.0
NW	
WNW	
W	0.9
NE	0.9
N	0.9
SW	1.0
SW	1.0
N	0.9
NW	0.7
SW	0.9
SE	1.0
SE	1.6
S	1.7
N	1.2
N	1.2
SW	4.6
NE	4.2
NNE	4.4
NNE	4.4
NNE	4.4
NNE	4.4
NNE	4.8
NE	2.2
NE	2.1
N	2.2
N	2.2
NNW	1.8
NNW	1.8
NNE	1.8
NNW	1.1
NW	1.0
WNW	0.9
W	0.8
WNW	0.7
WNW	0.7
NNE	0.6
NE	0.6
NE	0.5
N	0.5
N	0.6
N	0.7
NNE	0.8

ENE	0.8
N	0.6
NW	0.5
NNW	0.5
NNE	0.7
NNW	1.3
NNE	1.1
N	1.0
NE	2.8
NNE	3.2
N	3.6
NE	3.6
NNE	3.4
N	3.4
NE	4.2
NNW	2.0
N	2.1
NE	1.0
N	0.8
NE	0.9
NNW	0.7
N	0.7
N	0.8
NE	1.5
NE	1.5
N	1.6
N	1.8
NNE	1.5
NE	5.3
SE	1.2
E	1.3
ESE	3.4
SE	1.3
S	1.4
S	1.8
S	1.3
S	1.3
SSE	1.4
S	1.0
SSE	1.5
S	1.9
S	1.6
S	1.5
ESE	1.4
S	1.2
SSE	1.2

E	1.2
SE	1.2
S	1.0
SE	1.1
S	1.1
SE	1.1
SSE	1.3
S	1.0
SSE	1.4
S	1.1
SSE	1.1
SSE	1.3
S	1.3
SE	1.5
S	1.1
SE	1.2
S	1.1
S	1.0
S	1.1
S	1.0
SSE	1.3
E	1.4
SSE	1.8
SE	1.6
SE	1.6
W	0.7
N	0.7
S	0.9
E	0.9
NW	1.0
NW	3.7
E	5.6
NNE	2.5
NW	2.1
N	2.4
NW	1.0
NW	0.6
NW	0.6
NE	3.8
N	1.1
NW	2.2
NW	1.0
NW	0.9
NNW	0.9
NW	1.1
NW	1.0
NW	1.0
NW	1.0
NW	1.0
NW	5.0
N	4.2

NNW	3.1
NW	2.9
NNW	2.6
NW	2.0
W	1.4
WNW	1.4
WNW	1.4
NW	1.4
NW	1.4
NW	1.2
NW	1.3
W	1.2
W	1.2
NNW	1.2
WNW	1.3
NNW	1.4
NNW	1.4
N	1.7
NNW	2.2
NW	1.7
N	2.3
NW	1.8
NW	1.9
W	1.6
NNW	1.5
ENE	1.8
NW	1.5
ENE	1.4
E	2.2
ENE	4.9
NE	
NE	2.0
NNE	1.9
ENE	2.3
NE	1.6
E	1.8
N	1.8
ESE	1.6
E	0.9
N	1.8
ENE	1.4
W	1.4
NW	4.1
WSW	3.0
WSW	1.0
WSW	1.2
N	2.4
NW	2.7
NW	2.1
ENE	1.7
SSW	1.9

SSE	2.3
W	2.1
WNW	2.1
WSW	3.1
NW	2.3
NW	3.4
NNW	3.0
N	2.7
NNW	2.6
W	2.6
NE	1.1
SSW	0.4
NNW	0.6
E	0.9
W	0.5
NW	1.5
N	1.5
W	1.8
W	1.8
NW	1.0
W	1.3
W	2.3
W	3.1
W	3.6
W	3.7
W	3.8
W	3.7
SW	3.7
WSW	3.2
SW	3.8
SW	3.4
SW	3.7
SW	3.4
W	5.1
WSW	5.0
W	6.8
NW	5.2
NW	5.6
W	5.2
W	7.0
WSW	4.5
SW	2.2
NW	4.8
NNW	2.3
NW	4.7
W	4.4
NWN	2.9
W	3.5
W	3.5
W	3.8
W	3.5
W	3.1

NW	4.5
W	4.7
W	5.2
NW	5.8
W	3.5
W	3.2
W	3.1
W	5.2
W	4.3
W	4.3
W	4.1
W	3.1
W	2.8
NW	3.3
NW	3.4
WNW	3.6
W	2.7
WNW	2.1
NW	2.4
W	2.6
WNW	2.7
NW	2.9
WNW	2.4
WSW	2.7
WNW	2.7
WNW	1.2
NW	0.9
NW	1.6
W	1.7
NW	1.8
NW	1.5
NW	1.5
NW	1.4
NW	1.5
WNW	1.3
NW	1.0
NW	1.3
NNW	1.2
NW	0.9
NW	0.9
NNW	0.7
NW	1.2
NW	1.3
NW	1.0
W	1.4
W	1.0
W	1.0
W	0.8
NW	0.9
NWN	1.0
NW	1.6
NW	1.5

NW	1.7
NW	1.4
N	0.9
NW	0.6
NW	1.0
NW	0.5
NW	0.2
NW	0.2
NNE	0.2
NW	0.2
W	0.2
WNW	0.3
WNW	0.4
W	0.7
NW	0.6
E	0.4
W	0.5
W	0.5
N	0.4
NW	0.2
N	0.6
NE	0.5
NNE	0.5
NNW	0.5
N	0.6
NW	0.7
NW	1.0
N	1.0
NE	1.3
W	1.6
N	1.4
W	1.2
NW	1.5
W	1.6
W	2.3
N	2.1
N	1.9
W	2.0
NW	2.9
N	3.0
NW	2.7
NW	2.9
W	3.4
W	3.7
W	3.3
NW	2.5
WNW	2.6
WNW	2.8
W	2.3
W	3.3
W	2.9
WNW	3.1

NNW	2.0
W	1.8
NW	2.2
NW	2.5
N	2.3
SW	1.8
W	1.9
N	1.5
NW	1.3
SW	1.5
SW	1.7
WNW	1.6
N	1.7
W	1.3
SE	2.7
S	3.0
WW	2.6
SE	2.5
E	2.0
ESE	1.8
SSE	2.0
SE	1.7
ESE	1.6
S	1.7
ESE	1.9
SE	1.9
SSE	1.7
SSE	1.8
SSE	1.6
ESE	1.5
S	1.5
SE	1.4
S	1.7
S	1.5
SE	1.4
S	1.7
SSE	1.9
SSE	2.3
SSE	2.1
SSE	2.2
SSE	2.4
ESE	2.0
S	2.1
SSE	1.8
E	2.1
SSE	2.1
S	2.0
SSE	2.1
SSE	3.1
S	2.3
S	1.8
SSW	1.8

SSW	1.2
S	1.2
S	1.2
SSW	1.5
SSW	1.5
SSW	1.4
W	1.5
SW	1.3
SW	1.4
SSW	1.4
S	1.3
WSW	1.5
WSW	1.3
S	3.0
W	0.5
WNW	0.7
SW	0.8
WNW	0.6
SSW	0.5
W	0.6
W	0.3
W	0.3
NNW	0.4
W	0.5
SW	0.5
SW	0.7
W	0.5
W	0.5
SW	0.4
W	0.4
N	0.3
NW	0.4
WNW	0.3
WNW	2.8
NW	1.2
WNW	1.2
WSW	1.4
WSW	1.4
SW	1.2
SW	1.1
WSW	0.9
W	1.4
WSW	1.3
WSW	1.3
WSW	1.3
WSW	1.4
SW	1.6
WSW	1.3
N	3.0
N	0.3
S	0.3
WSW	0.6

WSW	0.3
NNW	0.4
WNW	0.6
SW	0.7
SSE	0.7
E	0.7
SSE	0.9
WNW	0.6
E	0.6
W	0.5
WNW	0.4
SE	0.6
W	0.6
S	0.4
S	0.5
S	0.5
E	0.9
NW	0.9
E	0.9
SE	0.6
W	0.9
SE	0.7
ENE	0.5
ESE	0.4
SSE	0.3
E	0.4
NW	0.7
W	0.3
W	0.7
W	0.8
SW	0.6
SE	0.6
NNE	0.3
WNW	0.5
WSW	0.3
R	0.4
RNR	0.6
RNR	0.6
NR	0.9
R	1.6
R	2.1
R	2.0
R	1.5
SR	1.8
SR	1.8
S	1.9
SR	1.9
R	1.7
SSR	1.5
SSR	1.5
SW	1.6
W	2.2

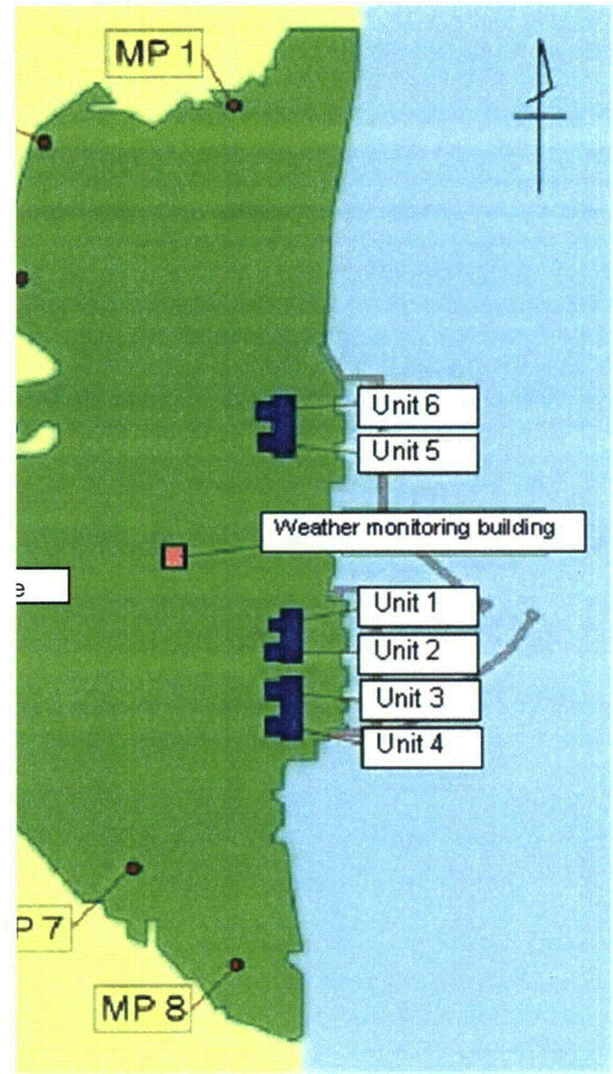
WNW	2.9
SW	3.4
WNW	4.0
W	4.7
W	6.8
W	5.7
WNW	5.6
W	5.7
WSW	5.9
WSW	6.1
NW	4.2
W	3.7
NW	5.3
W	4.3
W	5.1
SSW	4.9
W	5.8
NE	3.4
W	4.6
N	4.9
SSW	3.1
SE	2.6
W	4.9
W	4.6
W	3.4
SW	3.8
SW	4.6
S	3.9
NW	2.4
W	4.8
W	5.0
WSW	4.5
WSW	6.1
W	5.1
W	5.7
W	4.5
NW	4.1
W	3.3
W	3.8
W	3.5
W	3.6
W	2.7
W	2.8
W	4.1
W	3.5
W	4.4
WSW	4.1
WSW	3.2
WSW	2.7
W	2.8
W	2.7
W	2.2

W	2.6
W	3.1
W	2.6
W	2.5
W	2.6
W	3.1
W	3.4
W	3.3
W	2.3
W	1.8
W	2.0
WNW	2.2
ENE	1.2
WSW	0.8
W	1.0
W	2.0
WNW	1.4
W	1.8
W	2.5
WNW	2.4
W	2.4
WNW	2.9
SW	4.5
SW	3.7
W	2.8
SW	3.5
WSW	3.0
WSW	3.4
NW	4.6
NW	3.2
W	3.0
NE	2.9
SW	2.1
W	2.5
SW	1.8
WNW	2.1
W	1.6
W	1.8
NW	1.5
NW	2.3
WNW	2.1
WSW	1.0
NE	1.1
NNE	1.0
W	1.1
S	1.0
W	0.9
NW	0.5
S	0.8
SW	0.8
NNW	3.5
N	1.6

NNW	1.5
WNW	1.5
N	0.7
NNE	0.6
NE	0.6
N	2.2
NE	0.6
NE	0.7
ENE	0.9
ENE	0.8
ENE	0.6
E	0.9
ENE	1.1
ESE	0.6
SSE	0.6
NE	0.6
NE	0.8
N	0.9
NE	1.3
NE	1.3
NE	1.5
E	1.3
NNE	1.5
ENE	1.4
E	1.2
ENE	1.2
SE	1.0
ESE	1.0
SSE	1.5
NE	1.2
SSE	1.2
E	1.1
E	1.2
NE	1.3
E	0.7
NE	1.3
ENE	1.4
ENE	1.8
NE	1.5
ENE	1.4
NE	1.2
NE	1.3
E	1.3
S	1.1
SE	1.2
SE	1.0
NE	1.1
SE	1.3
E	1.5
SE	1.4
SE	1.6
SE	1.7

SE	1.8
SE	2.0
SE	1.6
S	1.7
SE	1.8
SE	1.9
SSE	2.3
S	2.1
SSE	2.0
S	1.9
S	1.9
S	1.7
S	1.9
SSE	2.1
S	1.8
S	2.0
S	1.9
SSW	2.2
S	2.0
SSW	2.1
S	2.1
SW	1.8
SSW	2.0
SE	1.7
SSW	2.1
SW	1.7
SSW	1.6
S	2.6
S	2.6
SW	2.4
WSW	1.8
NNE	1.0
W	1.4
WSW	1.0
SW	2.0
SW	1.8
NNW	0.8
NE	1.2
NW	1.2
W	1.4
WNW	1.0
NW	1.6
WNW	1.2
W	1.0
WNW	2.0
W	2.2
WNW	2.4
W	2.4
W	2.0
WNW	2.0
WNW	2.2
NW	1.6

NW	2.2
WNW	2.6
NW	3.2
W	1.2
WNW	1.3
WNW	0.8
W	1.0
WNW	1.2
W	1.0
W	0.8
W	1.0
WNW	1.3
W	0.9
W	0.8
WNW	0.9
WNW	1.0
WNW	1.0
W	0.8
W	0.6
W	0.5
NW	0.7
NW	0.8
NW	0.5
W	0.9
NW	0.8
NW	1.0
N	1.0
W	0.6
ESE	0.5
WNW	0.8
W	0.8
NW	0.7
NW	0.7
WNW	1.1
WNW	0.8


MP 1
Unit 6
Unit 5
Weather monitoring building
e
Unit 1
Unit 2
Unit 3
Unit 4
P 7
MP 8

From: Doane, Margaret
Sent: Sunday, March 20, 2011 7:29 AM
To: LIA02 Hoc; LIA03 Hoc; Mamish, Nader; Ramsey, Jack
Subject: RE: Report from Brooke and Kirk - Sunday morning

Brooke and Kirk,

1) As your note indicates NISA seems very busy as one would expect. You now have a much better understanding of their activities in crisis mode. When you have a chance, can you explain the least intrusive ways to get the information we need to be helpful. Maybe you can talk with Koyama and Yagi to make sure your previous understanding works in this crisis mode. If you haven't asked recently, can you ask what is working, as we don't want to slow them down. This would be helpful as we transition teams to make sure that everyone appreciates the need to work within their system.

2) I can't remember from the other conversations, does NISA get a report from TEPCO regarding what issues TEPCO sees as most important to resolve for the next 24 hours, next 48 hours. Are we regularly getting this in writing, or meetings. TEPCO and NISA perspectives are obviously important to anyone offering assistance.

You don't need to write this down if you don't have time. Just talk with the LT desk at the end of the day. Or, feel free to call my mobile.

From: LIA02 Hoc
Sent: Sunday, March 20, 2011 5:06 AM
To: LIA03 Hoc; LIA02 Hoc; Doane, Margaret; Mamish, Nader
Subject: Report from Brooke and Kirk - Sunday morning

Good morning,

Please find attached the readout from our conversation with Brooke and Kirk at 0430 EDT, Sunday morning, March 20.

Regards,
Jen

KKKK-28

From: Abrams, Charlotte
Sent: Sunday, March 20, 2011 3:45 PM
To: Schwartzman, Jennifer; Doane, Margaret; LIA02 Hoc; LIA03 Hoc; Fragoyannis, Nancy; Mamish, Nader; Wittick, Brian; Afshar-Tous, Mugeh; 'ShafferMr@state.gov'; Smith, Brooke; Foggie, Kirk; Bloom, Steven; Tobin, Jennifer; Mayros, Lauren; Jones, Andrea; English, Lance; Smiroldo, Elizabeth; Young, Francis; Henderson, Karen; Ramsey, Jack; Shepherd, Jill; Baker, Stephen
Subject: Re: 3/20/11 0700 Transition

Last night the PMT was working with data Jenn referred to. They indicated it was very helpful. They requested numbers from earLier in the week and Jen followed up with request to Japan team. The PMT folks were very excited about the info they did have.

Sent from my nrc blackberry. Charlotte Abrams 3014152933

----- Original Message -----
From: Schwartzman, Jennifer
To: Doane, Margaret; LIA02 Hoc; LIA03 Hoc; Fragoyannis, Nancy; Mamish, Nader; Abrams, Charlotte; Wittick, Brian; Afshar-Tous, Mugeh; 'ShafferMr@state.gov' <ShafferMr@state.gov>; Smith, Brooke; Foggie, Kirk; Bloom, Steven; Tobin, Jennifer; Mayros, Lauren; Jones, Andrea; English, Lance; Smiroldo, Elizabeth; Young, Francis; Henderson, Karen; Ramsey, Jack; Shepherd, Jill; Baker, Stephen
Sent: Sun Mar 20 08:52:09 2011
Subject: Re: 3/20/11 0700 Transition

I'm not exactly sure what request you're referring to; there wasn't anything in the transition log about Japanese TV when I came on shift last night and I didn't see any notes from you. However, we got good radiation/dose measurement data from MOFA throughout the night that the translator deciphered and we passed to the PMT. I just spoke with Karen and she confirmed the data is continuing to come in and get shared now.

There is a new translator on shift now so if you'd like her to look at something on Japanese TV the current shift can communicate that.

Sorry if this isn't what you needed. Jen Sent from an NRC Blackberry

----- Original Message -----
From: Doane, Margaret
To: LIA02 Hoc; LIA03 Hoc; Fragoyannis, Nancy; Mamish, Nader; Abrams, Charlotte; Wittick, Brian; Afshar-Tous, Mugeh; 'ShafferMR@state.gov' <ShafferMR@state.gov>; Smith, Brooke; Foggie, Kirk; Bloom, Steven; Schwartzman, Jennifer; Tobin, Jennifer; Mayros, Lauren; Jones, Andrea; English, Lance; Smiroldo, Elizabeth; Young, Francis; Henderson, Karen; Ramsey, Jack; Shepherd, Jill; Baker, Stephen
Sent: Sun Mar 20 07:30:55 2011
Subject: RE: 3/20/11 0700 Transition

Last night Josh asked for the interpreter to see whether on any Japanese channels or web, they were reporting dose rates I put in my note. Did we answer that question?

KKKK-29

From: LIA02 Hoc
Sent: Sunday, March 20, 2011 6:56 AM
To: LIA03 Hoc; Fragoyannis, Nancy; Doane, Margaret; Mamish, Nader; Abrams, Charlotte; Wittick, Brian; Afshar-Tous, Mugeh; 'ShafferMR@state.gov'; Smith, Brooke; Foggie, Kirk; Bloom, Steven; Schwartzman, Jennifer; Tobin, Jennifer; Mayros, Lauren; Jones, Andrea; English, Lance; Smiroldo, Elizabeth; Young, Francis; Henderson, Karen; Ramsey, Jack; Shepherd, Jill; Baker, Stephen
Subject: 3/20/11 0700 Transition

TRANSITION REPORT FOR MARCH 20, 2011 0700 Charlotte and Jen transitioning to Karen and Steve Baker

GENERAL NOTES. (includes notes from previous updates)
1) Information pertinent to the team in Japan can be forwarded to new email group, which incorporates Dan Dorman already, "Liaison Japan," in Outlook.
2) Action: International updates must now be sent to LIA07 (to be put in the HOO Status Update) before the end of every shift as well as posted on the LT status board (different than the LT Log).
3) 11 PM – 7 AM shift is responsible for the summary call with Kirk and Brooke, scheduled daily at 5 AM EST unless rescheduled.
4) Kirk and Brooke requested that the international team to sit in on calls with the ET and Chuck to take notes and provide a short summary of what was discussed via email.
5) Reminder to include names on watch bill emails and inform Brooke and Kirk when shift changes.
6) RST needs to follow up on Crystallization issue per the 0930 conference call (see item below)
7) Prior to the 2 pm call or any other call you set up, make sure you contact the HOOs to let them know that you are going to have the international call with UK, etc. Might be beneficial to establish a standing bridge.

- 0930 Conference Call (Update). On yesterday's 0930 conference call with UK/Canada/France (with RST), UK asked about crystallization on the fuel as a result of the salt from the sea water. We have so far been unable to get additional information on this from TEPCO. They will likely ask for a follow-up on the 0930 call this morning. RST will be on the line and can respond. Action: International liaison should verify whether the group desires another 2 PM call on health physics issues – if so, contact the HOO to give a heads up.

- NRC Relief Team to Japan (Update). Dan Dorman (NMSS) departed for Tokyo on March 19. Mike Scott (RES) and Alan Blamey (RI) depart on March 22. Todd Jackson (RI) departs March 23. Jack Giessner (RIII), Rob Taylor (NRR), Marie Miller (RI), Syed Ali (RES), Abdul Sheikh (NRR), Ralph Way (NSIR), and Jack Ramsey (OIP) will depart March 24. Action: New team members should be added to Liaison Japan group. Need Blackberry numbers and e-mail addresses for each traveler. Add new team members, contact information and flight arrival time to NRC traveler table. Dosimeters for team members are in drawer at LIA03 location.

- International request for information. The Indonesian Embassy in Washington requested information on how we arrived at the 50-mile evacuation announcement. We provided some very basic information. They have followed up with a request for a phone call or meeting with NRC and their Minister-Counselor. Action: Call will occur at 5PM on Monday, March 21.

- Business Cards for TeamJapan. Brooke, Kirk and Tony have requested an additional supply of business cards be provided to them. The ADM desk has generated the cards requested but FedEx wouldn't be able to get them out until Monday with delivery Tuesday. Action: Provide to Mike Scott (RES) who is departing on Tuesday March 22. Cards are on LIA03 desk.

- Thumb Drive for Brooke. Brooke has requested that her NRC thumb drive be sent to her. It is in the drawer of station LIA03. Action: Provide to Mike Scott who is departing on Tuesday, March 22.

- Meteorological/Radiation Data. PMT is looking to fill a gap in its data from 3/13-15. We may have received some of it tonight but the translator is still working on it. Action: Any data that comes in with those dates on it should be treated as a top priority for translation and providing to PMT.

- 21:30 Interagency Call. Next call will be 3/21 at 21:30 EST. Based upon information from the Task Force conference call, Chuck Casto had just returned from a meeting with TEPCO and TEPCO was very interested in getting the robots and helicopter from Lockhead Martin. They requested that the specs for these items be forwarded to them as soon as possible. Based upon information from DOS earlier in the call DDTC was working to expedite the licensing for these items in the event they were requested and the passports for Lockhead Martin personnel to accompany the helicopter. Update on the Bechtel trains in Perth for Japan – DOD Paycom has confirmed payment and flight is being prepared. The flight is estimated to arrive late or overnight Japan time on Sunday. One train of pumps and valves is being provided on this flight with a decision on supplying the remaining trains to be determined later based upon need by Japan.

- Radiological Data Request. NRC PMT room requested that we ask NISA to connect with TEPCO regarding getting updated radiological information including offsite plume monitoring data on a routine and expedited frequency. This request was sent to Danielle (Emche) to engage with Kirk and potentially NISA counterpart if appropriate. Action: The answer to this request should be communicated to the PMT room if received.

- International aid/support for Japan. IAEA and Russians have delegations in Japan. The Italians are interested in discussing what the USG is doing, and might be interested in helping in some way. We should receive more information from Roberto Ranieri soon. Spain has sent no one yet but Parliament will review and decide. South Africa and Slovenia have sent no one. And, as of today, has no plans. The Swiss regulator (as a part of the Swiss government team) has sent one person to do radiation monitoring and transmit the results. Marty Virgilio asked if there was any one coordination point (e.g. IAEA) for assistance going to Japan to avoid duplication of efforts. This does not appear to be the case but we have reached out to various contacts (USAID, Embassy Tokyo). This will likely become an action for future LT shifts (not just int'l).

- Request regarding calcium bentonite. USAID (see e-mail chain from 3/20, 2:20 am) received an offer from Kevin Johnson (406-490-5004) at a Montana bentonite mine to provide calcium bentonite to Japan to use to suppress leaks at the reactors. Bentonite is an absorbent clay that is used in kitty litter and also is used as to seal (expands as it absorbs liquid). The Montana mine offers to donate the bentonite. Unlikely that clay is a solution at this stage and supplies are likely to be located closer to Japan. Resolved by the RST.

- Use of USAid for Travel. Contacted Joshua Batkin, Chief of Staff for the Chairman, on direction by Nader Mamish to discuss the fact that we are to use USAid and the need for a legal agreement between the NRC and USAid if we are to get additional support. Joshua Batkin has worked it through Steve Burns and Jim Dyer who are interacting directly with USAID, he will let us know if there is anything additional needed from us.

- Call with TEPCO. RST held a call with TEPCO at 02:00. Group reported that TEPCO was not being particularly forthcoming about anything except the specific issue they wanted to talk about (which was the delivery of a train of Bechtel pumps that's on its way to Japan from Australia).

- Pressure increase in Unit 3. The latest NISA press release received contains an attachment with diagrams of all 6 units. It indicates that the pressure in unit 3 primary containment is just under 3x the pressure in units 1 and 2 (340 kilopascal vs 130). It's posted on ENAC in Japanese but our translator has worked it. News outlets were reporting high pressures in unit 3. RST opinion is that unit 3 pressure rise was slight and news media picked up on delta between press releases and called it "pressure increase." Note this is not/not official NRC opinion or statement. News reports subsequently indicated pressure had stabilized.

- Request from NISA regarding 50-mile limit. NISA requested through Kirk how NRC came to the conclusion of a 50-mile evacuation zone, as referenced in NRC press release of March 16. We recommended that Kirk refer them to the attachment to the press release. The attachment contains information from the RASCAL runs.

OFFICIAL USE ONLY

From: Ali, Syed
Sent: Sunday, March 20, 2011 7:12 PM
To: LIA03 Hoc
Subject: RE: Request for information for contact purposes

Ok, thanks Nancy

Syed

From: LIA03 Hoc
Sent: Sunday, March 20, 2011 6:50 PM
To: Ali, Syed
Cc: LIA02 Hoc
Subject: RE: Request for information for contact purposes

Syed, someone from the international liaison group will get back to you tomorrow on the logistics for your trip.

Thanks
Nancy

-----Original Message-----
From: Ali, Syed
Sent: Sunday, March 20, 2011 3:36 PM
To: LIA03 Hoc
Subject: RE: Request for information for contact purposes

I will send you the information you requested when I go to office on Monday. In the meantime, I have the following questions:

- Are we to make our own airline reservation? If so, what will be our departure and return dates?
- Are we to make our own hotel reservation? If so, what is the recommended hotel?
- Are we to make our own etravel arrangements or somebody is doing for the whole team.

Thanks,
Syed

From: LIA03 Hoc
Sent: Sunday, March 20, 2011 8:49 AM
To: Dorman, Dan; Scott, Michael; Blamey, Alan; Giessner, John; Taylor, Robert; Jackson, Todd; Miller, Marie; Ali, Syed; Sheikh, Abdul; Way, Ralph; Ramsey, Jack
Cc: LIA02 Hoc
Subject: Request for information for contact purposes

All,

KKKK-30

Please respond only to me (not to all as your response will have PII) to provide the information requested below. We need this information for ongoing contact purposes, and to make sure you have the telephonic equipment you need. Also please note that other travelers in your group cannot sign for your dosimeters. You need to stop by the Ops Center, International Liaison desk, to personally sign for that equipment.

NRC TRAVELERS IN JAPAN

Name

Phone Number

Email

Flight Arrival (in Japan Time)

Flight Arrival (in Eastern Daylight Time)

Return date to U.S.

Home telephone #

Emergency contact name

Do you need a blackberry &/or has it been internationally enabled?

Have you picked up your dosimeter

Dan Dorman
Deputy Director, NMSS

Daniel.Dorman@nrc.gov

Mike Scott
Deputy Director, Division of Systems Analysis, RES

Michael.Scott@nrc.gov

Alan Blamey, RII
TITLE?

Alan.Blamey@nrc.gov

Jack Giessner, RIII
TITLE?

@nrc.gov

Rob Taylor
SG Tube Integrity and Chemical Engineering Branch, NRR

Robert.Taylor@nrc.gov

Todd Jackson
Commercial and R&D Branch, DNMS, RI

Timothy.kolb@nrc.gov

Marie Miller
Chief, Material Security and Industrial Branch, RI

Marie.Miller@nrc.gov

Syed Ali
Senior Level Advisor, Div of Engineering, RES

Syed.Ali@nrc.gov

Abdul Sheikh, NRR
TITLE?

Abdul.Sheikh@nrc.gov

Ralph Way, NSIR

TITLE?

Ralph.Way@nrc.gov

Jack Ramsey, Senior Level Advisor, OIP

Jack.Ramsey@nrc.gov

From: Doane, Margaret
Sent: Sunday, March 20, 2011 9:58 AM
To: Schwartzman, Jennifer; Mamish, Nader
Cc: LIA03 Hoc; LIA02 Hoc
Subject: Re: Info from CA Briefing 20 March 2011

Nader at this point I can't see it making much difference if they need "all they can get". On the other hand if its duplicative and they don't need too many-like robots, we don't want to over burden US with equip requests. How can we track the few items, that matter. Then we'll hand it to IAEA when convention is invoked. Ideally they need a spreadsheet and countries can just fill in where they can or already have helped.
Any ideas?
Thanks

Sent from an NRC Blackberry
Margaret Doane

From: Schwartzman, Jennifer
To: Doane, Margaret; Mamish, Nader
Cc: LIA03 Hoc; LIA02 Hoc
Sent: Sun Mar 20 09:43:59 2011
Subject: Re: Info from CA Briefing 20 March 2011

FYI, this is starting to happen with a number of things (robots, boric acid, now protective gear). Last night Marty asked us to brainstorm about finding out whether there was a central clearinghouse to track what countries were providing what to Japan and whether it was sufficient. The logical point is IAEA but because the Japanese have not actually invoked the assistance convention I believe this technicality prevents IAEA from taking this role. I believe the current shift was going to arrange a call with Mark this morning to verify that our assumptions are correct and find out if the IAEA has adequate resources to handle this task if Japan does invoke. Some of the other LT members thought we could urge Japan to invoke via our diplomatic channels but that is dicey.
Sent from an NRC Blackberry

From: Doane, Margaret
To: Schwartzman, Jennifer; Mamish, Nader
Cc: LIA03 Hoc; LIA02 Hoc
Sent: Sun Mar 20 09:38:12 2011
Subject: Fw: Info from CA Briefing 20 March 2011

Nader, I thought I read that Areva was sending protection gear and some other things. At the bottom of this document there is a request for gear. Would they need more or should we track down the Areva shipment first before sending more. Also we would need to verify I'm right about Areva.

Sent from an NRC Blackberry
Margaret Doane

From: LIA01 Hoc
To: Andersen, James; Bates, Andrew; Brenner, Eliot; Bubar, Patrice; Camper, Larry; Castleman, Patrick; Chandrathil, Prema; Cheok, Michael; Dembek, Stephen; Doane, Margaret; Dricks, Victor; Franovich, Mike; Gott, William; Haney, Catherine; Hannah, Roger; Hart, Ken; Hayden, Elizabeth; Hipschman, Thomas; Howell, Linda; Jackson, Donald; Ledford,

KKKK-31

Joey; Lewis, Robert; Mamish, Nader; Marshall, Michael; Maupin, Cardelia; McConnell, Keith; Miller, Charles; Mitlyng, Viktoria; Moore, Scott; Nease, Rebecca; Nieh, Ho; Orders, William; Powell, Amy; Ramsey, Jack; Reddick, Darani; Reis, Terrence; Riemer, Kenneth; Screnci, Diane; Sheehan, Neil; Snodderly, Michael; Sollenberger, Dennis; Sosa, Belkys; Tschiltz, Michael; Uselding, Lara; Vietti-Cook, Annette; Whitney, James; McKenney, Christepher
Sent: Sun Mar 20 09:15:11 2011
Subject: Info from CA Briefing 20 March 2011

From: LIA02 Hoc
Sent: Sunday, March 20, 2011 3:41 PM
To: Dembek, Stephen
Cc: Mamish, Nader; LIA03 Hoc
Subject: NRC Travelers to Japan

Hi Steve –

We've been getting requests from the next NRC travelers to Japan concerning travel arrangements. Do you know who will be responsible for making their flight/hotel arrangements? In addition, do you know if they have to submit an authorization through eTravel?

Any insights are greatly appreciated.

Thanks,
Eric

KKKK-32

From: LIA02 Hoc
Sent: Monday, March 21, 2011 2:10 PM
To: LIA03 Hoc; Scott, Michael; Blamey, Alan; Giessner, John; Taylor, Robert; Jackson, Todd; Miller, Marie; Ali, Syed; Sheikh, Abdul; Way, Ralph; Ramsey, Jack
Cc: Dembek, Stephen
Subject: Radiation briefing

All,

Undine Shoop has requested that, if possible, all of those travelers departing from HQ on March 24 take part in a single radiation brief tomorrow afternoon at 3 PM. This briefing is required for anyone picking up dosimetry who did not already have it. Please advise as soon as possible whether you will be able to support.

Thank you,
Jen

From: LIA03 Hoc
Sent: Monday, March 21, 2011 1:20 PM
To: Scott, Michael; Blamey, Alan; Giessner, John; Taylor, Robert; Jackson, Todd; Miller, Marie; Ali, Syed; Sheikh, Abdul; Way, Ralph; Ramsey, Jack
Cc: Dembek, Stephen; LIA02 Hoc
Subject: FW: Country clearance info

See below message on country clearance.

Thanks.

Nancy

From: Dembek, Stephen
Sent: Monday, March 21, 2011 1:11 PM
To: LIA02 Hoc
Cc: LIA03 Hoc; CountryClearance Resource; RMTPACTSU_ELNRC
Subject: RE: Country clearance info

Country clearances are still needed. If it's during normal working hours, then OIP staff will do the country clearances. If travel is arranged at night or on the weekends then USAID said they would do it.

Have the travelers give the info on the website shown below to countryclearance@nrc.gov.

Steve

From: LIA02 Hoc
Sent: Monday, March 21, 2011 1:07 PM
To: Dembek, Stephen
Cc: LIA03 Hoc
Subject: Country clearance info

Steve,

KKKK-33

Item 4 on the checklist for our Japan travelers says:

4. Country clearance cable information

Format: Format is available at OIP SharePoint (http://portal.nrc.gov/OCM/ip/travel/default.aspx)
Complete the requested items. Place of Birth should be exactly the same as shown in your passport. Include your security clearance information and follow the directions included.

Are the travelers still required to do this even though USAID is handling all arrangements? If there is still a need for the country clearance, who should the travelers be sending the information to? This is not clear from the checklist. If no clearance is required I need to send a clarifying email to the travelers indicating that they should disregard item 4 on the checklist.

Please advise ASAP.

Thank you!

From: Bernardo, Robert
Subject: IOEB Clearinghouse Screening Summary for Monday, March 21, 2011
Date: Monday, March 21, 2011 2:47:11 PM

NOTE: ~~THIS SUMMARY IS OFFICIAL USE ONLY~~
*****~~MAY CONTAIN SENSITIVE/ PROPRIETARY OR NRC INTERNAL USE ONLY INFORMATION~~*****
~~DO NOT FORWARD ANY PORTIONS OUTSIDE OF NRC WITHOUT FIRST OBTAINING PERMISSION FROM ORIGINATOR~~

DIRS

Issues for Resolution (IFR): None

OpE Forum Postings (COMMS): None

Management Requests: None

Follow-up/Other Tasks: Nine (9)

[Note - The information in this part of the Summary is often preliminary in nature and is provided to help IOEB staff communicate and track noteworthy items being followed up by either the Regions or HQ staff.]

1) EN 46681 - PART 21 –PAINT CHIPS DISCOVERED IN WOODWARD GOVERNORS (REPORTED BY MCGUIRE)

Woodward governors purchased as nuclear safety related items for use in turbine driven auxiliary feedwater pumps and emergency diesel generators, were found to have paint chips on internal surfaces. These governors were manufactured by Woodward Governor Company, Loveland, CO for use at the McGuire Nuclear Station.
The NRC Resident Inspector has been informed. Pass the EN to all of the Regional Contacts, plus to the TRG leads for Vendor Quality, Pump and Valve, EDGs, ECCS and AFW. – Complete

2) EN 46686 - BYRON 1 - ULTRASONIC EXAMINATION RESULTS IN INDICATIONS ON TWO REACTOR HEAD PENETRATIONS

See EN text: Forward to TRG Lead for Primary Materials/Vessels and Piping/Welding (Keith Hoffman). Assigned to Russ Haskell

3) EN 46673 - CRYSTAL RIVER 3 - ADDITIONAL DELAMINATED CONTAINMENT CONCRETE DISCOVERED (3/16) - UPDATE

Non destructive testing (impulse response testing) in Bay 5-6 has confirmed a delamination. Total extent of damage is not yet known. The delamination in Bay 5-6 is "egg shaped" with the large end towards the top of containment and is approximately 100 ft long. The licensee will finish removing shield blocks in order to IR test in the vicinity of the fuel transfer tubes that penetrate Bay 5-6 at the 133 ft elevation. IR testing is expected to be completed on March 21. Based on the design of containment (significant rebar in the lower elevations), it is not expected that the delamination would be below the area of the tubes. Impulse response testing of the other bays has been completed. The licensee is setting up to perform 10 core bores. The licensee has determined that the containment

KKKK-34

with delamination in Bay 5-6 is seismically acceptable for Mode 5. This is based on a previous evaluation performed for the original delamination of Bay 3-4. The evaluation and associated calculations were provided to Region II DRS (March 21) for review. Forward to Containment TRG (Jerome Bettle) and Structural TRG (Goutam Bagchi). Assigned to Bob Bernardo

4) EN 46687 - GRAND GULF - HIGH PRESSURE CORE SPRAY (HPCS) VALVE BREAKER OVERCURRENT TRIP SETPOINT OUT OF TOLERANCE

See EN text: Forward to TRG Lead for Electrical Systems (Roy Mathew), ECCS (Samuel Miranda); assigned to Russ Haskell

5) OCONEE 1 - INCREASING COUNT TREND ON CCW RADIATION MONITOR DUE TO SUSPECTED LEAKAGE FROM A LETDOWN HEAT EXCHANGER (1/31) – UPDATE

The results of the ultrasonic measurements of the Unit 1 letdown coolers were reviewed by the licensee and it was determined the 1A cooler was the one that was leaking. The licensee began the process of isolating the cooler yesterday by closing the inlet valve to the cooler at approximately 1300. Since that time CC rad monitor readings have significantly decreased, indicating it was the leaking cooler. The outlet will be closed today following a 24 hour thermal stabilization period. Pass to the TRG Leads for Health Physics (Steve Garry) and Primary Materials/Piping (Keith Hoffman). Assigned to Bob Bernardo

6) RIVER BEND – INADVERTENT TRIP OF THE "A" CHANNEL OF REACTOR PROTECTION SYSTEM (RPS)

Licensee experienced an inadvertent trip of 'A' RPS channel. Upon further investigation, a discovery was made that the RPS motor generator (MG) set output circuit breaker was tripped. Licensee shifted to 'A' alternate power supply to restore the "A" RPS channel. Trip cause is under investigation. Continue to follow. Forward to TRG Leads for Electrical Systems (Roy Mathew), I&C (David Rahn); assigned to Russ Haskell

7) VOGTLE 2 – HIGH VIBRATION ON NSCW FAN

At 0205 on 3/19/11, Unit 2 received a high vibration alarm on fan #3 on the B Nuclear Services Cooling Water (NSCW) tower. After investigation, the fan was declared inoperable. The wet bulb temperature at 0235 was 56F, so the Ultimate Heat Sink (UHS) Limiting Condition for Operation (LCO) action statement was not entered. At 1154 on 3/19/11, wet-bulb temperature exceeded 63F and the licensee entered the appropriate 72-hour LCO action statement. Investigation revealed damage to the gear box, fan motor, gear box hold down studs, and flexible coupling (hub) on the horizontal shaft. The licensee is prepared to install a new gear box and fan motor this afternoon as soon as the hold down stud is repaired. The issue of concern is the flexible coupling. It may not arrive onsite in time for the licensee to meet the 72-hour completion time. The licensee is currently working on a request for a Notice of Enforcement Discretion (NOED). The final decision on requesting the NOED will be made at 0600 tomorrow morning (3/22/11). Pass to the TRG Lead for Service Water/Ultimate Heat Sink (Gerard Purciarello) and the ITSB Branch Chief (Rob Elliott). Assigned to Bob Bernardo

8) EN 46685 - WOLF CREEK - SAFETY INJECTION (SI) DISCHARGE TO THE REACTOR

See EN text. Region is evaluating this event per MD 8.3. Forward to TRG Lead for Pump & Valve (Michael Farnan), ECCS (Samuel Miranda), Human Performance (Mike Boggi), Safety Culture (Eric Fries) and IOLB Branch Chief (Jack McHale). Continue to follow and make screening recommendation; assigned to Russ Haskell

9) See this link: "FAQ Related to Events Occurring in Japan" that is now available on an NRR SharePoint site regarding the situation in Japan. - (Internal use only)

New Reactors Items: None

Research (RES) Items: None

Items Screened Out*: Three (3) - Three (3) Event Notifications (ENs)

1) EN 46681 - PART 21 –PAINT CHIPS DISCOVERED IN WOODWARD GOVERNORS (REPORTED BY MCGUIRE)

2) EN 46686 - BYRON 1 - ULTRASONIC EXAMINATION RESULTS IN INDICATIONS ON TWO REACTOR HEAD PENETRATIONS

3) EN 46687 - GRAND GULF - HIGH PRESSURE CORE SPRAY (HPCS) VALVE BREAKER OVERCURRENT TRIP SETPOINT OUT OF TOLERANCE

**(i.e., Screened /reviewed against LIC-401 criteria for initiating an "Issue for Resolution" (IFR), which is IOEB's process for conducting further evaluation of an issue to determine what, if any, additional actions should be taken to communicate and organizationally learn from OpE.)*

NOTE: ~~THIS SUMMARY IS OFFICIAL USE ONLY~~
*****~~MAY CONTAIN SENSITIVE/ PROPRIETARY OR NRC INTERNAL USE ONLY INFORMATION~~*****
~~DO NOT FORWARD ANY PORTIONS OUTSIDE OF NRC WITHOUT FIRST OBTAINING PERMISSION FROM ORIGINATOR.~~

Attendees at Screening Meeting:

Mark King (by phone)
Bob Bernardo (by phone)
Steve Pannier
Joe Giantelli
Russ Haskell
Dave Garmon
Mary Wegner – RES (by phone)
Derek Scully – NRO (by phone)

From: Jackson, Todd
Sent: Monday, March 21, 2011 3:42 PM
To: LIA03 Hoc
Subject: RE: Travel Reservation March 23 for TODD JAMES JACKSON

Hi,
Is there someone I can call to talk about these arrangements?

Thanks,
Todd

From: LIA03 Hoc
Sent: Monday, March 21, 2011 1:21 PM
To: Jackson, Todd
Subject: FW: Travel Reservation March 23 for TODD JAMES JACKSON

Your travel arrangements.

From: LIA02 Hoc
Sent: Monday, March 21, 2011 1:17 PM
To: LIA03 Hoc; Mamish, Nader
Subject: FW: Travel Reservation March 23 for TODD JAMES JACKSON

From: RMTPACTSU_ELNRC [mailto:RMTPACTSU_ELNRC@ofda.gov]
Sent: Monday, March 21, 2011 1:16 PM
To: Jackson, Todd
Cc: LIA01 Hoc; LIA02 Hoc; ET07 Hoc
Subject: Travel Reservation March 23 for TODD JAMES JACKSON

Subject: Travel Reservation March 23 for TODD JAMES JACKSON

TODD JAMES JACKSON has asked us to deliver their itinerary information to you. You can click here to view their travel information using Sabre® Virtually There®

KKKK-35

From: Emche, Danielle
Sent: Monday, March 21, 2011 11:27 AM
To: RST01 Hoc; PMT01 Hoc; LIA02 Hoc; LIA03 Hoc
Subject: FW: Update to Information Sheet Regarding the Tohoku Earthquake as of 11:00AM (EST), March 21, 2011
Attachments: 0321_1300_Radiation_Monitoring.pdf; 0321_1600_Radiation_Monitoring.pdf; 110321_Update to Information Sheet-09.doc; 0321_News_No 19_by_JAIF.pdf

Attached are updates from the close of day Monday in Japan.
Danielle

KKKK-36

News Release

21

Readings at Monitoring Post out of 20 Km Zone of Fukushima Dai-ichi NPP

As of 13:00 March [illegible], 2011

Ministry of Education, Culture, Sports, Science

1. Monitoring Outputs by MEXT (reverse chronological order) *Boldface and underlined readings are new.

* 1 measured by Geiger-Müller counter
* 2 measured by ionization chamber type survey meter
* 3 measured by NaI scintillator detector

Reading Point

Monitoring Post (length from NPP)	Monitoring Time	Reading (unit : μSi / h)	Weather	Reading by
測定箇所 【1】 (約60Km北西)	3月21日8時49分	4.5 *2	降雨無し	日本原子力研究開発機構
測定箇所 【2】 (約55Km北西)	3月21日9時28分	9.2 *2	降雨無し	日本原子力研究開発機構
測定箇所 【3】 (約45Km北西)	3月21日10時02分	7.6 *2	降雨無し	日本原子力研究開発機構
測定箇所 【4】 (約50Km北西)	3月21日9時48分	2.8 *2	降雨無し	文部科学省
測定箇所 【5】 (約45Km北)	3月21日10時42分	1.1 *2	降雨無し	日本原子力研究開発機構
測定箇所 【6】 (約45Km北)	3月21日11時11分	2.2 *2	降雨無し	日本原子力研究開発機構
測定箇所 【7】 (約45Km北)	3月21日11時18分	2.2 *2	降雨無し	日本原子力研究開発機構
測定箇所 【10】 (約40Km北西)	3月21日10時10分	1.9 *2	降雨無し	文部科学省
測定箇所 【11】 (約40Km北西)	3月21日10時23分	4.1 *2	降雨無し	文部科学省
測定箇所 【20】 (約45Km北西)	3月21日10時53分	1.7 *2	降雨無し	文部科学省
測定箇所 【21】 (約30Km西北西)	3月21日11時23分	6.7 *2	降雨無し	文部科学省
測定箇所 【22】 (約35Km西北西)	3月21日11時13分	1.3 *2	降雨有り	文部科学省
測定箇所 【31】 (約30Km西北西)	3月21日10時20分	28.0 *2	降雨無し	日本原子力研究開発機構
測定箇所 【32】 (約30Km北西)	3月21日10時40分	80.0 *2	降雨無し	日本原子力研究開発機構
測定箇所 【33】 (約30Km北西)	3月21日10時50分	45.0 *2	降雨無し	日本原子力研究開発機構

JAEA

MEXT

Month Date Hour Minute

No rain

rain

＊1　GM(ガイガー=ミューラー計測管)における値
＊2　電離箱における値
＊3 NaI(ヨウ化ナトリウム)シンチレータにおける値

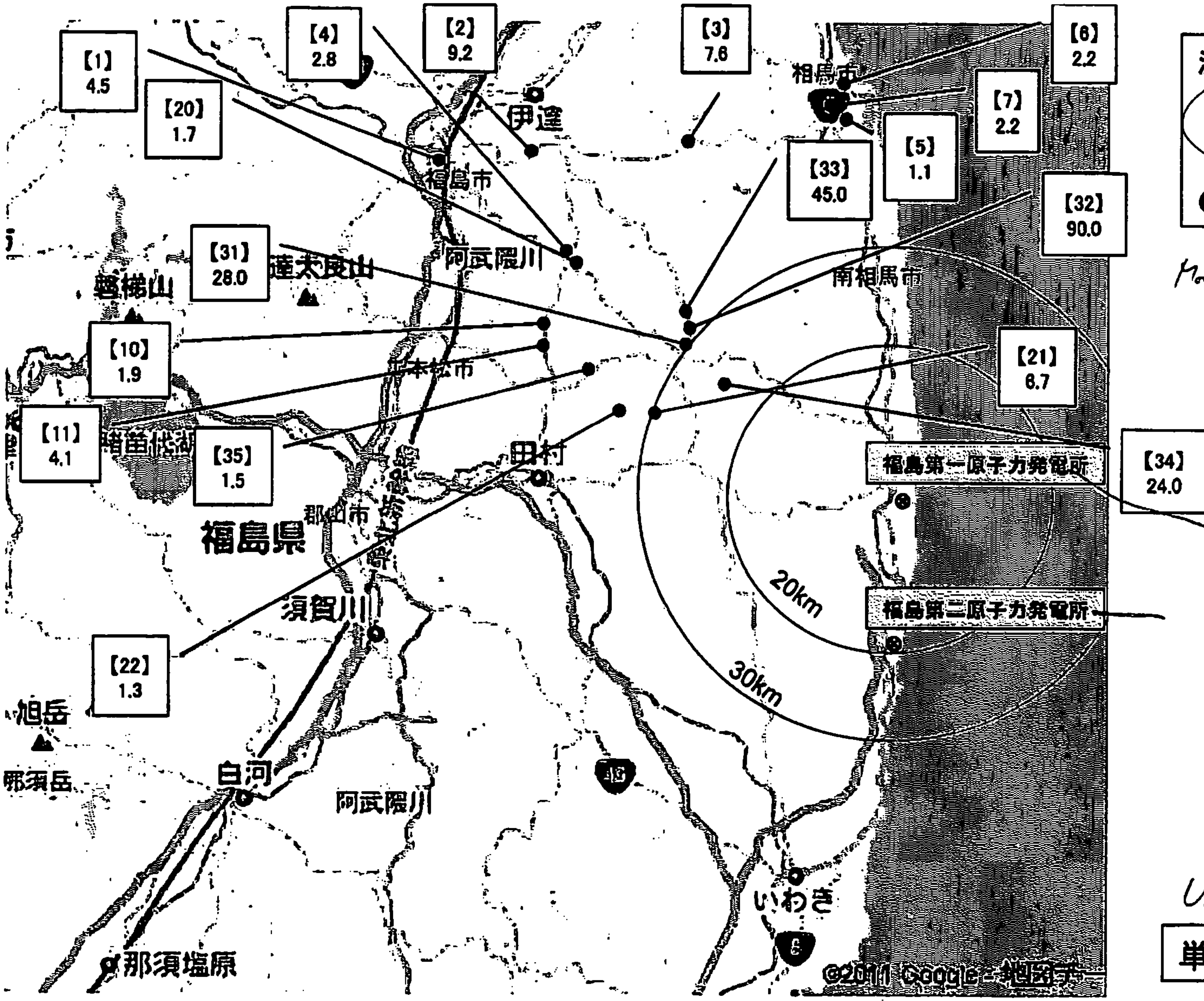
場所(福島第1発電所からの距離)	測定日時	数値(マイクロシーベルト／時)(記載のない限り屋外)	天候	実施者
測定箇所　【34】　(約25Km北西)	3月21日11時35分	24.0 ＊2	降雨無し	日本原子力研究開発機構
測定箇所　【35】　(約30Km北西)	3月21日11時51分	1.5 ＊2	降雨無し	日本原子力研究開発機構

2. ~~防衛省の測定については準備中~~

Reading by Ministry of Defense is under preparation.

Reading of Monitoring Post out of Fukushima Dai-ichi NPP

福島第一原子力発電所周辺のモニタリング結果



Monitoring Time

測定日時
3月21日
9時00分～12時00分

March 21
9:00～12:00

●測定箇所

Monitoring Post

Fukushima Dai-ichi

Fukushima Dai-ni

Unit : μSv/hour

単位：マイクロシーベルト毎時

No.19

Status of Fukushima Daiichi power station as of 09:00, March 21, 2011
"NHK News reports on developments at Fukushima Daiichi on March 21"
and others

Here is information regarding the status of Fukushima Daiichi nuclear power station according to the news reports aired by NHK in this morning on March 21.

- Injecting water to the spent fuel pool at unit 3 of Fukushima Daiichi by Tokyo Fire Department's task force was finished at around 04:00 am this morning after 6.5 hours operation. Then, the Self-Defense Force conducted the operation of injecting water to the spent fuel pool at unit-4 from 06:37 am to 08:30 am this morning.
- A construction company in Mie Prefecture voluntarily offers assistance for water injection at Fukushima Daiichi. The government emergency headquarters decided to accept the offer. The company's 2 special vehicles and 3 operators departed last night to the site. The vehicles can inject waters by using its 50-meters-long arm and pumps.
- Ministry of Defense announced that the Self-Defense Force helicopter measured the surface temperatures of Fukushima Daiichi from the air and found that the temperature of each units are below 100 degrees C. Unit 1:58 degrees C; Unit 2: 35 degrees C; Unit 3: 62 degrees C; Unit 4: 42 degrees C; Unit 5: 24 degrees C; Unit 6: 25 degrees C. (as of the afternoon on March 20)

Nuclear and Industrial Safety Agency reported that...

- The pressure of the Reactor Containment Vessel at unit 3 of Fukushima Daiichi rose once (320 kPa as of 11:00 March 20th). TEPCO prepared to lower the pressure but concluded immediate pressure relief was not required. Monitoring the pressure continues (225 kPa as of 22:00 March 20).

End

16:00

News Release

Readings at Monitoring Post out of 20 Km Zone of Fukushima Dai-ichi NPP

21

As of ~~10:00~~ March ~~18~~, 2011

Ministry of Education, Culture, Sports, Science

1. Monitoring Outputs by MEXT (reverse chronological order) ***Boldface and underlined readings are new.**

* 1 measured by Geiger-Müller counter
* 2 measured by ionization chamber type survey meter
* 3 measured by NaI scintillator detector

Reading Point

Monitoring Post (length from NPP)	Monitoring Time	Reading (unit : μSi / h)	Weather	Reading by
測定箇所 【1】 (約60Km北西)	**3月21日13時38分**	**5.0 *2**	**降雨有り**	**日本原子力研究開発機構**
測定箇所 【1】 (約60Km北西)	3月21日8時49分	4.5 *2	降雨無し	日本原子力研究開発機構
測定箇所 【2】 (約55Km北西)	**3月21日13時42分**	**8.4 *2**	**降雨有り**	**日本原子力研究開発機構**
測定箇所 【2】 (約55Km北西)	3月21日9時28分	9.2 *2	降雨無し	日本原子力研究開発機構
測定箇所 【3】 (約45Km北西)	**3月21日13時04分**	**7.0 *2**	**降雨有り**	**日本原子力研究開発機構**
測定箇所 【3】 (約45Km北西)	3月21日10時02分	7.6 *2	降雨無し	日本原子力研究開発機構
測定箇所 【4】 (約50Km北西)	3月21日9時48分	2.8 *2	降雨無し	文部科学省
測定箇所 【5】 (約45Km北)	3月21日10時42分	1.1 *2	降雨無し	日本原子力研究開発機構
測定箇所 【6】 (約45Km北)	3月21日11時11分	2.2 *2	降雨無し	日本原子力研究開発機構
測定箇所 【7】 (約45Km北)	3月21日11時18分	2.2 *2	降雨無し	日本原子力研究開発機構
測定箇所 【10】 (約40Km北西)	3月21日10時10分	1.9 *2	降雨無し	文部科学省
測定箇所 【11】 (約40Km北西)	3月21日10時23分	4.1 *2	降雨無し	文部科学省
測定箇所 【12】 (約40Km西)	**3月21日12時27分**	**0.7 *2**	**降雨有り**	**文部科学省**
測定箇所 【13】 (約40Km西)	**3月21日12時43分**	**0.9 *2**	**降雨有り**	**文部科学省**
測定箇所 【14】 (約35Km西)	**3月21日12時50分**	**0.7 *2**	**降雨有り**	**文部科学省**
測定箇所 【15】 (約35Km西)	**3月21日13時00分**	**1.6 *2**	**降雨有り**	**文部科学省**

JAEA

MEXT

Month Date Hour Time

rain

No rain

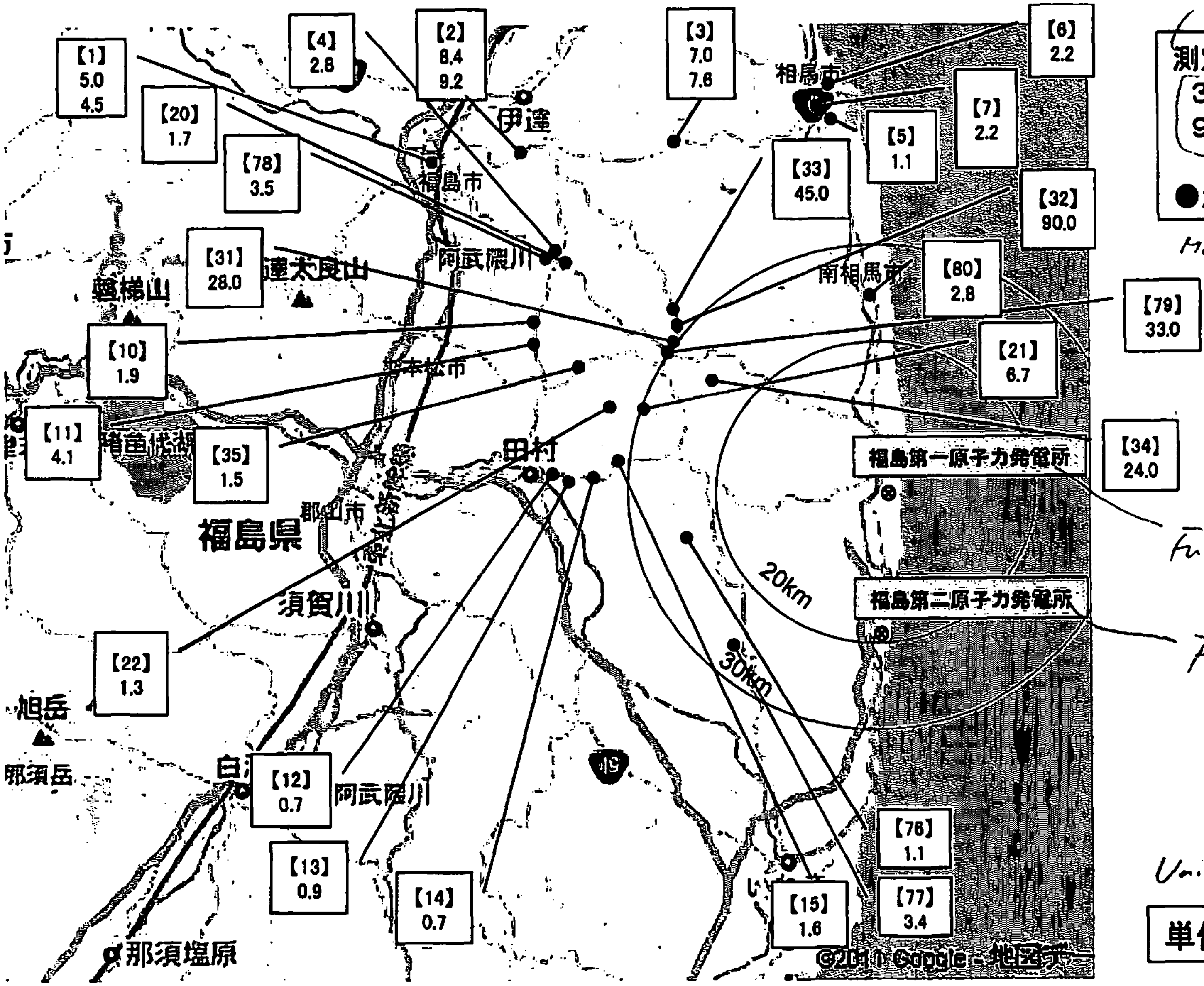
＊1 GM(ガイガー=ミューラー計測管)における値
＊2 電離箱における値
＊3 NaI(ヨウ化ナトリウム)シンチレータにおける値

場所(福島第1発電所からの距離)	測定日時	数値(マイクロシーベルト／時)(記載のない限り屋外)	天候	実施者
測定箇所 【20】 (約45Km北西)	3月21日10時53分	1.7 [*2]	降雨無し	文部科学省
測定箇所 【21】 (約30Km西北西)	3月21日11時23分	6.7 [*2]	降雨無し	文部科学省
測定箇所 【22】 (約35Km西北西)	3月21日11時13分	1.3 [*2]	降雨有り	文部科学省
測定箇所 【31】 (約30Km西北西)	3月21日10時20分	28.0 [*2]	降雨無し	日本原子力研究開発機構
測定箇所 【32】 (約30Km北西)	3月21日10時40分	90.0 [*2]	降雨無し	日本原子力研究開発機構
測定箇所 【33】 (約30Km北西)	3月21日10時50分	45.0 [*2]	降雨無し	日本原子力研究開発機構
測定箇所 【34】 (約25Km北西)	3月21日11時35分	24.0 [*2]	降雨無し	日本原子力研究開発機構
測定箇所 【35】 (約30Km北西)	3月21日11時51分	1.5 [*2]	降雨無し	日本原子力研究開発機構
測定箇所 【76】 (約25Km南西)	3月21日11時08分	1.1 [*2]	降雨無し	警察(NBC対策部隊) — Police
測定箇所 【77】 (約25Km南西)	3月21日11時31分	3.4 [*2]	降雨無し	警察(NBC対策部隊)
測定箇所 【78】 (約45Km北西)	3月21日8時40分	3.5 [*2]	降雨無し	警察(NBC対策部隊)
測定箇所 【79】 (約30Km北西)	3月21日9時30分	33.0 [*2]	降雨無し	警察(NBC対策部隊)
測定箇所 【80】 (約25Km北)	3月21日13時15分	2.8 [*2]	降雨有り	警察(NBC対策部隊)

2. 防衛省の測定については準備中

Reading of Monitoring Post out of Fukushima Daiichi NPP

福島第一原子力発電所周辺のモニタリング結果



Monitoring Time

測定日時
3月21日
9時00分～15時00分

March 21 9:00~15:00

●測定箇所

Monitoring Post

Unit: μSv/hour

単位：マイクロシーベルト毎時

<u>Update to Information Sheet Regarding the Tohoku Earthquake</u>

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

As of 11:00AM (EST), March 21, 2011

- Radiation Levels
  - At 04:30PM (JST) on March 21, radiation level outside main office building (approximately 1,640 feet from Unit 2 reactor building) of Fukushima Daiichi Nuclear Power Station: 2,015 micro Sv/hour.
  - At 06:30PM on March 21, radiation level at main gate (approximately 3,281 feet from Unit 2 reactor building) of Fukushima Daiichi Nuclear Power Station: 1,932 micro Sv/hour.
  - Measurement results of ambient dose rate around Fukushima Nuclear Power Station announced at 1:00PM and 4:00PM on March 21 are shown in the attached two PDF files respectively.
  - For comparison, a human receives 2,400 micro Sv per year from natural radiation in the form of sunlight, radon, and other sources. One chest CT scan generates 6,900 micro Sv per scan.
- Fukushima Daiichi Unit 1 reactor
  - At 2:25PM on March 21, pressure inside the reactor core: 0.198MPa.
  - At 2:25PM on March 21, water level inside the reactor core: 1.75 meters below the top of the fuel rods.
  - At 2:25PM on March 21, pressure inside the primary containment vessel: 0.16MPaabs.
  - As of 4:00PM on March 21, the injection of seawater into the reactor core continues.
  - As of 7:00PM on March 21, external power generation is connected and the functionality of the electric devices is being checked.
- Fukushima Daiichi Unit 2 reactor
  - At 2:25PM on March 21, pressure inside the reactor core: -0.023MPa.
  - At 2:25PM on March 21, water level inside the reactor core: 1.35 meters below the top of the fuel rods.
  - At 2:25PM on March 21, pressure inside the primary containment vessel: 0.12MPaabs.
  - At 2:25PM on March 21, the temperature of the spent fuel pool: 122.0 degrees Fahrenheit.
  - At 6:22PM on March 21, steam was emitted from the secondary containment building. (Under investigation)
  - As of 4:00PM on March 21, the injection of seawater into the reactor core continues.
  - As of 7:00PM on March 21, external power generation is connected and the functionality of the electric devices is being checked.
- Fukushima Daiichi Unit 3 reactor
  - At 9:30PM on March 20, the Tokyo Fire Department began to shoot water aimed at the spent fuel pool, continuously until 3:58AM on March 21 (roughly 1,137 tons in total).

- At 12:25PM on March 21, pressure inside the reactor core: -0.083MPa.
- At 12:25PM on March 21, water level inside the reactor core: 1.6 meters below the top of the fuel rods.
- At 12:25PM on March 21, pressure inside the primary containment vessel: 0.120MPaabs.
- At 3:55PM on March 21, gray smoke was emitted from the secondary containment building.
- At 4:49PM on March 21, the gray smoke changed to white smoke, but the volume of the smoke was unchanged.
- At 6:02PM on March 21, it was confirmed that the emission of smoke had ceased.
- As of 4:00PM on March 21, the injection of seawater into the reactor core continues.
- As of 7:00PM on March 20, about 3,742 tons of water in total has been shot to the spent fuel storage pool.
- As of 7:00PM on March 21, activities for connecting an external power supply are underway.

- Fukushima Daiichi Unit 4 reactor
  - At 6:22PM on March 20, 10 Self Defense Force vehicles began to shoot water aimed at the spent fuel pool, until 7:43PM (roughly 81 tons in total).
  - At 6:37AM on March 21, 12 Self Defense Force vehicles and TEPCO began to shoot water aimed at the spent fuel pool, until 8:41AM (in total about 91 tons). TEPCO used one high pressure water cannon supplied by the US Army.
  - As of 7:00PM on March 21, roughly 83 tons of water in total has been shot to the spent fuel storage pool.
  - As of 7:00PM on March 21, activities for connecting an external power supply are underway.
- Fukushima Daiichi Unit 5 reactor
  - At 4:00PM on March 21, the temperature of the spent fuel pool: 108.1 degrees Fahrenheit.
  - As of 7:00PM on March 21, external power generation is connected and the functionality of the electric devices is being checked.
- Fukushima Daiichi Unit 6 reactor
  - At 7:27PM on March 20: cold shutdown
  - At 4:00PM on March 21, the temperature of the spent fuel pool: 96.8 degrees Fahrenheit.
  - As of 7:00PM on March 21, external power generation is connected and the functionality of the electric devices is being checked.
- Fukushima Daiichi Common Spent Fuel Pool
  - From 10:37AM to 3:30PM on March 21, roughly 130 tons of water in total has been injected into the spent fuel storage pool.

Our official sources are:

- Office of The Prime Minister of Japan
- Nuclear and Industrial Safety Agency (NISA)
- Tokyo Electric Power Company (TEPCO) Press Releases

- Ministry of Education, Culture, Sports, Science and Technology (MEXT)

From: LIA02 Hoc
Sent: Monday, March 21, 2011 12:19 PM
To: Liaison Japan
Cc: LIA03 Hoc
Subject: NRC relief team logistics

Hello everyone,

I hope that you are all enjoying some much-needed rest and that my sending this message will not wake anyone up.

I wanted to fill you in on a few logistical details regarding the relief team we are sending to Japan over the course of this week:

1. Business cards for Brooke Smith, Kirk Foggie and Tony Nakanishi have been printed. Mike Scott of RES will be bringing them when he flies to Tokyo tomorrow. In addition, he will also be carrying Brooke Smith's thumb drive.
2. Rather than send the new team over with additional satellite phones, Cris Brown has agreed that the two satellite phones currently with the team can be turned over to two members of the relief team. When the new group arrives, please decide among yourselves who will take ownership of the phones, then communicate that information back to Cris Brown and LIA02/LIA03. The phones can continue to be passed on to future relief teams using the same process, with the last group responsible for bringing the phones home. Note: If the phones are not in use/have not been helpful, Cris Brown requests that someone from the current team just bring them home.

We are continuing to work on travel arrangements for the relief team and will provide you with a complete list of flight data and contact information as soon as it becomes available. Their names are also being added to this "Liaison Japan" alias.

Please do not hesitate to contact us if you have any questions or concerns, or if there is anything you need the travelers to take to Japan for you.

Best regards,
Jennifer Schwartzman
Int'l Liaison Desk

KKKK-37

From: Emche, Danielle
Sent: Monday, March 21, 2011 5:27 AM
To: LIA02 Hoc; LIA03 Hoc
Subject: Call w/kirk and brooke

Did this already happen?
Danielle
Sent from an NRC BlackBerry.

KKKK-38

From: Emche, Danielle
Sent: Monday, March 21, 2011 6:00 AM
To: LIA02 Hoc; LIA03 Hoc
Subject: Re: Call w/kirk and brooke

The reason I ask: on Sat. pm I communicated to the ops center desks that request for rad data should go through nightly call to find out from Kirk what he has already done or may want to do with NISA in this area. Kirk is way too busy for me to call him and inquire about any action in this area, separate from the nightly call. Pending discussion during the nightly call and direction from Kirk and what he advises, I will follow up with NISA as appropriate. Please include this in the turnover so that action isn't further delayed.

Danielle
Sent from an NRC BlackBerry.

----- Original Message -----
From: Emche, Danielle
To: LIA02 Hoc; LIA03 Hoc
Sent: Mon Mar 21 05:26:45 2011
Subject: Call w/kirk and brooke

Did this already happen?
Danielle
Sent from an NRC BlackBerry.

KKKK-39

Garcia-Santos, Norma

From: White, Bernard
Sent: Monday, March 21, 2011 9:25 AM
To: Benner, Eric; Berry, Rollie; Bjorkman, Gordon; Easton, Earl; Garcia-Santos, Norma; Khodorkovsky, Bella; Ordaz, Vonna; Pstrak, David; Rahimi, Meraj; Waters, Michael; Weaver, Doug; Witt, Kevin
Subject: FW: IOEB Clearinghouse Screening Summary for Friday, March 18, 2011

FYI on first two items below on the Japanese events and associated earth quakes

---

From: King, Mark
Sent: Friday, March 18, 2011 1:56 PM
Subject: IOEB Clearinghouse Screening Summary for Friday, March 18, 2011

NOTE: THIS SUMMARY IS OFFICIAL USE ONLY
*****MAY CONTAIN SENSITIVE/ PROPRIETARY OR NRC INTERNAL USE ONLY INFORMATION*****
DO NOT FORWARD ANY PORTIONS OUTSIDE OF NRC WITHOUT FIRST OBTAINING PERMISSION FROM ORIGINATOR

Issues for Resolution (IFR): One (1)

1) DAINI NUCLEAR POWER PLANT (JAPAN) - INES LEVEL 3 REPORT - LOSS OF HEAT SINK DUE TO MIYAGIKEN-OKI EARTHQUAKE AND TSUNAMI

Regarding Daini Nuclear Power Station (a four unit site in Japan). The tsunami that followed the magnitude 8.9 earthquake on March 11, 2011 resulted in flooding of seawater pump rooms leaving only turbine driven pumps for decay heat removal (DHR). The turbine driven pump operation caused suppression pool pressure to increase to the extent that turbine driven pump operating could no longer be supported. Personnel were able to recover motor driven pumps and restore DHR to cool units 1, 2, and 4 to cold shutdown.

This event satisfies various LIC-401criteria (including an international event rated at Level 3 on the INES scale) for screening in as an Issue for Resolution (IFR).
A new IFR and screen in documentation is assigned to Rebecca Sigmon.

OpE Forum Postings (COMMS): One (1)

1) DAINI NUCLEAR POWER PLANT (JAPAN) - INES LEVEL 3 REPORT - LOSS OF HEAT SINK DUE TO MIYAGIKEN-OKI EARTHQUAKE AND TSUNAMI Develop OpE COMM to: ALL COMMS, CONTAINMENT, ECCS, EDG, ELECTRICAL PWR, EP, FLOODING/MISSILES, NAT. PHENOMENA, NRO, PUMP & VALVE, SERVICE WATER/UHS; assigned to Rebecca Sigmon. (see item 1 above).

Management Requests: None

Follow-up/Other Tasks: Four (4)

[Note - The information in this part of the Summary is often preliminary in nature and is provided to help IOEB staff communicate and track noteworthy items being followed up by either the Regions or HQ staff.]

1) (UPDATE) INES LEVEL 4 EVENT UPGRADED TO INES LEVEL 5 - MIYAGIKEN-OKI EARTHQUAKE (JAPAN)

KKKK-40

(Update 3/18/2011) The events at the Dai'ichi nuclear power station have been upgraded to an INES Level 5 "Accident with Wider Consequences." Further information on the ratings and the INES scale is available at: http://www-ns.iaea.org/tech-areas/emergency/ines.asp

2) JAPAN EVENT: SUPPLEMENTAL INFORMATION ON TODAY'S ALL-EMPLOYEES MEETING

Event: Supplemental Information on Today's All-Employees Meeting
As mentioned in a previous Network Announcement, there will be an All-Employees meeting today at 2:00 p.m. in the TWFN auditorium, led by EDO Bill Borchardt, to discuss events in Japan. VTC will be available to the regions, TTC, and headquarters satellite offices. Please note the following additional information:

- The bridgeline (call-in number: 888-820-8960; passcode: 8690842) is intended for employees who are teleworking today. If you are not working at home, please attend the meeting in person or via VTC to avoid overloading the bridgelines.
- There will be a sign-language interpreter in the auditorium for the hearing-impaired.
- The event will videotaped for later viewing.
- The slides that will be used during the presentation are available on the OEDO Sharepoint site.

http://portal.nrc.gov/edo/staff/Lists/Announcements/DispForm.aspx?ID=20&Source=http%3A%2F%2Fportal%2Enrc%2Egov%2Fedo%2Fstaff%2FLists%2FAnnouncements%2FAllItems%2Easpx - - (INFO ONLY).

4) DAINI NUCLEAR POWER PLANT (JAPAN) - INES LEVEL 3 REPORT - LOSS OF HEAT SINK DUE TO MIYAGIKEN-OKI EARTHQUAKE AND TSUNAMI

Regarding Daini Nuclear Power Station (a four unit site in Japan).
The tsunami that followed the magnitude 8.9 earthquake on March 11, 2011 resulted in flooding of seawater pump rooms leaving only turbine driven pumps for decay heat removal (DHR). The turbine driven pump operation caused suppression pool pressure to increase to the extent that turbine driven pump operating could no longer be supported. Personnel were able to recover motor driven pumps and restore DHR to cool units 1, 2, and 4 to cold shutdown.

This event satisfies various LIC-401criteria (including an international event rated at Level 3 on the INES scale) for screening in as an Issue for Resolution (IFR). Also forward to TRG for ECCS, EP, Flooding, Pump and Valve, Service water and UHS and NRO; assigned to Dave Garmon.

5) EN 46680 - MILLSTONE 2 - CONTROL ROOM BOUNDARY RENDERED INOPERABLE

See EN Text. Forward to EP TRG Lead (Eric Schrader) and Fire Protection TRG Lead (Brain Metzger) and HVAC/Dose Assessment (Nageswara Karipineni) ; assigned to Dave Garmon.

New Reactors Items: None

Research (RES) Items: One

1) RESEARCH DRAFT REPORTS ON CONTAINMENT LINER CORROSION OPE / WORKSHOP/ SUMMARY AND RECOMMENDATION REPORT

1) Research Reports- review items of interest discussing OpE DRAFT REPORTS, “CONTAINMENT LINER CORROSION OPERATING EXPERIENCE SUMMARY” AND “NUCLEAR CONTAINMENT STEEL LINER CORRSION WORKSHOP: SUMMARY AND RECOMMENDATION REPORT” is now available in ADAMS at ML package **ML110690016**. Send information to TRG for Containment (Jerome Bettle) and NRO (Omid Tabatabai), assigned to Mark King - completed.

Items Screened Out*: Two (2) - two (2) Event Notifications (ENs)

1) EN 46678 - CATAWBA 1 & 2 - OFFSITE NOTIFICATION DUE TO VEHICLE FIRE

2) EN 46680 - MILLSTONE 2 - CONTROL ROOM BOUNDARY RENDERED INOPERABLE

**(i.e., Screened /reviewed against LIC-401 criteria for initiating an "Issue for Resolution" (IFR), which is IOEB's process for conducting further evaluation of an issue to determine what, if any, additional actions should be taken to communicate and organizationally learn from OpE.)*

NOTE: THIS SUMMARY IS OFFICIAL USE ONLY
*****MAY CONTAIN SENSITIVE/ PROPRIETARY OR NRC INTERNAL USE ONLY INFORMATION*****
DO NOT FORWARD ANY PORTIONS OUTSIDE OF NRC WITHOUT FIRST OBTAINING PERMISSION FROM ORIGINATOR

Attendees at Screening Meeting:

Jesse Robles
Russ Haskell
Joe Giantelli
Dave Garmon
Mark King
Rebecca Sigmon
Ryan Craffey- NRO

From: Way, Ralph
Sent: Monday, March 21, 2011 1:35 PM
To: LIA03 Hoc
Subject: RE: Country clearance info

Here who I sent it to; CountryClearance Resource and what I got back.

r

From: Sent: Monday, March 21, 2011 9:07 AM
To: Way, Ralph
Subject: Thank You for Using the Country Clearance Email Address

Your email has been auto-forwarded to OIP staff (Emily Larson, Daphene Floyd, Kia Jackson, and Stephen Dembek) for processing into the Department of State's eCountryClearance system. Once it has been processed, each traveler will receive a "pending" e-mail from the eCountryClearance system. They will also receive an "approved" e-mail when it is cleared by the respective country's contact.

If you have any questions, please feel free to send another email to CountryClearance@nrc.gov .

From: LIA03 Hoc
Sent: Monday, March 21, 2011 1:27 PM
To: Way, Ralph
Subject: RE: Country clearance info

Ralph, who did you send it to?

From: Way, Ralph
Sent: Monday, March 21, 2011 1:22 PM
To: LIA03 Hoc
Subject: RE: Country clearance info

Nancy

I sent the attached in this morning. Unless they need something else?

r

From: LIA03 Hoc
Sent: Monday, March 21, 2011 1:20 PM
To: Scott, Michael; Blamey, Alan; Giessner, John; Taylor, Robert; Jackson, Todd; Miller, Marie; Ali, Syed; Sheikh, Abdul; Way, Ralph; Ramsey, Jack
Cc: Dembek, Stephen; LIA02 Hoc
Subject: FW: Country clearance info

See below message on country clearance.

Thanks.

KKKK-41

Nancy

From: Dembek, Stephen
Sent: Monday, March 21, 2011 1:11 PM
To: LIA02 Hoc
Cc: LIA03 Hoc; CountryClearance Resource; RMTPACTSU_ELNRC
Subject: RE: Country clearance info

Country clearances are still needed. If it's during normal working hours, then OIP staff will do the country clearances. If travel is arranged at night or on the weekends then USAID said they would do it.

Have the travelers give the info on the website shown below to countryclearance@nrc.gov.

Steve

From: LIA02 Hoc
Sent: Monday, March 21, 2011 1:07 PM
To: Dembek, Stephen
Cc: LIA03 Hoc
Subject: Country clearance info

Steve,

Item 4 on the checklist for our Japan travelers says:

4. Country clearance cable information

Format: Format is available at OIP SharePoint (http://portal.nrc.gov/OCM/ip/travel/default.aspx)
Complete the requested items. Place of Birth should be exactly the same as shown in your passport. Include your security clearance information and follow the directions included.

Are the travelers still required to do this even though USAID is handling all arrangements? If there is still a need for the country clearance, who should the travelers be sending the information to? This is not clear from the checklist. If no clearance is required I need to send a clarifying email to the travelers indicating that they should disregard item 4 on the checklist.

Please advise ASAP.

Thank you!

From: LIA03 Hoc
Sent: Monday, March 21, 2011 2:45 PM
To: LIA03 Hoc; Scott, Michael; Blamey, Alan; Giessner, John; Taylor, Robert; Jackson, Todd; Miller, Marie; Ali, Syed; Sheikh, Abdul; Way, Ralph; Ramsey, Jack
Cc: LIA02 Hoc
Subject: RE: Country clearance info

If you have not received KI yet you can pick it up at the Health Center.

Thanks.
Nancy

From: LIA03 Hoc
Sent: Monday, March 21, 2011 1:20 PM
To: Scott, Michael; Blamey, Alan; Giessner, John; Taylor, Robert; Jackson, Todd; Miller, Marie; Ali, Syed; Sheikh, Abdul; Way, Ralph; Ramsey, Jack
Cc: Dembek, Stephen; LIA02 Hoc
Subject: FW: Country clearance info

See below message on country clearance.

Thanks.

Nancy

From: Dembek, Stephen
Sent: Monday, March 21, 2011 1:11 PM
To: LIA02 Hoc
Cc: LIA03 Hoc; CountryClearance Resource; RMTPACTSU_ELNRC
Subject: RE: Country clearance info

Country clearances are still needed. If it's during normal working hours, then OIP staff will do the country clearances. If travel is arranged at night or on the weekends then USAID said they would do it.

Have the travelers give the info on the website shown below to countryclearance@nrc.gov.

Steve

From: LIA02 Hoc
Sent: Monday, March 21, 2011 1:07 PM
To: Dembek, Stephen
Cc: LIA03 Hoc
Subject: Country clearance info

Steve,

Item 4 on the checklist for our Japan travelers says:

4. Country clearance cable information

Format: Format is available at OIP SharePoint (http://portal.nrc.gov/OCM/ip/travel/default.aspx)

Complete the requested items. Place of Birth should be exactly the same as shown in your passport. Include your security clearance information and follow the directions included.

Are the travelers still required to do this even though USAID is handling all arrangements? If there is still a need for the country clearance, who should the travelers be sending the information to? This is not clear from the checklist. If no clearance is required I need to send a clarifying email to the travelers indicating that they should disregard item 4 on the checklist.

Please advise ASAP.

Thank you!

From: Way, Ralph
Sent: Monday, March 21, 2011 2:47 PM
To: LIA03 Hoc
Subject: RE: Country clearance info

Nancy,

I go in for my pre deployment medical review tomorrow morning. Can I get it then?

r

From: LIA03 Hoc
Sent: Monday, March 21, 2011 2:45 PM
To: LIA03 Hoc; Scott, Michael; Blamey, Alan; Giessner, John; Taylor, Robert; Jackson, Todd; Miller, Marie; Ali, Syed; Sheikh, Abdul; Way, Ralph; Ramsey, Jack
Cc: LIA02 Hoc
Subject: RE: Country clearance info

If you have not received KI yet you can pick it up at the Health Center.

Thanks.
Nancy

From: LIA03 Hoc
Sent: Monday, March 21, 2011 1:20 PM
To: Scott, Michael; Blamey, Alan; Giessner, John; Taylor, Robert; Jackson, Todd; Miller, Marie; Ali, Syed; Sheikh, Abdul; Way, Ralph; Ramsey, Jack
Cc: Dembek, Stephen; LIA02 Hoc
Subject: FW: Country clearance info

See below message on country clearance.

Thanks.

Nancy

From: Dembek, Stephen
Sent: Monday, March 21, 2011 1:11 PM
To: LIA02 Hoc
Cc: LIA03 Hoc; CountryClearance Resource; RMTPACTSU_ELNRC
Subject: RE: Country clearance info

Country clearances are still needed. If it's during normal working hours, then OIP staff will do the country clearances. If travel is arranged at night or on the weekends then USAID said they would do it.

Have the travelers give the info on the website shown below to countryclearance@nrc.gov.

Steve

KKKK-42

From: LIA02 Hoc
Sent: Monday, March 21, 2011 1:07 PM
To: Dembek, Stephen
Cc: LIA03 Hoc
Subject: Country clearance info

Steve,

Item 4 on the checklist for our Japan travelers says:

4. Country clearance cable information

Format: Format is available at OIP SharePoint (http://portal.nrc.gov/OCM/ip/travel/default.aspx)
Complete the requested items. Place of Birth should be exactly the same as shown in your passport. Include your security clearance information and follow the directions included.

Are the travelers still required to do this even though USAID is handling all arrangements? If there is still a need for the country clearance, who should the travelers be sending the information to? This is not clear from the checklist. If no clearance is required I need to send a clarifying email to the travelers indicating that they should disregard item 4 on the checklist.

Please advise ASAP.

Thank you!

From:	Blamey, Alan
Sent:	Monday, March 21, 2011 4:29 PM
To:	LIA03 Hoc
Subject:	RE: Country clearance info

A. Blamey has received KI from Region II.

From: LIA03 Hoc
Sent: Monday, March 21, 2011 2:45 PM
To: LIA03 Hoc; Scott, Michael; Blamey, Alan; Giessner, John; Taylor, Robert; Jackson, Todd; Miller, Marie; Ali, Syed; Sheikh, Abdul; Way, Ralph; Ramsey, Jack
Cc: LIA02 Hoc
Subject: RE: Country clearance info

If you have not received KI yet you can pick it up at the Health Center.

Thanks.
Nancy

From: LIA03 Hoc
Sent: Monday, March 21, 2011 1:20 PM
To: Scott, Michael; Blamey, Alan; Giessner, John; Taylor, Robert; Jackson, Todd; Miller, Marie; Ali, Syed; Sheikh, Abdul; Way, Ralph; Ramsey, Jack
Cc: Dembek, Stephen; LIA02 Hoc
Subject: FW: Country clearance info

See below message on country clearance.

Thanks.

Nancy

From: Dembek, Stephen
Sent: Monday, March 21, 2011 1:11 PM
To: LIA02 Hoc
Cc: LIA03 Hoc; CountryClearance Resource; RMTPACTSU_ELNRC
Subject: RE: Country clearance info

Country clearances are still needed. If it's during normal working hours, then OIP staff will do the country clearances. If travel is arranged at night or on the weekends then USAID said they would do it.

Have the travelers give the info on the website shown below to countryclearance@nrc.gov.

Steve

From: LIA02 Hoc
Sent: Monday, March 21, 2011 1:07 PM
To: Dembek, Stephen
Cc: LIA03 Hoc
Subject: Country clearance info

KKKK-43

Steve,

Item 4 on the checklist for our Japan travelers says:

4. Country clearance cable information

Format: Format is available at OIP SharePoint (http://portal.nrc.gov/OCM/ip/travel/default.aspx)
Complete the requested items. Place of Birth should be exactly the same as shown in your passport. Include your security clearance information and follow the directions included.

Are the travelers still required to do this even though USAID is handling all arrangements? If there is still a need for the country clearance, who should the travelers be sending the information to? This is not clear from the checklist. If no clearance is required I need to send a clarifying email to the travelers indicating that they should disregard item 4 on the checklist.

Please advise ASAP.

Thank you!

From: LIA07 Hoc
Sent: Tuesday, March 22, 2011 7:21 PM
To: OST04 Hoc
Subject: FW: 03.22.11 - USAID/DCHA Japan Earthquake and Tsunami Fact Sheet #12
Attachments: image001.png; image005.png; 03.22.11 - USAID-DCHA Japan EQ and Tsunami Fact Sheet #12.pdf; 03.22.11 - Japan Earthquake and Tsunami Map.pdf; image002.png

Attachments for big books and m drive (other agencies tab)
Thanks!

From: RMTPACTSU_ELNRC [mailto:RMTPACTSU_ELNRC@ofda.gov]
Sent: Tuesday, March 22, 2011 7:09 PM
To: LIA11 Hoc; LIA01 Hoc; LIA02 Hoc; LIA07 Hoc; LIA08 Hoc; LIA12 Hoc; LIA04 Hoc; Harrington, Holly; McIntyre, David; Burnell, Scott; ET07 Hoc
Subject: 03.22.11 - USAID/DCHA Japan Earthquake and Tsunami Fact Sheet #12

Subject: 03.22.11 - USAID/DCHA Japan Earthquake and Tsunami Fact Sheet #12

Please find attached and pasted below the USAID/DCHA Japan Earthquake and Tsunami Fact Sheet #12 and accompanying map, both dated March 22, 2011. These documents have been approved for public use.
If you experience formatting issues in the text below, please refer to the attached document.

To be added to or removed from this distribution list, please email rmtpactsu_inc@ofda.gov.

USAID
FROM THE AMERICAN PEOPLE

BUREAU FOR DEMOCRACY, CONFLICT, AND HUMANITARIAN ASSISTANCE (DCHA)
OFFICE OF U.S. FOREIGN DISASTER ASSISTANCE (OFDA)

Japan – Earthquake and Tsunami

Fact Sheet #12, Fiscal Year (FY) 2011 March 22, 2011

Note: The last fact sheet was dated March 21, 2011.

KEY DEVELOPMENTS

- The earthquake and tsunami have resulted in nearly 9,200 deaths and left nearly 13,800 people missing, as reported by the Government of Japan (GoJ) on March 22. The natural disasters also damaged or destroyed more than 128,000 buildings and 1,700 roads.
- Technicians and engineers have been repairing communications, transportation, and basic service infrastructure, allowing increased numbers of displaced persons to return home or travel to central evacuation centers.
- A magnitude 6.6 aftershock struck off the coast of eastern Honshu Island at a depth of 16.5 miles at approximately 1700 hours local time on March 22. According to the U.S. Geological Survey (USGS), the epicenter was located approximately 170 miles east of Iwaki City, Fukushima Prefecture, and 182 miles east-southeast of Sendai, Miyahi Prefecture. USGS reports that nearby towns on Honshu Island experienced Level III shaking on the Modified Mercalli Intensity Scale, indicating that the earthquake was not likely to result in any damage to structures.

KKKK-44

NUMBERS AT A GLANCE[1]		SOURCE
Confirmed Deaths	9,199	GoJ NPA[2] – March 22, 2011
Missing Persons	13,786	GoJ NPA – March 22, 2011
Number of People in Evacuation Centers	263,915	GoJ NPA – March 22, 2011

FY 2011 HUMANITARIAN FUNDING PROVIDED TO JAPAN TO DATE
USAID/OFDA Assistance for the Japan Earthquake and Tsunami....... $7,135,894
DoD[3] Humanitarian Assistance for the Japan Earthquake and Tsunami....... $20,900,000
Total USAID and DoD Assistance for the Japan Earthquake and Tsunami....... $28,035,894

CONTEXT

- On March 11 at 0046 hours Eastern Standard Time, or 1446 hours Japan Standard Time, a magnitude 9.0 earthquake occurred off the east coast of Honshu Island—approximately 231 miles northeast of Tokyo—at a depth of approximately 15 miles, generating a tsunami that struck the eastern coast of Japan and resulted in additional fatalities and damage, particularly in Miyagi, Fukushima, and Iwate prefectures. Furthermore, the natural disasters led to a serious nuclear incident at the Fukushima Daiichi power plant located approximately 150 miles north of Tokyo.
- USAID immediately activated a Response Management Team in Washington, D.C., and deployed a Disaster Assistance Response Team (DART)—including urban search and rescue (USAR) specialists and nuclear experts—to support Japanese emergency response efforts. On March 11, U.S. Ambassador John V. Roos declared a disaster due to the effects of the earthquake and tsunami in Japan.

Humanitarian Situation and Response

- The newly created GoJ Special Headquarters—designed to assist disaster-affected individuals—began operations on March 20. The headquarters is relocating displaced individuals to unaffected prefectures and working to minimize the burden on local governments in the host prefectures. According to the GoJ Chief Cabinet Secretary, the special headquarters will meet regularly to ensure that displaced individuals receive adequate support. On March 22, the GoJ reported that approximately 264,000 people remained in shelters, representing a decrease of more than 55,000 people—17 percent of the population in shelters—since March 21.
- The number of evacuation centers hosting displaced persons has also decreased as road clearance has enabled displaced persons to congregate in larger evacuation centers that are easier to reach with humanitarian assistance.
- Electrical supply continues to improve with power restored to approximately 27,000 households since March 21, according to **the** U.N. Office for the Coordination of Humanitarian Affairs (OCHA). As of March 22, approximately 217,000 households remained without power.
- Technicians have restored more than 90 percent of earthquake- and tsunami-damaged telecommunications and 90 percent of damaged roads are now accessible to the public, according to OCHA.

Logistics and Relief Supplies

- On March 22, the second shipment of equipment for a DoD-funded high-flow pump system arrived in Japan via two Australian military flights. The equipment will be assembled and transferred to the Fukushima Daiichi power plant to augment cooling capacity at the facility. The initial shipment of equipment for the pump system arrived in Japan on March 21.
- In response to a GoJ request, 10,000 sets of USAID/OFDA-funded personal protective equipment—including suits, masks, gloves, decontamination bags, and other supplies—have arrived at Yokota Air Force Base, near Tokyo. The equipment is en route to individuals working near the nuclear exclusion zone around Fukushima Daiichi nuclear power plant.
- On March 22, DoD delivered 635 daily servings of drinking water and 32,720 daily servings of food to benefit more than 5,500 displaced individuals. At present, 17 ships and an estimated 17,000 personnel are involved in or prepared to assist with humanitarian efforts in Japan.

Situation at Nuclear Power Plants

- According to the U.N. World Health Organization (WHO), tests have found limited radioactive contamination of drinking water and certain foods grown in the vicinity of the Daiichi nuclear power plant. As a precautionary measure, the GoJ has suspended shipments of milk from Fukushima Prefecture and leafy vegetables from Ibaraki, Tochigi, Gunma, and Fukushima prefectures, as well as recommended that individuals living near the Fukushima Daiichi facility avoid drinking tap water. However, the GoJ reported that consuming contaminated food or water would not pose a health risk, and WHO reported no evidence that contaminated food has reached other countries.
- U.S. Department of Energy, DART, U.S. Nuclear Regulatory Commission, and U.S. Embassy staff continue to actively monitor and triangulate information on radiation levels in Tokyo. To date, U.S. agencies continue to report that there have not been any increases in radiation levels in Tokyo. DART nuclear specialists also note no significant changes in the situation at the Fukushima Daiichi power plant in recent days.

USAID AND DOD HUMANITARIAN ASSISTANCE TO JAPAN

Implementing Partner	*Activity*	*Location*	*Amount*
USAID/OFDA ASSISTANCE[1]			
U.S. Embassy in Tokyo	Emergency Relief Support	Affected Areas	$100,000
DoD	USAR Operations (Transport of USAR cargo)	Affected Areas	$1,000,000
L.A. County USAR Team	USAR Operations	Affected Areas	$2,058,000
Fairfax County USAR Team	USAR Operations	Affected Areas	$2,058,000
	USAID/DART Support Costs		$1,618,240
	Administrative Support		$301,654
TOTAL USAID/OFDA			**$7,135,894**
DOD ASSISTANCE			
	Emergency Relief Support	Affected Areas	$20,900,000
TOTAL DOD			**$20,900,000**
TOTAL USG HUMANITARIAN ASSISTANCE TO JAPAN IN FY 2011			**$28,035,894**

[1] USAID/OFDA funding represents anticipated or actual obligated amounts as of March 22, 2011. Amounts are subject to change.
[2]Estimated expenditure as of March 22, 2011.

PUBLIC DONATION INFORMATION

- The most effective way people can assist relief efforts is by making cash contributions to humanitarian organizations that are conducting relief operations. A list of humanitarian organizations that are accepting cash donations for earthquake and tsunami response efforts in Japan can be found at www.usaid.gov/japanquake or www.interaction.org.
- USAID encourages cash donations because they allow aid professionals to procure the exact items needed (often in the affected region); reduce the burden on scarce resources (such as transportation routes, staff time, warehouse space, etc.); can be transferred very quickly and without transportation costs; support the economy of the disaster-stricken region; and ensure culturally, dietary, and environmentally appropriate assistance.
- More information can be found at:
    - The Center for International Disaster Information: www.cidi.org or (703) 276-1914
    - Information on relief activities of the humanitarian community can be found at www.reliefweb.int

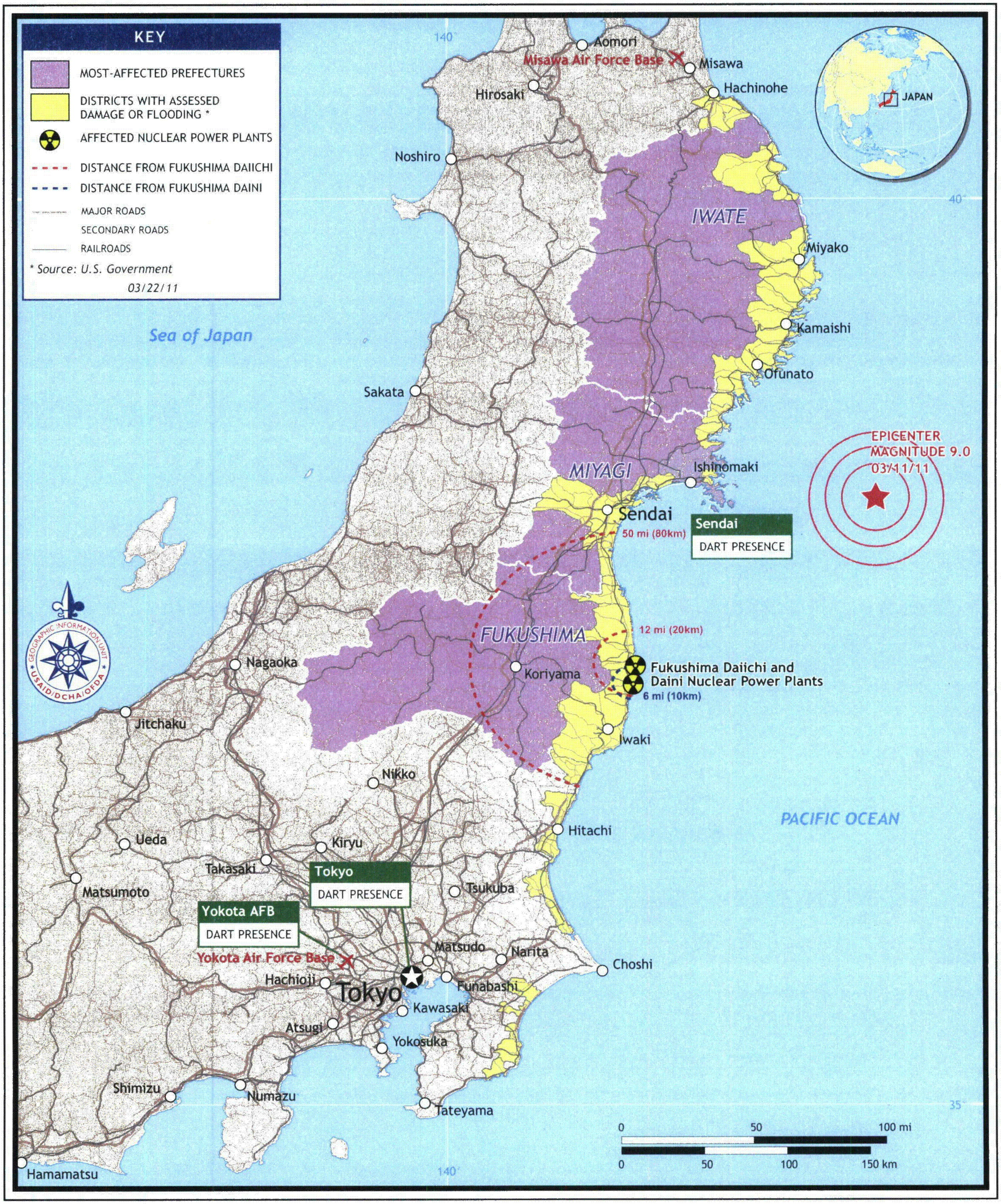
USAID/OFDA bulletins appear on the USAID web site at http://www.usaid.gov/our_work/humanitarian_assistance/disaster_assistance/

Helen Ho, Lily Frey, and Patricia Shea
Information Coordinators
Pacific Tsunami and Japan Earthquake Response Management Team
RMTPACTSU_INC@ofda.gov
202-712-0039

[1] Figures remain preliminary and are expected to change.

[2] National Police Agency (NPA)
[3] U.S. Department of Defense (DoD)

USG HUMANITARIAN ASSISTANCE TO JAPAN FOR THE EARTHQUAKE AND TSUNAMI



From: RST01 Hoc
Sent: Tuesday, March 22, 2011 7:35 PM
To: Hoc, RST16
Subject: FW: 03.22.11 - USAID/DCHA Japan Earthquake and Tsunami Fact Sheet #12
Attachments: image001.png; image005.png; 03.22.11 - USAID-DCHA Japan EQ and Tsunami Fact Sheet #12.pdf; 03.22.11 - Japan Earthquake and Tsunami Map.pdf; image003.png

---

From: LIA02 Hoc
Sent: Tuesday, March 22, 2011 7:17 PM
To: ET02 Hoc; PMT01 Hoc; RST01 Hoc
Subject: FW: 03.22.11 - USAID/DCHA Japan Earthquake and Tsunami Fact Sheet #12

General data about the suffering and general humanitarian efforts, and an interesting map showing the affected areas and NPPs.

From: RMTPACTSU_ELNRC [mailto:RMTPACTSU_ELNRC@ofda.gov]
Sent: Tuesday, March 22, 2011 7:09 PM
To: LIA11 Hoc; LIA01 Hoc; LIA02 Hoc; LIA07 Hoc; LIA08 Hoc; LIA12 Hoc; LIA04 Hoc; Harrington, Holly; McIntyre, David; Burnell, Scott; ET07 Hoc
Subject: 03.22.11 - USAID/DCHA Japan Earthquake and Tsunami Fact Sheet #12

Subject: 03.22.11 - USAID/DCHA Japan Earthquake and Tsunami Fact Sheet #12

Please find attached and pasted below the USAID/DCHA Japan Earthquake and Tsunami Fact Sheet #12 and accompanying map, both dated March 22, 2011. These documents have been approved for public use.
If you experience formatting issues in the text below, please refer to the attached document.

To be added to or removed from this distribution list, please email rmtpactsu_inc@ofda.gov.

USAID
FROM THE AMERICAN PEOPLE

BUREAU FOR DEMOCRACY, CONFLICT, AND HUMANITARIAN ASSISTANCE (DCHA)
OFFICE OF U.S. FOREIGN DISASTER ASSISTANCE (OFDA)

Japan – Earthquake and Tsunami

Fact Sheet #12, Fiscal Year (FY) 2011 March 22, 2011

Note: The last fact sheet was dated March 21, 2011.

KEY DEVELOPMENTS

- The earthquake and tsunami have resulted in nearly 9,200 deaths and left nearly 13,800 people missing, as reported by the Government of Japan (GoJ) on March 22. The natural disasters also damaged or destroyed more than 128,000 buildings and 1,700 roads.

KKKK-45

- Technicians and engineers have been repairing communications, transportation, and basic service infrastructure, allowing increased numbers of displaced persons to return home or travel to central evacuation centers.
- A magnitude 6.6 aftershock struck off the coast of eastern Honshu Island at a depth of 16.5 miles at approximately 1700 hours local time on March 22. According to the U.S. Geological Survey (USGS), the epicenter was located approximately 170 miles east of Iwaki City, Fukushima Prefecture, and 182 miles east-southeast of Sendai, Miyahi Prefecture. USGS reports that nearby towns on Honshu Island experienced Level III shaking on the Modified Mercalli Intensity Scale, indicating that the earthquake was not likely to result in any damage to structures.

NUMBERS AT A GLANCE[1]		SOURCE
Confirmed Deaths	9,199	GoJ NPA[2] – March 22, 2011
Missing Persons	13,786	GoJ NPA – March 22, 2011
Number of People in Evacuation Centers	263,915	GoJ NPA – March 22, 2011

FY 2011 HUMANITARIAN FUNDING PROVIDED TO JAPAN TO DATE
USAID/OFDA Assistance for the Japan Earthquake and Tsunami... $7,135,894
DoD[3] Humanitarian Assistance for the Japan Earthquake and Tsunami.. $20,900,000
Total USAID and DoD Assistance for the Japan Earthquake and Tsunami.. $28,035,894

CONTEXT

- On March 11 at 0046 hours Eastern Standard Time, or 1446 hours Japan Standard Time, a magnitude 9.0 earthquake occurred off the east coast of Honshu Island—approximately 231 miles northeast of Tokyo—at a depth of approximately 15 miles, generating a tsunami that struck the eastern coast of Japan and resulted in additional fatalities and damage, particularly in Miyagi, Fukushima, and Iwate prefectures. Furthermore, the natural disasters led to a serious nuclear incident at the Fukushima Daiichi power plant located approximately 150 miles north of Tokyo.
- USAID immediately activated a Response Management Team in Washington, D.C., and deployed a Disaster Assistance Response Team (DART)—including urban search and rescue (USAR) specialists and nuclear experts—to support Japanese emergency response efforts. On March 11, U.S. Ambassador John V. Roos declared a disaster due to the effects of the earthquake and tsunami in Japan.

Humanitarian Situation and Response

- The newly created GoJ Special Headquarters—designed to assist disaster-affected individuals—began operations on March 20. The headquarters is relocating displaced individuals to unaffected prefectures and working to minimize the burden on local governments in the host prefectures. According to the GoJ Chief Cabinet Secretary, the special headquarters will meet regularly to ensure that displaced individuals receive adequate support. On March 22, the GoJ reported that approximately 264,000 people remained in shelters, representing a decrease of more than 55,000 people—17 percent of the population in shelters—since March 21.
- The number of evacuation centers hosting displaced persons has also decreased as road clearance has enabled displaced persons to congregate in larger evacuation centers that are easier to reach with humanitarian assistance.
- Electrical supply continues to improve with power restored to approximately 27,000 households since March 21, according to **the** U.N. Office for the Coordination of Humanitarian Affairs (OCHA). As of March 22, approximately 217,000 households remained without power.
- Technicians have restored more than 90 percent of earthquake- and tsunami-damaged telecommunications and 90 percent of damaged roads are now accessible to the public, according to OCHA.

Logistics and Relief Supplies

- On March 22, the second shipment of equipment for a DoD-funded high-flow pump system arrived in Japan via two Australian military flights. The equipment will be assembled and transferred to the Fukushima Daiichi power plant to augment cooling capacity at the facility. The initial shipment of equipment for the pump system arrived in Japan on March 21.
- In response to a GoJ request, 10,000 sets of USAID/OFDA-funded personal protective equipment—including suits, masks, gloves, decontamination bags, and other supplies—have arrived at Yokota Air Force Base, near Tokyo. The equipment is en route to individuals working near the nuclear exclusion zone around Fukushima Daiichi nuclear power plant.
- On March 22, DoD delivered 635 daily servings of drinking water and 32,720 daily servings of food to benefit more than 5,500 displaced individuals. At present, 17 ships and an estimated 17,000 personnel are involved in or prepared to assist with humanitarian efforts in Japan.

Situation at Nuclear Power Plants

- According to the U.N. World Health Organization (WHO), tests have found limited radioactive contamination of drinking water and certain foods grown in the vicinity of the Daiichi nuclear power plant. As a precautionary measure, the GoJ has suspended shipments of milk from Fukushima Prefecture and leafy vegetables from Ibaraki, Tochigi, Gunma, and Fukushima prefectures, as well as recommended that individuals living near the Fukushima Daiichi facility avoid drinking tap water. However, the GoJ reported that consuming contaminated food or water would not pose a health risk, and WHO reported no evidence that contaminated food has reached other countries.
- U.S. Department of Energy, DART, U.S. Nuclear Regulatory Commission, and U.S. Embassy staff continue to actively monitor and triangulate information on radiation levels in Tokyo. To date, U.S. agencies continue to report that there have not been any increases in radiation levels in Tokyo. DART nuclear specialists also note no significant changes in the situation at the Fukushima Daiichi power plant in recent days.

USAID AND DOD HUMANITARIAN ASSISTANCE TO JAPAN

Implementing Partner	*Activity*	*Location*	*Amount*
	USAID/OFDA ASSISTANCE[1]		
U.S. Embassy in Tokyo	Emergency Relief Support	Affected Areas	$100,000
DoD	USAR Operations (Transport of USAR cargo)	Affected Areas	$1,000,000
L.A. County USAR Team	USAR Operations	Affected Areas	$2,058,000
Fairfax County USAR Team	USAR Operations	Affected Areas	$2,058,000
	USAID/DART Support Costs		$1,618,240
	Administrative Support		$301,654
TOTAL USAID/OFDA			**$7,135,894**
	DOD ASSISTANCE		
	Emergency Relief Support	Affected Areas	$20,900,000
TOTAL DOD			**$20,900,000**
TOTAL USG HUMANITARIAN ASSISTANCE TO JAPAN IN FY 2011			**$28,035,894**

[1] USAID/OFDA funding represents anticipated or actual obligated amounts as of March 22, 2011. Amounts are subject to change.
[2]Estimated expenditure as of March 22, 2011.

PUBLIC DONATION INFORMATION

- The most effective way people can assist relief efforts is by making cash contributions to humanitarian organizations that are conducting relief operations. A list of humanitarian organizations that are accepting cash donations for earthquake and tsunami response efforts in Japan can be found at www.usaid.gov/japanquake or www.interaction.org.
- USAID encourages cash donations because they allow aid professionals to procure the exact items needed (often in the affected region); reduce the burden on scarce resources (such as transportation routes, staff time, warehouse space, etc.); can be transferred very quickly and without transportation costs; support the economy of the disaster-stricken region; and ensure culturally, dietary, and environmentally appropriate assistance.
- More information can be found at:
  - The Center for International Disaster Information: www.cidi.org or (703) 276-1914
  - Information on relief activities of the humanitarian community can be found at www.reliefweb.int

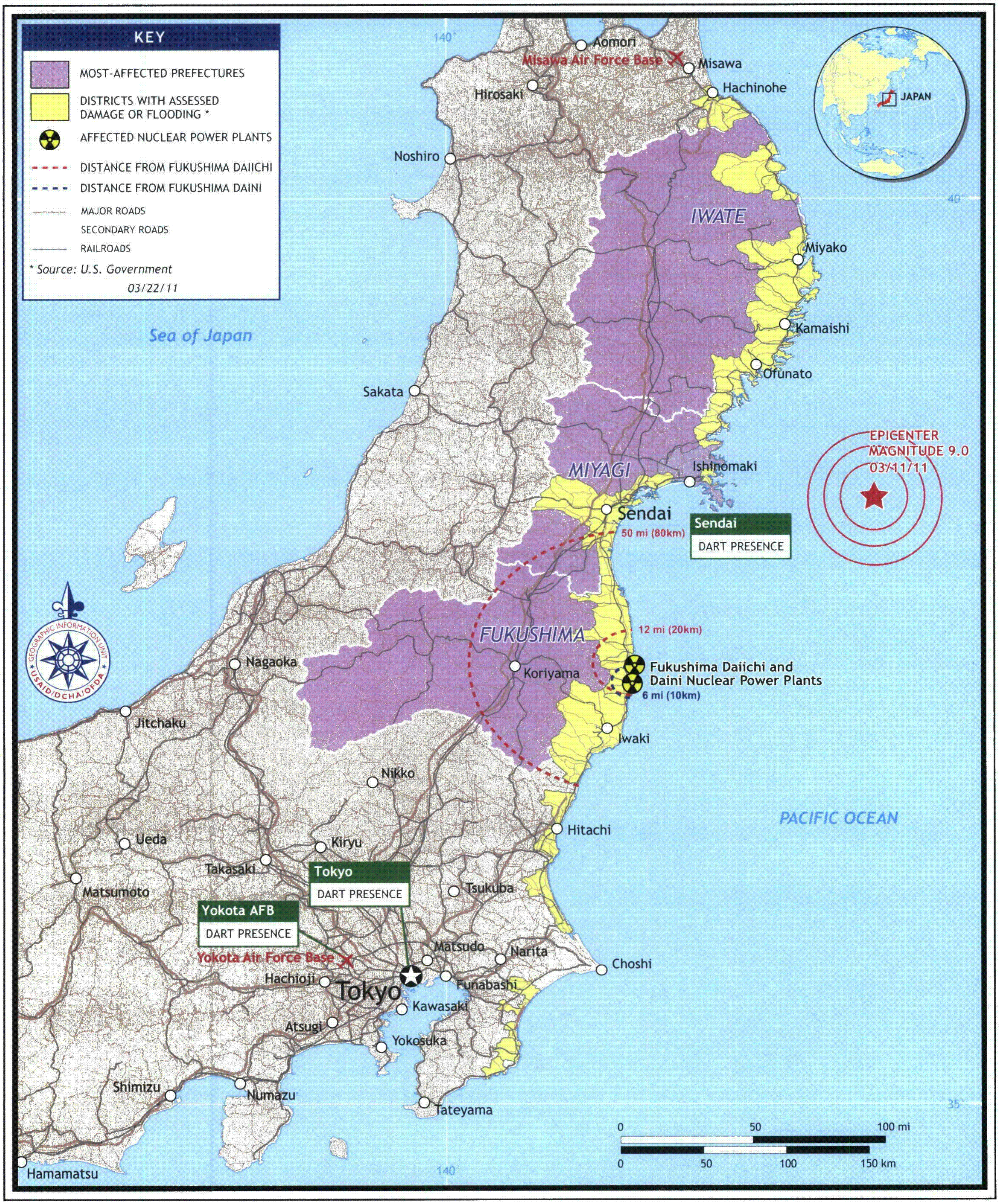
USAID/OFDA bulletins appear on the USAID web site at http://www.usaid.gov/our_work/humanitarian_assistance/disaster_assistance/

Helen Ho, Lily Frey, and Patricia Shea
Information Coordinators
Pacific Tsunami and Japan Earthquake Response Management Team
RMTPACTSU_INC@ofda.gov
202-712-0039

[1] Figures remain preliminary and are expected to change.
[2] National Police Agency (NPA)
[3] U.S. Department of Defense (DoD)

USAID
FROM THE AMERICAN PEOPLE

USG HUMANITARIAN ASSISTANCE TO JAPAN FOR THE EARTHQUAKE AND TSUNAMI



From: Devercelly, Richard
Sent: Tuesday, March 22, 2011 8:28 PM
To: LIA03 Hoc
Subject: RE: Dosimeter Numbers

My dosimeter is Spare 2 and issued by the TTC RSO. If you still need the number, please tell me where to find it.

From: LIA03 Hoc
Sent: Tuesday, March 22, 2011 7:56 PM
To: Liaison Japan
Cc: O'Donnell, John
Subject: Dosimeter Numbers

Dear Team – When you get the chance, please email the International Liaison Team your dosimeter number. In our haste to get you out to Japan, we neglected to get that information from you and the RSO needs it for NRC records. In addition, if you are planning to stay past the end of March, please let us know, as we will need to get you a new dosimeter. The ones you have now are only for use during the second quarter.

Thank you for your help.
The International Liaison Team

KKKK-46

From:	LIA07 Hoc
Sent:	Tuesday, March 22, 2011 6:20 AM
To:	LIA07 Hoc
Subject:	0600 EDT (March 22, 2011) USNRC Earthquake/Tsunami Status Update
Attachments:	NRC Status Update 3.22.11--0600 EDT.pdf

Please find attached a 0600 EDT (March 22, 2011) status update from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami.

Please note that this information is "~~Official Use Only~~" and is only being shared within the federal family.

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

-Jim

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

KKKK-47

From: Mamish, Nader
Sent: Tuesday, March 22, 2011 12:23 PM
To: LIA03 Hoc
Cc: Harrington, Holly
Subject: RE: bios for travelers
Attachments: Transition Update - Tuesday, March 15 - 3pm Shift Change

Bois should go to MOFA (see Item 7 in the attached). Not sure whether Jack is going. Margie is deciding ...

From: LIA03 Hoc
Sent: Tuesday, March 22, 2011 11:01 AM
To: Harrington, Holly; Mamish, Nader
Subject: bios for travelers

To whom do we send the bios for Japan travelers? We have bios for everyone in the second wave of travelers, except Alan Blamey (already in flight) and Jack Ramsey.

KKKK-48

From: Harrington, Holly
Sent: Tuesday, March 22, 2011 1:15 PM
To: LIA03 Hoc
Subject: RE: bios for travelers

We would appreciate having them just in case they are useful. thanks

---

From: LIA03 Hoc
Sent: Tuesday, March 22, 2011 11:01 AM
To: Harrington, Holly; Mamish, Nader
Subject: bios for travelers

To whom do we send the bios for Japan travelers? We have bios for everyone in the second wave of travelers, except Alan Blamey (already in flight) and Jack Ramsey.

KKKK-49

From: LIA10 Hoc
Sent: Wednesday, March 23, 2011 2:39 PM
To: LIA02 Hoc; LIA03 Hoc
Subject: Nikkei article: Tepco reports black smoke "ending"

2011/3/23 17:52 from Nikkei subscriber website

Tepco reports Unit 3 black smoke "ending"

According to the Fukushima Office of Tepco, the black smoke from Unit 3 of Fukushima Daiichi NPS was coming to an end as of 5:10pm. The smoke is thought to have originated from the eastern side of the building. Tepco reports no change in radiation levels near the main gate of the plant just before and after the time the black smoke arose. Workers in Units 1 through 3 are still evacuated.

によると、福島第１原発３号機から出ていた黒煙は、午後５時 10 分時点で収まりつつある。煙の発生場所は建屋東側とみられる。黒煙が上がった時刻の前後で、原発正門付近の放射線量に変化はないとしている。１～３号機の作業員は現在も避難しているという。

福島原発３号機の黒煙「収まりつつある」　東電

東京電力福島事務所によると、福島第１原発３号機から出ていた黒煙は、午後５時 10 分時点で収まりつつある。煙の発生場所は建屋東側とみられる。黒煙が上がった時刻の前後で、原発正門付近の放射線量に変化はないとしている。１～３号機の作業員は現在も避難しているという。

KKKK-50

From: Atkinson, David R <AtkinsonDR@state.gov>
Sent: Tuesday, March 22, 2011 1:45 PM
To: LIA02 Hoc; Emche, Danielle; LIA03 Hoc
Cc: Christensen, Brent W; Talbot, Nancy E; Schrage, Barbara; Abrams, Charlotte
Subject: Re: Request to share data on Japan event with Taiwan

Danielle,

I haven't been able to catch you on the phone today, but did speak with TECRO vis-a-vis your offer to brief them by phone. They would prefer a face-to-face discussion if possible. They believe it would be best to pass any info NRC can share to their AEC rep at the meeting this week, rather than to non-experts tonight.

I am out of the office today, but if we can't accomodate their request to conduct this brief as part of the meeting with AEC this week, please let EAP/TC Director Brent Christensen know. He can be reached at 202-647-7712. Thanks,

David

From: LIA02 Hoc [mailto:LIA02.Hoc@nrc.gov]
Sent: Monday, March 21, 2011 06:44 PM
To: Atkinson, David R; Emche, Danielle <Danielle.Emche@nrc.gov>; LIA03 Hoc <LIA03.Hoc@nrc.gov>
Cc: Christensen, Brent W; Talbot, Nancy E; Schrage, Barbara; Abrams, Charlotte <Charlotte.Abrams@nrc.gov>; LIA03 Hoc <LIA03.Hoc@nrc.gov>
Subject: RE: Request to share data on Japan event with Taiwan

David,

NRC would like to request a teleconference, rather than a face-to-face meeting, which could be scheduled with various TECRO/AIT representatives and NRC experts. Tomorrow evening would be possible for NRC. During the teleconference, NRC will not be able to provide a written packet of information. We can provide you with a description of our approach for the plume modeling. We welcome your questions and will answer them to the best of our ability.

Please understand that this event doesn't quite fit the description of what was envisioned by the NRC/AEC Arrangement for technical exchange because this was not a U.S. event. Therefore, we won't be able to provide the same type of specific data that we would normally provide in technical exchange with TECRO. To put this into context, this would be like NRC presenting to Japan about our assessment of nuclear regulatory activities in Taiwan. Please let me know your interest in/or availability for scheduling a conference call.

Best regards,
Danielle

From: Atkinson, David R [mailto:AtkinsonDR@state.gov]
Sent: Monday, March 21, 2011 5:25 PM
To: Emche, Danielle; LIA02 Hoc; LIA03 Hoc
Cc: Christensen, Brent W; Talbot, Nancy E; Schrage, Barbara
Subject: Request to share data on Japan event with Taiwan

Danielle,

KKKK-51

Following up my call this afternoon, we've chatted with TECRO about this a little more today. Since it was an offer to them by Assistant Secretary Campbell to share info under the January agreement, rather than a specific request, they didn't have enumerated questions. However, they would very much welcome any data/projections we've been given by IAEA or other sources that we are willing to share. They did confirm that the meeting with the AEC rep would be an appropriate venue to turn any data we can release over, without prejudicing the actual business goals of that meeting.

My suggested course of action would be to see if NRC could prepare a packet of info that can be released to help AEC and the Taiwan authorities improve or enhance their own analysis as our way of fulfilling the January agreement. Once we're clear on what we can share, we can discuss the right way to present it without disrupting NRC ops. Let me know if this is something NRC is willing to consider, or if other problems come up that we can help out with. Happy to discuss further and thanks for your help this afternoon.

David Atkinson
Deputy Director
Office for Taiwan Coordination (EAP/TC)
202-647-7713 (office)

SBU
This email is UNCLASSIFIED.

From: LIA02 Hoc
Sent: Wednesday, March 23, 2011 5:42 AM
To: Doane, Margaret; Mamish, Nader
Cc: LIA03 Hoc; Abrams, Charlotte; Schwartzman, Jennifer; Foggie, Kirk; Smith, Brooke; Kreuter, Jane
Subject: NRC JapanTeam Meetings - March 23

Information from call with Kirk and Brooke concerning today's (March 23) meetings:

NISA – Meeting with NRC JapanTeam and NISA Senior Leadership was successful. Meetings between NRC/NISA continue to improve as the organization's staffs continue build relationships and become more comfortable with one another. Discussed the need for NISA and TEPCO to align and better coordinate. Another meeting is scheduled between NRC/NISA for 11am (Japan time) to discuss their main areas-of-interest: 1) radiation monitoring; 2) severe accident mitigation in the near term; and 3) mid-to-long-term strategies for coping with the situation, including decommissioning the sites and advice from experiences with TMI.

TEPCO - Meeting with NRC JapanTeam and PMT via teleconference. Main topic of discussion was saltwater deposition. NRC informed TEPCO that they believe that TEPCO should start injecting freshwater (with or without boron) as soon as feasible. NRC, DOE and TEPCO are all reanalyzing their information (NRC was believed to be the most conservative in their predictions).

Cabinet Minister – Meeting is planned for tonight at 8:00pm (Japan time) to clarify the organizational structure in the current situation.

KKKK-52

From: RMTPACTSU_ELNRC <RMTPACTSU_ELNRC@ofda.gov>
Sent: Wednesday, March 23, 2011 3:11 PM
To: LIA01 Hoc; LIA11 Hoc; LIA02 Hoc; LIA03 Hoc; LIA04 Hoc; LIA07 Hoc; LIA07 Hoc; LIA08 Hoc; LIA12 Hoc
Subject: ACTION: FEMA Liaisons in TWFN Lobby

ESCORT TO OPS CENTER REQUIRED: Security in the TWFN Guard Station just informed me that two (2) FEMA Liaisons are in the Lobby looking for an escort to Operations Center.

KKKK-53

From: LIA07 Hoc
Sent: Wednesday, March 23, 2011 6:17 AM
Subject: 0600 EDT (March 23, 2011) USNRC Earthquake/Tsunami Status Update
Attachments: NRC Status Update 3.23.11--0600 EDT.pdf

Please find attached a 0600 EDT (March 23, 2011) status update from the US Nuclear Regulatory Commission's Emergency Operations Center regarding the impacts of the earthquake/tsunami.

Please note that this information is "Official Use Only" and is only being shared within the federal family.

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

-Jim

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

KKKK-54

From: O'Donnell, John
Sent: Wednesday, March 23, 2011 7:48 AM
To: Kolb, Timothy; LIA03 Hoc; Liaison Japan
Subject: RE: Dosimeter Numbers

Thanks Tim,
I will get the info from Roger.

John O'Donnell

From: Kolb, Timothy
Sent: Wednesday, March 23, 2011 5:53 AM
To: LIA03 Hoc; Liaison Japan
Cc: O'Donnell, John
Subject: RE: Dosimeter Numbers

I provided the paperwork for the Japan team to Roger Pedersen on Monday with the appropriate signatures. He should have what you need.
Thank you,
Tim Kolb

From: LIA03 Hoc
Sent: Tuesday, March 22, 2011 8:50 PM
To: Liaison Japan
Cc: O'Donnell, John
Subject: RE: Dosimeter Numbers

Dear Team – As a follow-up to our previous email, we only need the dosimeter numbers from the original team members in Japan, not the relief team arriving there over the next few days. As well, you can find your dosimeter number on the back of your dosimeter of you snap it out of its holder. There are two numbers on the back. Please send us both, as we are not sure which number the RSO is requesting.

Please let us know if you have any additional questions,
NRC International Liaison Team

From: LIA03 Hoc
Sent: Tuesday, March 22, 2011 7:56 PM
To: Liaison Japan
Cc: O'Donnell, John
Subject: Dosimeter Numbers

Dear Team – When you get the chance, please email the International Liaison Team your dosimeter number. In our haste to get you out to Japan, we neglected to get that information from you and the RSO needs it for NRC records. In addition, if you are planning to stay past the end of March, please let us know, as we will need to get you a new dosimeter. The ones you have now are only for use during the second quarter.

Thank you for your help.
The International Liaison Team

KKKK-55

3月30日　　福島第一(1F)

測定場所　①事務本館北(2号機より北西約0．5キロ)　②体育館付近(MP－5東側)(2号機より西北西約0．9キロ)
③西門付近 (MP-5付近)(2号機より西約1．1キロ)　④正門付近前(MP-6付近)(2号機より西南西約1．0キロ)
⑤免震棟前(2号機より北西約0．5キロ)　⑥事務本館南側　⑦正門
MC:モニタリングカー　可搬:可搬型MP

定場所	⑧																							
間	12:00	12:10	12:20	12:30	12:40	12:50	13:00	13:10	13:20	13:30	13:40	13:50	14:00	14:10	14:20	14:30	14:40	14:50	15:00	15:10	15:20	15:30	15:40	15:50
C 測定値(μSv/h)	109.2	109.0	109.3	109.2	109.1	108.9	109.0	108.8	108.8	108.8	108.2	108.3	108.2	108.1	108.2	108.1	108.1	107.8	107.7	107.6	107.5	107.7		
中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D		
⑥本館南(μSv/h)	1,050	—	—	1,050	—	—	1,040	—	—	1,050	—	—	1,050	—	—	1,040	—	—	1,050	—	—	1,030		
⑦正門(μSv/h)	167	—	—	168	—	—	165	—	—	165	—	—	164	—	—	163	—	—	163	—	—	162		
③西門(μSv/h)	76.5	—	—	73.5	—	—	76.6	—	—	73.9	—	—	75.8	—	—	75.8	—	—	74.7	—	—	73.4		
風向	東南東	東南東	東	東	東南東	東	東北東	南東	東	東	東	東	東	東	東南東	東	東	南東	東	東	南	南南東		
風速(m/s)	2.8	2.4	2.9	3.2	2.8	2.5	2.1	2.3	2.6	2.9	3.0	3.4	3.4	3.1	2.2	2.4	2.6	2.4	2.4	1.3	1.0	1.1		

定場所																								
間	16:00	16:10	16:20	16:30	16:40	16:50	17:00	17:10	17:20	17:30	17:40	17:50	18:00	18:10	18:20	18:30	18:40	18:50	19:00	19:10	19:20	19:30	19:40	19:50
C 測定値(μSv/h)																								
中性子																								
⑥本館南(μSv/h)																								
⑦正門(μSv/h)																								
③西門(μSv/h)																								
風向																								
風速(m/s)																								

定場所																								
間	20:00	20:10	20:20	20:30	20:40	20:50	21:00	21:10	21:20	21:30	21:40	21:50	22:00	22:10	22:20	22:30	22:40	22:50	23:00	23:10	23:20	23:30	23:40	23:50
C 測定値(μSv/h)																								
中性子																								
⑥本館南(μSv/h)																								
⑦正門(μSv/h)																								
③西門(μSv/h)																								
風向																								
風速(m/s)																								

KKKK-56

3月30日　　福島第一(1F)

測定場所　①事務本館北(2号機より北西約0．5キロ)　②体育館付近(MP－5東側)(2号機より西北西約0．9キロ)
③西門付近 (MP-5付近)(2号機より西約1．1キロ)　④正門付近前(MP-6付近)(2号機より西南西約1．0キロ)
⑤免震棟前(2号機より北西約0．5キロ)　⑥事務本館南側　⑦正門
MC:モニタリングカー　可搬:可搬型MP

定場所	⑨											
間	0:00	0:10	0:20	0:30	0:40	0:50	1:00	1:10	1:20	1:30	1:40	1:50
IC 測定値(μSv/h)	112.5	112.4	112.1	111.8	111.8	111.9	111.8	111.7	111.6	111.4	111.2	111.2
中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
⑥本館南(μSv/h)	1,090	−	−	1,100	−	−	1,100	−	−	1,090	−	−
⑦正門(μSv/h)	168	−	−	167	−	−	168	−	−	166	−	−
③西門(μSv/h)	80.1	−	−	82.2	−	−	82.3	−	−	81.2	−	−
風向	北東	北東	東	北東	東	北西	北北西	北西	北西	北西	南西	南
風速(m/s)	0.3	0.5	0.4	0.4	0.4	0.8	0.8	1.1	1.0	0.9	0.8	0.9

定場所												
間	2:00	2:10	2:20	2:30	2:40	2:50	3:00	3:10	3:20	3:30	3:40	3:50
IC 測定値(μSv/h)	111.1	111.1	110.9	110.8	110.8	110.7	110.7	111.3	111.3	111.1	111.1	111.0
中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
⑥本館南(μSv/h)	1,090	−	−	1,080	−	−	1,080	−	−	1,080	−	−
⑦正門(μSv/h)	167	−	−	167	−	−	166	−	−	169	−	−
③西門(μSv/h)	81.1	−	−	80.3	−	−	79.6	−	−	80	−	−
風向	南	南南東	南南東	西南西	北北西	西	北西	西	北	北西	西	北西
風速(m/s)	0.9	0.5	0.5	0.4	0.5	0.2	0.3	0.3	0.4	0.3	0.3	0.7

定場所	⑨											
間	4:00	4:10	4:20	4:30	4:40	4:50	5:00	5:10	5:20	5:30	5:40	5:50
IC 測定値(μSv/h)	110.9	110.8	110.8	110.8	110.6	110.6	110.6	110.6	110.4	110.3	110.2	110.1
中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
⑥本館南(μSv/h)	1,080	−	−	1,080	−	−	1,080	−	−	1,080	−	−
⑦正門(μSv/h)	165	−	−	167	−	−	166	−	−	167	−	−
③西門(μSv/h)	82.4	−	−	80.7	−	−	80.1	−	−	80.7	−	−
風向	西	西	西南西	南西	南西	西南西	北北西	西	西南西	西	北北東	西北西
風速(m/s)	0.6	0.6	0.6	0.7	0.7	0.7	0.5	0.5	0.8	0.6	0.4	0.4

定場所												
間	6:00	6:10	6:20	6:30	6:40	6:50	7:00	7:10	7:20	7:30	7:40	7:50
IC 測定値(μSv/h)	110.2	110.3	110.1	109.9	109.8	110.0	110.0	109.8	109.9	109.9	109.7	109.8
中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
⑥本館南(μSv/h)	1,080	−	−	1,070	−	−	1.070	−	−	1,070	−	−
⑦正門(μSv/h)	163	−	−	166	−	−	165	−	−	167	−	−
③西門(μSv/h)	80.1	−	−	78.3	−	−	78.8	−	−	78.6	−	−
風向	東北東	西	西南西	西南西	西北西	北西	西北西	西南西	西	西北西	北西	北北西
風速(m/s)	0.4	0.3	0.3	0.5	0.6	0.5	0.5	0.8	0.6	0.5	0.6	0.6

定場所	⑨											
間	8:00	8:10	8:20	8:30	8:40	8:50	9:00	9:10	9:20	9:30	9:40	9:50
IC 測定値(μSv/h)	109.8	109.7	109.6	109.4	109.5	109.6	109.3	109.5	109.7	110.6	109.2	109.1
中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
⑥本館南(μSv/h)	1,060	−	−	1,060	−	−	1,050	−	−	1,040	−	−
⑦正門(μSv/h)	166	−	−	165	−	−	169	−	−	187	−	−
③西門(μSv/h)	79.1	−	−	79.1	−	−	78.2	−	−	78.5	−	−
風向	西北西	北東	北	東北東	東	東南東	東	東	東	東	東	東
風速(m/s)	0.6	0.6	0.8	1.4	1.6	2.2	2.2	2.3	2.2	2.8	2.8	2.7

定場所												
間	10:00	10:10	10:20	10:30	10:40	10:50	11:00	11:10	11:20	11:30	11:40	11:50
IC 測定値(μSv/h)	109.3	113.1	112.1	114.3	112.4	116.0	111.5	109.9	109.7	109.5	109.6	109.6
中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
⑥本館南(μSv/h)	1.030	−	−	1,030	−	−	1,050	−	−	1.050	−	−
⑦正門(μSv/h)	188	−	−	172	−	−	164	−	−	163	−	−
③西門(μSv/h)	79.5	−	−	82.7	−	−	79.0	−	−	76.5	−	−
風向	東	東	東	東	東	東	東	東南東	東南東	東南東	東南東	東南東
風速(m/s)	2.3	2.7	2.9	2.6	2.6	2.5	2.6	2.2	2.8	2.1	2.9	2.8

測定場所　①事務本館北(2号機より北西約0．5キロ)　②体育館付近(MP－5東側)(2号機より西北西約0．9キロ)

3月29日　福島第一(1F)　③西門付近 (MP-5付近)(2号機より西約1．1キロ)　④正門付近前(MP-6付近)(2号機より西南西約1．0キロ)

⑤免震棟前(2号機より北西約0．5キロ)　⑥事務本館南側　⑦正門

MC:モニタリングカー　可搬:可搬型MP

定場所	③																							
間	12:00	12:10	12:20	12:30	12:40	12:50	13:00	13:10	13:20	13:30	13:40	13:50	14:00	14:10	14:20	14:30	14:40	14:50	15:00	15:10	15:20	15:30	15:40	15:50
C 測定値(μSv/h)	122.5	121.8	121.4	120.8	120.5	120.4	120.2	118.5	119.4	118.0	117.7	117.5	117.2	116.7	116.9	116.5	116.4	116.1	116.0	115.8	117.6	137.8	119.5	117.5
中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
⑥本館南(μSv/h)	1,170	—	—	1,150	—	—	1,130	—	—	1,120	—	—	1,130	—	—	1,130	—	—	1,220	—	—	1,210	—	—
⑦正門(μSv/h)	177	—	—	178	—	—	177	—	—	178	—	—	177	—	—	176	—	—	175	—	—	175	—	—
③西門(μSv/h)	86	—	—	85.6	—	—	84	—	—	84.8	—	—	82.6	—	—	81	—	—	82.8	—	—	98.8	—	—
風向	西南西	南西	西	西	西	西	北西	西	西	西	南南西	北北西	東	東	東南東	東南東	東	東南東	南南東	東	東	東	東南東	南東
風速(m/s)	2.8	2.6	2.8	2.7	2.5	3.3	3.4	2.8	2.4	2.2	2.0	1.6	2.6	2.0	2.3	1.5	1.5	1.7	1.5	1.9	2.5	2.7	2.8	2.5

定場所																								
間	16:00	16:10	16:20	16:30	16:40	16:50	17:00	17:10	17:20	17:30	17:40	17:50	18:00	18:10	18:20	18:30	18:40	18:50	19:00	19:10	19:20	19:30	19:40	19:50
C 測定値(μSv/h)	117.5	126.2	121.4	127.9	123.1	119.9	121.5	119.9	118.1	117.7	117.7	117.5	117.1	120.1	118.1	120.2	117.4	116.4	116.0	115.9	115.7	115.4	115.3	115.1
中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
⑥本館南(μSv/h)	1,180	—	—	1,130	—	—	1,160	—	—	1,170	—	—	1,160	—	—	1,110	—	—	1,110	—	—	1,110	—	—
⑦正門(μSv/h)	174	—	—	194	—	—	175	—	—	176	—	—	173	—	—	177	—	—	172	—	—	171	—	—
③西門(μSv/h)	82.4	—	—	90.3	—	—	83.9	—	—	83	—	—	84	—	—	85	—	—	82.2	—	—	81	—	—
風向	南東	東北東	東	東	東南東	東	東	東南東	東	東南東	東	東	東	北	北西	北西	西北西	西	西	北西	北西	西	西	北西
風速(m/s)	2.7	2.1	2.0	1.7	1.5	1.8	1.4	1.3	0.9	1.7	1.5	1.4	1.0	0.7	0.4	0.7	0.6	0.8	1.0	0.8	0.9	0.9	1.0	1.1

定場所																								
間	20:00	20:10	20:20	20:30	20:40	20:50	21:00	21:10	21:20	21:30	21:40	21:50	22:00	22:10	22:20	22:30	22:40	22:50	23:00	23:10	23:20	23:30	23:40	23:50
C 測定値(μSv/h)	115.0	115.0	114.5	114.4	114.3	114.2	114.0	113.9	113.7	113.2	113.2	113.1	113.1	113.0	112.9	112.7	112.6	112.5	112.4	112.6	112.4	112.2	112.5	113.2
中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
⑥本館南(μSv/h)	1,100	—	—	1,110	—	—	1,100	—	—	1,100	—	—	1,100	—	—	1,100	—	—	1,100	—	—	1,110	—	—
⑦正門(μSv/h)	171	—	—	169	—	—	169	—	—	169	—	—	170	—	—	168	—	—	169	—	—	168	—	—
③西門(μSv/h)	81.5	—	—	82	—	—	82.6	—	—	81.3	—	—	81	—	—	82	—	—	82	—	—	82	—	—
風向	北西	西	西	西南西	北西	西	北西	北西	北西	南西	南南西	西南西	西	西	北東	北	西	西北西	南西	南西	南東	南東	東	東
風速(m/s)	0.9	0.8	0.9	0.7	0.5	0.7	0.9	0.6	0.6	0.2	0.3	0.4	0.4	0.5	0.4	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.4	0.5

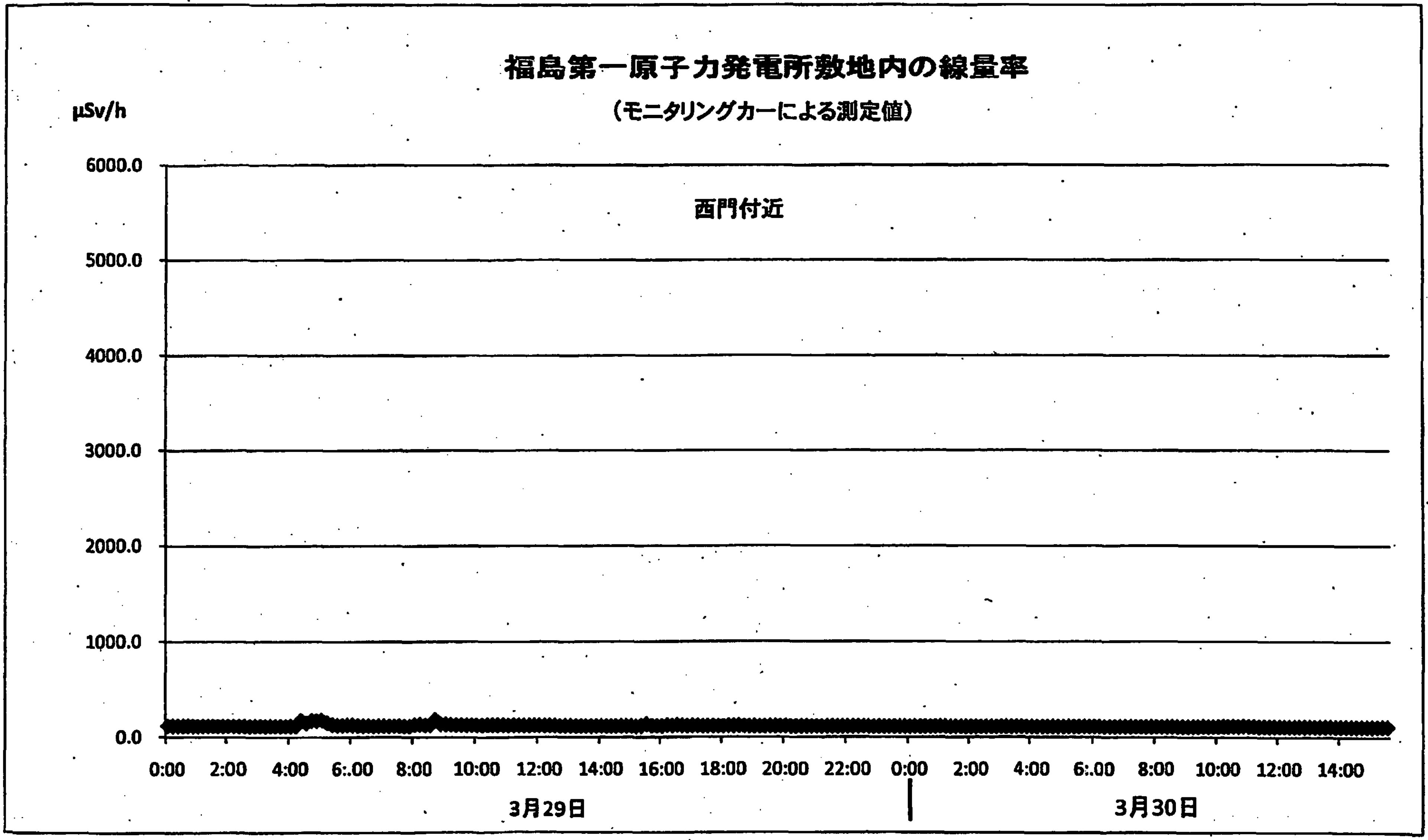
測定場所　　①事務本館北(2号機より北西約0．5キロ)　　②体育館付近(MP－5東側)(2号機より西北西約0．9キロ)
③西門付近 (MP-5付近)(2号機より西約1．1キロ)　④正門付近前(MP-6付近)(2号機より西南西約1．0キロ)
⑤免震棟前(2号機より北西約0．5キロ)　⑥事務本館南側　⑦正門
MC:モニタリングカー　可搬:可搬型MP

.3月29日　　福島第一(1F)

定場所	⑧																							
間	0:00	0:10	0:20	0:30	0:40	0:50	1:00	1:10	1:20	1:30	1:40	1:50	2:00	2:10	2:20	2:30	2:40	2:50	3:00	3:10	3:20	3:30	3:40	3:50
測定値(μSv/h)	117.8	117.7	117.7	117.5	117.5	117.5	117.5	117.4	117.4	117.3	117.2	117.1	117.2	117.1	116.9	116.7	116.7	116.8	116.6	116.5	116.4	116.4	116.3	116.3
中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
⑥本館南(μSv/h)	1,150	—	—	1,140	—	—	1,150	—	—	1,150	—	—	1,150	—	—	1,140	—	—	1,130	—	—	1,130	—	—
⑦正門(μSv/h)	181	—	—	182	—	—	180	—	—	182	—	—	180	—	—	182	—	—	182	—	—	180	—	—
③西門(μSv/h)	85.4	—	—	85.5	—	—	85.4	—	—	85.0	—	—	83.7	—	—	85.4	—	—	85.0	—	—	85.3	—	—
風向	北西	北西	西北西	西北西	北西	北北西	北西	南西	南南東	南東	北西	北北西	北西	西	西北西	西北西	西	西	西	西	西	西南西	北西	西
風速(m/s)	0.6	0.7	0.6	0.5	0.3	0.3	0.4	0.4	0.4	0.3	0.4	0.6	0.5	1.0	1.2	1.2	1.1	1.0	0:9	1.0	1.2	1.0	0.8	0.5

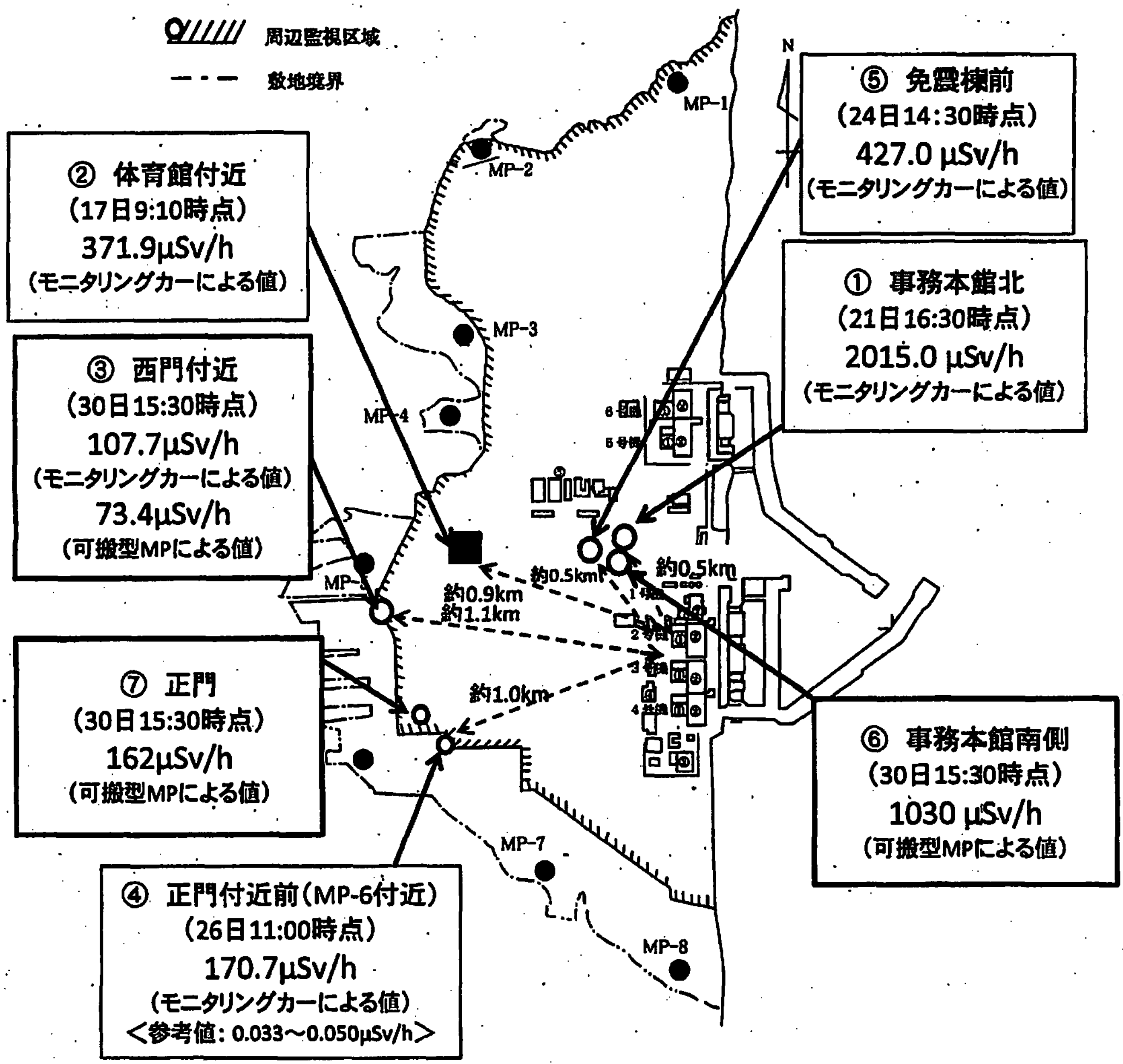
定場所	⑧																							
間	4:00	4:10	4:20	4:30	4:40	4:50	5:00	5:10	5:20	5:30	5:40	5:50	6:00	6:10	6:20	6:30	6:40	6:50	7:00	7:10	7:20	7:30	7:40	7:50
測定値(μSv/h)	116.2	116.2	175.1	150.0	176.5	173.0	182.0	155.0	134.3	127.0	126.6	128.5	127.6	122.3	120.1	120.0	118.2	117.8	117.6	117.4	117.3	117.4	116.7	116.6
中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
⑥本館南(μSv/h)	1,140	—	—	1,200	—	—	1,200	—	—	1,190	—	—	1,160	—	—	1,130	—	—	1,190	—	—	1,300	—	—
⑦正門(μSv/h)	181	—	—	201	—	—	236	—	—	191	—	—	186	—	—	183	—	—	183	—	—	181	—	—
③西門(μSv/h)	85.2	—	—	119	—	—	152	—	—	96.8	—	—	96.1	—	—	88.1	—	—	85.5	—	—	86.7	—	—
風向	西	北東	北	西	西	西	西南西	西	西	西	西南西	西	西	西南西	西	西	西	西南西	西南西	西南西	西北西	北北東	南東	南
風速(m/s)	0.6	0.4	0.3	0.3	0.4	0.6	0.8	0.8	0.8	0.7	0.8	0.9	0.8	1.0	0.7	0.8	0.8	0.5	0.5	0.4	0.2	0.4	0.6	1.0

定場所	⑧																							
間	8:00	8:10	8:20	8:30	8:40	8:50	9:00	9:10	9:20	9:30	9:40	9:50	10:00	10:10	10:20	10:30	10:40	10:50	11:00	11:10	11:20	11:30	11:40	11:50
測定値(μSv/h)	132.7	134.7	128.2	130.3	183.8	140.2	137.8	131.9	130.3	129.6	127.8	127.0	126.6	126.1	128.7	130.6	128.1	127.9	125.4	124.9	124.0	123.3	123.2	122.7
中性子	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D	N.D
⑥本館南(μSv/h)	1,250	—	—	1,160	—	—	1,190	—	—	1,230	—	—	1,260	—	—	1,200	—	—	1,190	—	—	1,270	—	—
⑦正門(μSv/h)	181	—	—	180	—	—	180	—	—	180	—	—	182	—	—	180	—	—	179	—	—	180	—	—
③西門(μSv/h)	101	—	—	99.5	—	—	101	—	—	96	—	—	92.9	—	—	95	—	—	90.6	—	—	89.3	—	—
風向	東南東	東	東	東南東	東	南東	東	東	東	南東	東南東	南東	南東	東	東	東	東	南東	東	東	東	南東	西南西	南西
風速(m/s)	0.8	1.3	1.9	1.8	2.3	2.1	1.8	2.0	3.1	2.5	2.7	2.4	2.1	1.7	3.2	3.8	3.0	3.1	3.0	1.9	2.5	2.0	1.5	2.5


福島第一原子力発電所敷地内の線量率
（モニタリングカーによる測定値）
μSv/h
6000.0
5000.0
4000.0
3000.0
2000.0
1000.0
0.0
西門付近
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
0:00
2:00
4:00
6:00
8:00
10:00
12:00
14:00
3月29日
3月30日

福島第一原子力発電所

2011/3/30
17:30現在



第二(2F)(事業者のモニタリングポスト)

月30日																								
ニタリングポスト	12:00	12:10	12:20	12:30	12:40	12:50	13:00	13:10	13:20	13:30	13:40	13:50	14:00	14:10	14:20	14:30	14:40	14:50	15:00	15:10	15:20	15:30	15:40	15:50
IP1(μSv/h)	8.227	8.260	8.110	8.067	8.060	8.053	8.070	8.043	8.050	8.047	8.000	8.013	8.043	8.017	8.007	7.997	8.013	7.997	7.983	7.990	7.983	7.963		
IP2(μSv/h)	4.457	4.533	4.360	4.323	4.333	4.310	4.303	4.303	4.303	4.317	4.300	4.277	4.287	4.267	4.280	4.277	4.273	4.273	4.257	4.257	4.257	4.240		
IP3(μSv/h)	7.697	7.790	7.610	7.597	7.587	7.590	7.610	7.593	7.560	7.553	7.550	7.533	7.553	7.530	7.543	7.490	7.543	7.503	7.480	7.483	7.467	7.487		
IP4(μSv/h)	6.103	6.047	5.887	5.897	5.837	5.890	5.837	5.867	5.823	5.847	5.840	5.843	5.807	5.833	5.827	5.787	5.800	5.810	5.810	5.790	5.783	5.763		
IP5(μSv/h)	5.493	5.493	5.273	5.300	5.260	5.253	5.207	5.207	5.200	5.207	5.207	5.207	5.207	5.207	5.207	5.207	5.207	5.207	5.207	5.113	5.160	5.200		
IP6(μSv/h)	6.897	6.783	6.623	6.587	6.567	6.607	6.577	6.560	6.560	6.540	6.540	6.537	6.517	6.527	6.507	6.510	6.463	6.483	6.490	6.470	6.490	6.480		
IP7(μSv/h)	3.750	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測		
風向	南東	南南東	南東	南東	南南東	南東	東南東	東南東	南東	南東	東南東	南東	南東	南東	東南東	南南西	南南西	南西	北北東	南東	北東	北西		
風速(m/s)	2.0	1.9	1.1	2.2	1.9	2.4	2.8	1.2	1.1	2.7	2.1	1.4	0.6	1.1	0.8	2.0	0.8	0.5	0.0	0.4	1.3	0.7		

月30日																								
ニタリングポスト	16:00	16:10	16:20	16:30	16:40	16:50	17:00	17:10	17:20	17:30	17:40	17:50	18:00	18:10	18:20	18:30	18:40	18:50	19:00	19:10	19:20	19:30	19:40	19:50
IP1(μSv/h)																								
IP2(μSv/h)																								
IP3(μSv/h)																								
IP4(μSv/h)																								
IP5(μSv/h)																								
IP6(μSv/h)																								
IP7(μSv/h)																								
風向																								
風速(m/s)																								

月30日																								
ニタリングポスト	20:00	20:10	20:20	20:30	20:40	20:50	21:00	21:10	21:20	21:30	21:40	21:50	22:00	22:10	22:20	22:30	22:40	22:50	23:00	23:10	23:20	23:30	23:40	23:50
IP1(μSv/h)																								
IP2(μSv/h)																								
IP3(μSv/h)																								
IP4(μSv/h)																								
IP5(μSv/h)																								
IP6(μSv/h)																								
IP7(μSv/h)																								
風向																								
風速(m/s)																								

第二(2F) (事業者のモニタリングポスト)

月30日																								
ニタリングポスト	0:00	0:10	0:20	0:30	0:40	0:50	1:00	1:10	1:20	1:30	1:40	1:50	2:00	2:10	2:20	2:30	2:40	2:50	3:00	3:10	3:20	3:30	3:40	3:50
P1(μSv/h)	8.197	8.190	8.177	8.410	8.273	8.270	8.910	8.427	8.307	8.353	8.320	8.290	8.307	8.330	8.403	8.280	8.290	8.317	8.280	8.303	8.347	8.357	8.487	8.350
P2(μSv/h)	4.407	4.390	4.387	4.480	4.407	4.457	4.920	4.650	4.550	4.513	4.463	4.477	4.463	4.497	4.557	4.443	4.413	4.427	4.440	4.443	4.457	4.533	4.613	4.630
P3(μSv/h)	7.767	7.760	7.737	7.760	7.783	7.787	8.133	7.937	7.883	7.880	7.803	7.810	7.823	7.840	7.823	7.770	7.730	7.757	7.770	7.737	7.740	7.740	7.813	7.840
P4(μSv/h)	5.957	5.963	5.970	5.987	5.963	5.967	6.130	6.347	6.197	6.097	6.087	6.080	6.117	6.140	6.100	5.997	5.993	5.980	5.953	6.007	5.977	6.003	6.083	6.143
P5(μSv/h)	5.407	5.407	5.400	5.353	5.400	5.400	5.420	5.887	5.493	5.500	5.493	5.500	5.593	5.687	5.500	5.400	5.400	5.400	5.400	5.400	5.480	5.493	5.493	5.593
P6(μSv/h)	6.560	6.567	6.567	6.573	6.647	6.623	6.723	6.923	6.790	6.743	6.743	6.737	6.787	6.740	6.667	6.583	6.597	6.573	6.587	6.593	6.597	6.620	6.630	6.687
P7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	西北西	西北西	西北西	北西	北	北北西	北北西	北北東	北東	北北東	北北東	北北東	北北西	南西	西南西	南西	西南西	南西	南南西	南	南南西	南	南南東	南東
風速(m/s)	6.0	7.2	7.6	2.9	4.5	3.0	1.8	3.2	2.5	2.1	2.6	1.6	0.1	0.8	1.4	2.7	3.0	3.0	1.8	1.3	1.4	1.5	3.2	2.7

月30日																								
ニタリングポスト	4:00	4:10	4:20	4:30	4:40	4:50	5:00	5:10	5:20	5:30	5:40	5:50	6:00	6:10	6:20	6:30	6:40	6:50	7:00	7:10	7:20	7:30	7:40	7:50
P1(μSv/h)	8.343	8.437	8.333	8.247	8.163	8.160	8.180	8.157	8.160	8.157	8.147	8.160	8.137	8.157	8.160	8.147	8.133	8.097	8.147	8.147	8.140	8.150	8.207	8.117
P2(μSv/h)	4.550	4.653	4.503	4.377	4.353	4.343	4.363	4.343	4.357	4.357	4.343	4.343	4.343	4.333	4.343	4.363	4.350	4.343	4.370	4.370	4.363	4.390	4.430	4.407
P3(μSv/h)	7.797	7.813	7.747	7.663	7.683	7.643	7.647	7.653	7.680	7.673	7.663	7.640	7.667	7.633	7.647	7.640	7.647	7.633	7.663	7.657	7.647	7.683	7.723	7.690
P4(μSv/h)	6.147	6.020	5.950	5.920	5.917	5.920	5.930	5.930	5.897	5.903	5.910	5.930	5.927	5.870	5.890	5.903	5.923	5.880	5.930	5.883	5.893	5.927	5.927	5.943
P5(μSv/h)	5.493	5.400	5.347	5.307	5.387	5.393	5.333	5.347	5.307	5.300	5.300	5.313	5.333	5.300	5.307	5.300	5.307	5.307	5.300	5.300	5.307	5.307	5.347	5.313
P6(μSv/h)	6.637	6.567	6.543	6.530	6.503	6.510	6.510	6.520	6.513	6.490	6.477	6.487	6.487	6.480	6.490	6.467	6.500	6.470	6.480	6.483	6.480	6.510	6.520	6.497
P7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	東南東	南東	南東	南	南	南	南南西	南東	東南東	東南東	東	東	東北東	東北東	北東	北北東	北西	北	北北東	西南西	南西	北東	北東	北東
風速(m/s)	1.5	1.0	0.8	3.0	2.2	1.6	2.3	1.7	1.6	1.3	1.4	1.4	1.1	0.8	0.8	0.6	0.5	0.4	0.3	0.3	0.4	0.5	1.0	0.7

月30日																								
ニタリングポスト	8:00	8:10	8:20	8:30	8:40	8:50	9:00	9:10	9:20	9:30	9:40	9:50	10:00	10:10	10:20	10:30	10:40	10:50	11:00	11:10	11:20	11:30	11:40	11:50
P1(μSv/h)	8.160	8.137	8.130	8.400	8.423	8.553	8.460	8.247	8.377	8.510	8.420	8.353	8.360	8.350	8.400	8.443	8.190	8.147	8.153	8.147	8.153	8.150	8.157	8.147
P2(μSv/h)	4.377	4.360	4.373	4.630	4.637	4.837	4.910	4.447	4.550	4.680	4.703	4.553	4.570	4.557	4.627	4.653	4.417	4.377	4.353	4.353	4.357	4.353	4.367	4.387
P3(μSv/h)	7.687	7.673	7.633	7.787	7.817	8.117	8.267	7.940	7.773	7.830	7.990	7.800	7.823	7.770	7.870	7.857	7.843	7.710	7.733	7.710	7.667	7.627	7.643	7.647
P4(μSv/h)	5.943	5.907	5.857	5.913	5.983	6.287	6.437	6.083	5.937	5.990	6.080	6.043	6.087	6.017	6.080	6.177	6.193	6.110	6.030	5.983	6.053	5.927	5.960	5.977
P5(μSv/h)	5.320	5.300	5.307	5.307	5.367	5.693	5.787	5.593	5.400	5.500	5.400	5.447	5.453	5.400	5.513	5.687	5.693	5.540	5.400	5.307	5.400	5.307	5.300	5.400
P6(μSv/h)	6.523	6.500	6.523	6.493	6.530	6.647	6.743	6.567	6.570	6.670	6.687	6.683	6.770	6.713	6.777	6.887	6.977	6.837	6.780	6.750	6.733	6.630	6.633	6.740
P7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	東北東	東北東	北東	北北東	北東	東北東	北東	東北東	東	東	東	東	東	東	東	東	東南東	南東	南東	南東	南東	南東	南東	南東
風速(m/s)	1.4	1.5	1.3	1.4	1.6	2.3	2.0	2.2	0.7	3.8	1.2	1.3	2.0	3.8	3.5	3.7	3.0	2.4	2.7	2.2	2.2	2.5	2.6	2.0

第二(2F)(事業者のモニタリングポスト)

月29日																								
タリングポスト	12:00	12:10	12:20	12:30	12:40	12:50	13:00	13:10	13:20	13:30	13:40	13:50	14:00	14:10	14:20	14:30	14:40	14:50	15:00	15:10	15:20	15:30	15:40	15:50
P1(μSv/h)	8.590	8.560	8.537	8.590	8.563	8.563	8.517	8.543	8.537	8.497	8.500	8.517	8.517	8.510	8.497	8.463	8.467	8.453	8.470	8.460	8.427	8.467	8.447	8.443
P2(μSv/h)	4.593	4.587	4.597	4.607	4.570	4.580	4.570	4.567	4.570	4.553	4.573	4.577	4.580	4.560	4.547	4.550	4.550	4.543	4.553	4.537	4.543	4.523	4.523	4.517
P3(μSv/h)	8.110	8.110	8.090	8.087	8.067	8.090	8.067	8.070	8.067	8.020	8.050	8.033	8.067	8.050	8.020	8.007	7.967	8.023	7.970	7.987	7.987	7.993	7.973	7.970
P4(μSv/h)	6.203	6.220	6.193	6.223	6.213	6.213	6.200	6.190	6.190	6.177	6.160	6.140	6.123	6.173	6.160	6.173	6.150	6.157	6.153	6.163	6.130	6.117	6.117	6.117
P5(μSv/h)	5.593	5.593	5.593	5.593	5.593	5.593	5.593	5.593	5.593	5.540	5.593	5.593	5.567	5.493	5.573	5.493	5.547	5.547	5.547	5.500	5.520	5.500	5.500	5.500
P6(μSv/h)	6.843	6.797	6.807	6.833	6.830	6.820	6.780	6.777	6.817	6.777	6.773	6.787	6.780	6.783	6.753	6.767	6.763	6.753	6.760	6.767	6.767	6.723	6.727	6.730
P7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	南南東	南南東	南東	南南東	南東	南	南南東	南南東	東南東	南東	南南東	南南東	南	南	南南東	南南西	南	南南東	南南東	南南東	南南東	南南東	南	南
風速(m/s)	7.8	6.5	4.1	5.0	3.1	5.6	4.2	2.6	0.7	2.5	3.2	4.6	4.1	2.6	1.1	2.0	3.9	1.4	2.6	2.1	2.1	1.4	4.0	5.4

月29日																								
タリングポスト	16:00	16:10	16:20	16:30	16:40	16:50	17:00	17:10	17:20	17:30	17:40	17:50	18:00	18:10	18:20	18:30	18:40	18:50	19:00	19:10	19:20	19:30	19:40	19:50
P1(μSv/h)	8.440	8.463	8.420	8.463	8.387	8.413	8.377	8.383	8.370	8.387	8.380	8.363	8.363	8.373	8.367	8.380	8.370	8.370	8.353	8.333	8.333	8.320	8.330	8.343
P2(μSv/h)	4.527	4.540	4.503	4.533	4.490	4.493	4.500	4.507	4.503	4.480	4.487	4.487	4.470	4.487	4.483	4.503	4.460	4.467	4.477	4.467	4.467	4.463	4.467	4.450
P3(μSv/h)	7.937	7.960	7.973	7.937	7.943	7.960	7.930	7.920	7.940	7.900	7.927	7.923	7.940	7.917	7.950	7.900	7.903	7.867	7.900	7.847	7.890	7.853	7.863	7.870
P4(μSv/h)	6.117	6.123	6.097	6.120	6.090	6.113	6.100	6.090	6.093	6.073	6.090	6.080	6.093	6.073	6.100	6.083	6.077	6.053	6.070	6.047	6.047	6.057	6.043	6.047
P5(μSv/h)	5.500	5.493	5.493	5.493	5.493	5.493	5.500	5.500	5.493	5.500	5.500	5.493	5.500	5.493	5.493	5.493	5.500	5.453	5.453	5.493	5.493	5.447	5.500	5.447
P6(μSv/h)	6.733	6.720	6.717	6.733	6.737	6.703	6.720	6.740	6.693	6.720	6.687	6.697	6.683	6.690	6.677	6.687	6.683	6.660	6.660	6.670	6.677	6.657	6.660	6.650
P7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	南	南	南	南	南	南南西	南	南	南	南南西	南南西	南西	西	西南西	南南西	南南西	南南西	南西	南西	西南西	西南西	西	西	西
風速(m/s)	5.0	2.1	4.2	5.9	5.7	0.5	3.4	5.9	6.4	6.3	4.8	2.8	1.5	0.8	4.4	5.4	4.7	1.8	3.2	4.4	3.2	5.1	7.1	5.6

月29日																								
タリングポスト	20:00	20:10	20:20	20:30	20:40	20:50	21:00	21:10	21:20	21:30	21:40	21:50	22:00	22:10	22:20	22:30	22:40	22:50	23:00	23:10	23:20	23:30	23:40	23:50
P1(μSv/h)	8.323	8.337	8.290	8.277	8.280	8.290	8.293	8.297	8.290	8.280	8.270	8.270	8.257	8.257	8.280	8.263	8.260	8.243	8.247	8.243	8.247	8.190	8.217	8.233
P2(μSv/h)	4.467	4.460	4.467	4.430	4.447	4.437	4.437	4.447	4.430	4.440	4.437	4.427	4.423	4.427	4.427	4.420	4.417	4.413	4.407	4.397	4.407	4.413	4.383	4.397
P3(μSv/h)	7.853	7.860	7.863	7.843	7.857	7.843	7.847	7.830	7.810	7.830	7.830	7.790	7.823	7.823	7.757	7.790	7.813	7.787	7.783	7.823	7.793	7.760	7.773	7.763
P4(μSv/h)	6.027	6.047	6.020	6.013	6.033	6.037	6.063	6.000	6.047	5.997	6.007	6.023	6.000	6.010	5.997	5.997	5.953	5.953	5.987	5.973	6.010	5.957	5.983	5.970
P5(μSv/h)	5.400	5.400	5.453	5.400	5.500	5.400	5.433	5.400	5.400	5.400	5.400	5.400	5.400	5.400	5.400	5.400	5.407	5.400	5.400	5.400	5.400	5.400	5.400	5.400
P6(μSv/h)	6.633	6.630	6.637	6.650	6.637	6.637	6.630	6.640	6.593	6.617	6.617	6.630	6.600	6.587	6.597	6.620	6.567	6.610	6.600	6.593	6.613	6.563	6.580	6.587
P7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	西	西南西	南西	西南西	南西	南南東	南西	南東	北北西	北北西	北北西	北北西	北北西	北西	西	西北西	北西	西北西	西北西	北西	北西	北北西	西北西	西北西
風速(m/s)	5.7	2.8	0.8	0.8	2.3	0.0	0.0	0.1	1.9	2.2	1.9	3.7	3.1	4.0	3.9	2.2	1.7	2.2	3.3	3.6	2.7	3.1	3.0	5.5

2011/3/30 16:

第二(2F)(事業者のモニタリングポスト)

月29日																								
タリングポスト	0:00	0:10	0:20	0:30	0:40	0:50	1:00	1:10	1:20	1:30	1:40	1:50	2:00	2:10	2:20	2:30	2:40	2:50	3:00	3:10	3:20	3:30	3:40	3:50
P1(μSv/h)	8.707	8.693	8.710	8.697	8.697	8.673	8.683	8.693	8.633	8.693	8.967	10.027	9.610	9.483	9.467	9.933	9.433	9.150	8.970	8.873	8.873	8.780	8.800	8.830
P2(μSv/h)	4.667	4.647	4.670	4.657	4.633	4.657	4.637	4.640	4.613	4.657	4.730	5.677	5.633	5.390	5.420	5.833	5.437	5.047	4.920	4.867	4.817	4.823	4.797	4.813
P3(μSv/h)	8.220	8.227	8.217	8.180	8.253	8.210	8.177	8.180	8.237	8.217	8.207	8.560	8.977	8.620	8.763	8.777	8.717	8.463	8.403	8.353	8.353	8.303	8.317	8.333
P4(μSv/h)	6.227	6.237	6.197	6.227	6.210	6.233	6.203	6.173	6.200	6.190	6.220	6.497	7.193	6.643	6.893	6.713	6.817	6.710	6.650	6.543	6.443	6.353	6.393	6.397
P5(μSv/h)	5.693	5.693	5.693	5.693	5.693	5.693	5.667	5.693	5.673	5.593	5.667	5.693	6.547	6.180	6.167	6.187	6.373	6.327	6.367	6.180	6.087	5.987	5.993	6.087
P6(μSv/h)	6.817	6.850	6.843	6.843	6.810	6.837	6.823	6.837	6.833	6.807	6.827	6.997	7.197	7.057	6.947	6.910	7.080	7.177	7.177	7.093	7.043	7.010	7.050	7.050
P7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	西北西	西	西	西	西南西	南西	東南東	東南東	南西	南西	南南東	東	東南東	東南東	東南東	南	南	北北西	北東	東北東	北北東	東	北東	東北東
速(m/s)	5.8	6.8	5.9	5.1	0.8	0.5	0.8	1.9	2.3	1.1	0.7	0.7	1.7	1.7	0.3	0.1	0.6	0.6	0.9	0.8	0.9	0.7	1.6	1.7

月29日																								
タリングポスト	4:00	4:10	4:20	4:30	4:40	4:50	5:00	5:10	5:20	5:30	5:40	5:50	6:00	6:10	6:20	6:30	6:40	6:50	7:00	7:10	7:20	7:30	7:40	7:50
P1(μSv/h)	8.837	9.013	9.220	9.023	8.973	9.090	9.060	9.203	9.017	8.923	8.743	8.823	8.827	8.813	8.837	8.783	8.803	8.763	8.717	8.717	8.693	8.683	8.677	8.630
P2(μSv/h)	4.813	4.987	5.323	5.030	4.970	5.053	5.113	5.110	5.000	4.893	4.810	4.780	4.837	4.843	4.873	4.820	4.833	4.813	4.740	4.710	4.690	4.687	4.690	4.677
P3(μSv/h)	8.377	8.503	8.763	8.623	8.460	8.517	8.483	8.557	8.467	8.450	8.320	8.287	8.330	8.377	8.363	8.360	8.343	8.350	8.293	8.210	8.203	8.163	8.210	8.203
P4(μSv/h)	6.470	6.623	6.927	6.793	6.623	6.627	6.643	6.770	6.623	6.503	6.480	6.410	6.403	6.493	6.437	6.403	6.450	6.410	6.297	6.293	6.257	6.233	6.267	6.230
P5(μSv/h)	6.060	6.187	6.567	6.373	6.273	6.373	6.273	6.413	6.247	6.133	6.060	6.087	6.087	6.087	6.087	5.993	5.993	5.893	5.787	5.787	5.767	5.747	5.787	5.793
P6(μSv/h)	6.993	7.160	7.413	7.253	7.207	7.293	7.320	7.160	7.143	7.107	7.053	7.057	7.043	7.073	7.060	7.023	6.980	6.930	6.847	6.877	6.833	6.797	6.823	6.823
P7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	東北東	東	東南東	東	西南西	南南西	東南東	東南東	東南東	東南東	南南東	南西	南西	南西	西南西	南西	南西	南南西	南西	南南東	東南東	南南東	南南東	南東
速(m/s)	1.4	1.6	1.9	0.6	0.5	0.9	1.1	1.5	1.5	1.1	1.0	0.9	0.9	0.8	2.2	3.4	3.8	2.8	1.2	1.8	1.5	2.3	3.1	2.6

月29日																								
タリングポスト	8:00	8:10	8:20	8:30	8:40	8:50	9:00	9:10	9:20	9:30	9:40	9:50	10:00	10:10	10:20	10:30	10:40	10:50	11:00	11:10	11:20	11:30	11:40	11:50
P1(μSv/h)	8.650	8.663	8.697	8.797	8.763	8.727	8.720	8.753	8.800	8.723	8.757	8.717	8.680	8.710	8.693	8.680	8.710	8.710	8.723	8.617	8.660	8.610	8.630	8.553
P2(μSv/h)	4.653	4.673	4.720	4.800	4.780	4.733	4.743	4.757	4.833	4.787	4.757	4.763	4.753	4.730	4.747	4.730	4.727	4.710	4.720	4.640	4.653	4.627	4.607	4.597
P3(μSv/h)	8.193	8.163	8.227	8.270	8.233	8.210	8.210	8.240	8.273	8.310	8.243	8.273	8.280	8.217	8.243	8.247	8.223	8.203	8.223	8.160	8.170	8.153	8.130	8.127
P4(μSv/h)	6.230	6.230	6.297	6.327	6.307	6.297	6.307	6.313	6.320	6.357	6.363	6.367	6.360	6.357	6.327	6.357	6.340	6.327	6.307	6.273	6.273	6.233	6.210	6.190
P5(μSv/h)	5.793	5.793	5.787	5.787	5.793	5.793	5.793	5.793	5.793	5.793	5.893	5.793	5.793	5.793	5.787	5.793	5.787	5.740	5.693	5.693	5.640	5.647	5.647	5.600
P6(μSv/h)	6.823	6.840	6.860	6.843	6.890	6.903	6.897	6.897	6.890	6.930	6.950	6.943	6.933	6.947	6.943	6.960	6.953	6.940	6.910	6.870	6.853	6.870	6.863	6.857
P7(μSv/h)	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測	欠測
風向	東	南南東	南南東	東南東	南東	南南東	南東	南東	東	東	東	東南東	東南東	東南東	南東	南東	南東	南東	南東	南南東	南東	南南東	南南東	南南東
速(m/s)	2.2	3.2	3.0	2.5	3.4	3.8	2.7	2.1	2.4	3.0	2.6	3.0	3.8	3.6	3.4	3.3	3.2	3.4	3.9	3.3	4.8	5.7	6.4	6.7

福島第二原子力発電所

2011/3/30
17:30現在

MP1:7.963μSv/h(30日 15:30時点)
(参考値:0.035～0.054μSv/h)

MP2:4.240μSv/h(30日 15:30時点)
(参考値:0.042～0.062μSv/h)

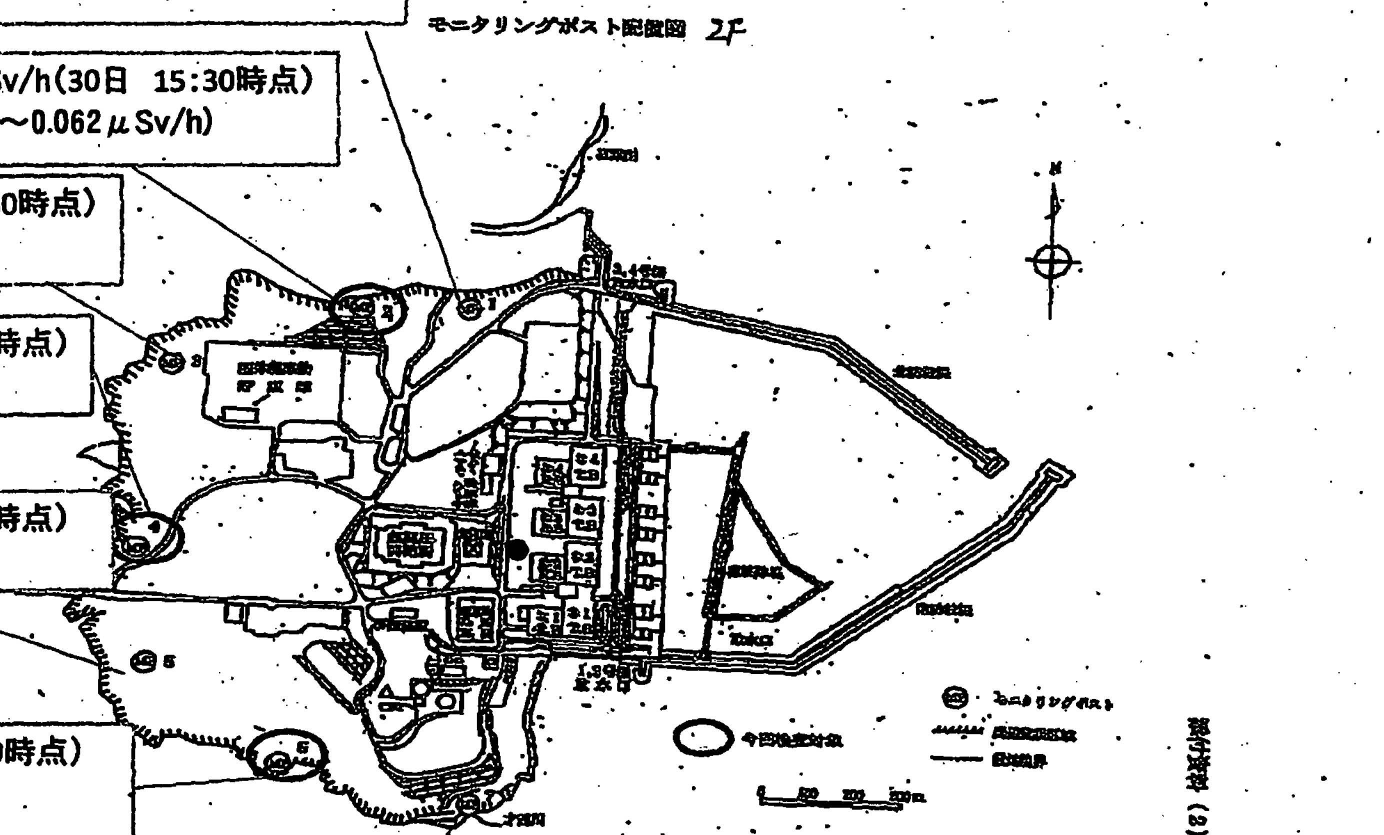
MP3:7.487μSv/h(30日 15:30時点)
(参考値:0.036～0.052μSv/h)

MP4:5.763μSv/h(30日 15:30時点)
(参考値:0.036～0.052μSv/h)

MP5:5.200μSv/h(30日 15:30時点)
(参考値:0.041～0.058μSv/h)

MP6:6.480μSv/h(30日 15:30時点)
(参考値:0.044～0.063μSv/h)

MP7 : 3.750μSv/h(30日 12:00時点)
(参考値:0.043～0.062μSv/h)



各発電所等の環境モニタリング結果

単位：μSv/h

通常の平常値の範囲	会社名	発電所名	3月29日											
			12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
0.023~0.027	北海道電力㈱	泊発電所	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.025	0.024	0.024
0.024~0.060	東北電力㈱	女川原子力発電所	0.63	0.63	0.63	0.63	0.62	0.62	0.62	0.62	0.63	0.63	0.62	0.62
0.012~0.060		東通原子力発電所	0.016	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.016
0.033~0.050	東京電力㈱	福島第一原子力発電所※	122.5	120.2	117.2	116.0	117.5	121.5	117.1	116.0	115.0	114.0	113.1	112.4
0.038~0.052		福島第二原子力発電所	8.110	8.087	8.067	7.970	7.937	7.930	7.940	7.900	7.853	7.847	7.823	7.783
0.011~0.159		柏崎刈羽原子力発電所	0.066	0.066	0.065	0.065	0.065	0.066	0.066	0.065	0.065	0.067	0.066	0.065
0.036~0.053	日本原子力発電㈱	東海第二発電所	0.679	0.674	0.671	0.666	0.667	0.664	0.665	0.660	0.657	0.655	0.654	0.653
0.039~0.110		敦賀発電所	0.072	0.074	0.073	0.072	0.074	0.073	0.073	0.074	0.074	0.073	0.074	0.075
0.064~0.108	中部電力㈱	浜岡原子力発電所	0.076	0.075	0.076	0.076	0.075	0.075	0.076	0.075	0.075	0.076	0.076	0.076
0.0207~0.132	北陸電力㈱	志賀原子力発電所	0.033	0.033	0.033	0.032	0.032	0.033	0.033	0.033	0.033	0.033	0.033	0.033
0.028~0.130	中国電力㈱	島根原子力発電所	0.030	0.029	0.030	0.030	0.030	0.031	0.029	0.030	0.029	0.029	0.031	0.030
0.070~0.077	関西電力㈱	美浜発電所	0.073	0.070	0.074	0.073	0.072	0.072	0.072	0.073	0.073	0.073	0.075	0.073
0.045~0.047		高浜発電所	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.041	0.043
0.036~0.040		大飯発電所	0.035	0.035	0.034	0.035	0.034	0.035	0.035	0.035	0.034	0.036	0.036	0.036
0.011~0.080	四国電力㈱	伊方発電所	0.014	0.013	0.014	0.014	0.014	0.014	0.014	0.019	0.018	0.015	0.014	0.014
0.023~0.087	九州電力㈱	玄海原子力発電所	0.027	0.026	0.036	0.035	0.032	0.027	0.027	0.034	0.032	0.028	0.025	0.027
0.034~0.120		川内原子力発電所	0.040	0.038	0.037	0.040	0.038	0.040	0.035	0.037	0.035	0.038	0.035	0.034
0.009~0.069	日本原燃(株)	六ヶ所 再処理事業所	0.015	0.016	0.016	0.016	0.016	0.017	0.017	0.016	0.015	0.016	0.016	0.016
0.009~0.071		六ヶ所 埋設事業所	0.021	0.021	0.022	0.021	0.021	0.023	0.023	0.022	0.022	0.022	0.022	0.021

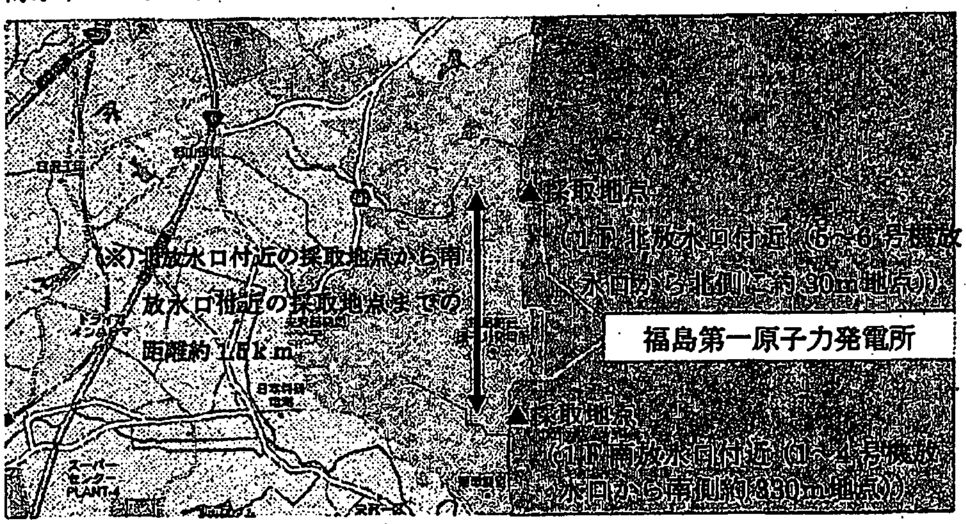
※福島第一原子力発電所については、作業状況により若干測定時間のずれ及び測定位置の変更が生じることもございます。

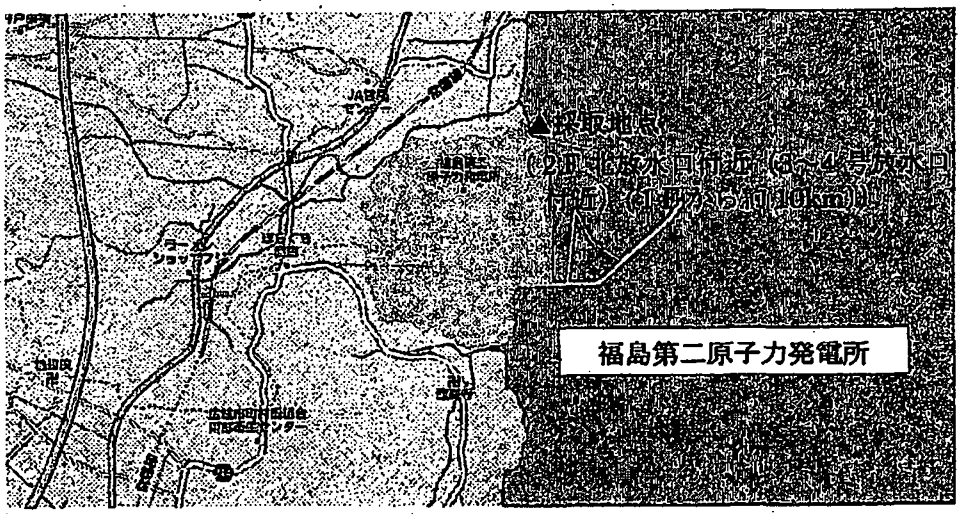
通常の平常値の範囲	会社名	発電所名	3月30日											
			0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00
0.023~0.027	北海道電力㈱	泊発電所	0.024	0.024	0.025	0.024	0.025	0.024	0.025	0.025	0.025	0.025		
0.024~0.060	東北電力㈱	女川原子力発電所	0.62	0.62	0.61	0.61	0.61	0.61	0.61	0.61	0.60	0.60		
0.012~0.060		東通原子力発電所	0.017	0.017	0.016	0.017	0.017	0.017	0.016	0.017	0.017	0.017		
0.033~0.050	東京電力㈱	福島第一原子力発電所※	112.5	111.8	111.1	110.7	110.9	110.6	110.2	110.0	109.8	109.3		
0.038~0.052		福島第二原子力発電所	7.767	8.133	7.823	7.770	7.797	7.647	7.667	7.663	7.687	8.287		
0.011~0.159		柏崎刈羽原子力発電所	0.066	0.066	0.065	0.066	0.065	0.067	0.066	0.066	0.066	0.066		
0.036~0.053	日本原子力発電㈱	東海第二発電所	0.655	0.650	0.648	0.652	0.646	0.662	0.648	0.654	0.654	0.652		
0.039~0.110		敦賀発電所	0.074	0.074	0.076	0.074	0.074	0.074	0.073	0.075	0.076	0.076		
0.064~0.108	中部電力㈱	浜岡原子力発電所	0.075	0.076	0.076	0.076	0.076	0.076	0.076	0.077	0.076	0.076		
0.0207~0.132	北陸電力㈱	志賀原子力発電所	0.033	0.034	0.033	0.034	0.034	0.033	0.032	0.033	0.035	0.034		
0.028~0.130	中国電力㈱	島根原子力発電所	0.030	0.032	0.032	0.030	0.029	0.032	0.032	0.031	0.031	0.030		
0.070~0.077	関西電力㈱	美浜発電所	0.072	0.072	0.073	0.074	0.072	0.073	0.073	0.072	0.073	0.073		
0.045~0.047		高浜発電所	0.043	0.042	0.042	0.043	0.043	0.043	0.043	0.043	0.044	0.044		
0.036~0.040		大飯発電所	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037		
0.011~0.080	四国電力㈱	伊方発電所	0.014	0.014	0.014	0.013	0.013	0.014	0.014	0.013	0.013	0.014		
0.023~0.087	九州電力㈱	玄海原子力発電所	0.026	0.027	0.026	0.027	0.027	0.027	0.027	0.026	0.027	0.028		
0.034~0.120		川内原子力発電所	0.036	0.038	0.038	0.036	0.034	0.038	0.040	0.037	0.037	0.040		
0.009~0.069	日本原燃(株)	六ヶ所 再処理事業所	0.016	0.016	0.016	0.016	0.016	0.016	0.017	0.016	0.017	0.016		
0.009~0.071		六ヶ所 埋設事業所	0.022	0.021	0.021	0.022	0.022	0.022	0.023	0.022	0.022	0.022		

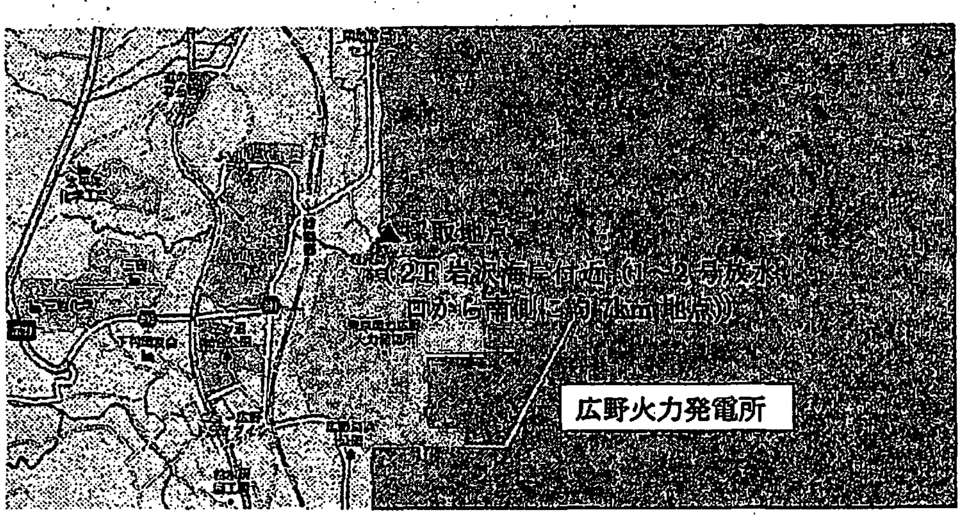
※福島第一原子力発電所については、作業状況により若干測定時間のずれ及び測定位置の変更が生じることもございます。

3/30(水) 9時時点

海水サンプリングポイント図







福島第一原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第一 事務本館北側		
	日時	3月19日	3月20日	3月21日
		11:53～12:13(放水前)	1:41～2:01	10:19～10:39
	採取方法	モニタリングカーにてダスト採取		
	風向・風速	W 4.7m/s (11:50現在)	SW 2.1m/s (1:40現在)	NW 2.6m (10:10現在)
試料測定	日時	3/19 14:12～	3/21 13:28～	3/21 13:48～
	測定方法	試料を2Fに持ち込みGe半導体型核種分析装置にて分析		
	測定時間	500s		

2. 結果

	核種	3月19日 採取分			3月20日 採取分			3月21日 採取分			③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	
揮発性	I-131	5.9E-03	3.4E-05	5.94	2.3E-03	1.3E-05	2.30	1.5E-03	1.1E-05	1.52	1.0E-03
	I-132	2.2E-03	8.8E-05	0.03	ND	—	—	2.5E-04	2.7E-05	0.004	7.0E-02
	I-133	3.8E-05	2.9E-05	0.01	ND	-	—	ND	—	—	5.0E-03
	Cs-134	ND	-	—	4.0E-05	8.3E-06	0.02	3.1E-05	8.6E-06	0.016	2.0E-03
	Cs-137	ND	-	—	3.9E-05	8.4E-06	0.01	3.6E-05	7.9E-06	0.01	3.0E-03
粒子状	Co-58	ND	-	—	ND	-	—	ND	-	—	1.0E-02
	I-131	1.1E-03	1.6E-05	1.07	1.3E-03	6.8E-06	1.29	9.2E-06	5.0E-06	0.01	1.0E-03
	I-132	3.8E-04	5.0E-05	0.01	ND	—	—	1.1E-04	1.2E-05	0.00	7.0E-02
	Cs-134	2.2E-05	1.7E-05	0.01	2.8E-05	4.8E-06	0.01	3.4E-05	5.4E-06	0.02	2.0E-03
	Cs-136	ND	—	—	5.6E-06	5.4E-06	0.001	4.5E-06	3.3E-06	0.0005	1.0E-02
	Cs-137	2.4E-05	1.8E-05	0.01	2.9E-05	5.0E-06	0.01	3.8E-05	4.7E-06	0.01	3.0E-03
その他の検出核種	Ru-106	2.1E-04	2.1E-04	0.36	3.8E-05	3.4E-05	0.06	ND	-	-	6.0E-04
	Te-129	ND	-	-	ND	-	-	1.3E-03	3.8E-04	0.00	4.0E-01
	Te-129m	ND	-	-	1.4E-04	1.2E-04	0.03	ND	-	-	4.0E-03
	Te-132	6.7E-05	1.8E-05	0.01	5.1E-04	6.0E-06	0.07	3.9E-04	4.3E-06	0.06	7.0E-03
	Ce-144	ND	-	-	5.0E-03	4.6E-04	7.08	ND	-	-	7.0E-04

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。

※ ○.○E−○とは、○.○×10$^{-○}$と同じ意味である。

福島第一原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第一　正門		
	日時	3/22 1:10～1:30	3/23 2:1～2:21	3/24 5:27～5:47
	採取方法	モニタリングカーにてダスト採取		
	風向・風速	W 0.5m/s (1:10現在)	N 3.2m/s(2:00現在)	ESE 0.8m/s (5:30現在)
試料測定	日時	3/22 14:50～	3/23 14:54～	3/24 22:03～
	測定方法	試料を2Fに持ち込みGe半導体型核種分析装置にて分析		
	測定時間	500s		

2. 結果

	核種	3/22採取分			3/23採取分			3/24採取分			③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	
揮発性	Co-58	ND	—	—	ND	—	—	ND	—	—	1.0E-02
	I-131	2.2E-03	1.6E-05	2.24	6.7E-04	9.6E-06	0.67	1.5E-03	1.0E-05	1.49	1.0E-03
	I-132	ND	—	—	ND	—	—	ND	—	—	7.0E-02
	I-133	ND	—	—	ND	—	—	ND	—	—	5.0E-03
	Cs-134	1.1E-05	1.1E-05	0.01	2.2E-05	7.6E-06	0.01	3.2E-05	7.9E-06	0.02	2.0E-03
	Cs-137	1.3E-05	1.0E-05	0.00	2.3E-05	7.6E-06	0.01	3.1E-05	7.3E-06	0.01	3.0E-03
粒子状	Co-58	ND	—	—	5.1E-06	5.1E-06	0.00	ND	—	—	1.0E-02
	I-131	4.7E-04	7.4E-06	0.47	4.3E-04	5.0E-06	0.43	5.0E-04	4.8E-06	0.50	1.0E-03
	I-132	ND	—	—	ND	—	—	ND	—	—	7.0E-02
	Cs-134	1.6E-05	5.9E-06	0.01	1.7E-05	4.2E-06	0.01	1.1E-05	4.6E-06	0.01	2.0E-03
	Cs-136	ND	—	—	3.0E-06	2.7E-06	0.00	ND	—	—	1.0E-02
	Cs-137	1.9E-05	5.3E-06	0.01	1.3E-05	4.2E-06	0.00	1.2E-05	3.8E-06	0.00	3.0E-03
その他の検出核種	Zr-95	ND	—	—	ND	—	—	2.5E-05	6.0E-06	0.00	8.0E-02
	Te-129	ND	—	—	2.3E-01	1.2E-01	0.58	4.6E+00	9.5E-01	11.39	4.0E-01
	Te-129m	ND	—	—	ND	—	—	3.4E-04	9.9E-05	0.08	4.0E-03
	Te-132	6.7E-05	1.1E-05	0.01	4.3E-04	4.5E-06	0.06	3.6E-04	4.4E-04	0.05	7.0E-03
	Ce-144	ND	—	—	1.3E-03	3.7E-04	1.89	ND	—	—	7.0E-04

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。
※ ○.○E−○とは、○.○×10$^{-○}$と同じ意味である。

福島第一原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第一　正門		
	日時	3/25 2:01～2:21	3/26 2:00～2:20	3/27 2:00～2:20
	採取方法	モニタリングカーにてダスト採取		
	風向・風速	ESE　0.8m/s (5:30現在)	NNW　2.9m/s (2:20現在)	S　0.5m/s (2:00現在)
試料測定	日時	3/25　13:38～	3/26　12:24～	3/27　11:38～
	測定方法	試料を2Fに持ち込みGe半導体型核種分析装置にて分析		
	測定時間	500s		

2. 結果

	核種	3/25採取分			3/26採取分			3/27採取分			③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	
揮発性	Co-58	ND	-	-	ND	-	-	ND	-	-	1.0E-02
	I-131	8.8E-04	2.1E-05	0.88	3.0E-04	7.9E-06	0.30	4.5E-04	8.2E-06	0.45	1.0E-03
	I-132	ND	-	-	ND	-	-	1.8E-04	1.3E-04	0.00	7.0E-02
	I-133	ND	-	-	ND	-	-	ND	-	-	5.0E-03
	Cs-134	3.2E-05	1.7E-05	0.02	1.2E-05	7.2E-06	0.01	1.2E-05	6.4E-06	0.01	2.0E-03
	Cs-136	ND	-	-	6.2E-06	3.7E-06	0.00	ND	-	-	1.0E-02
	Cs-137	2.4E-05	1.8E-05	0.01	8.8E-06	6.9E-06	0.00	1.4E-05	6.2E-06	0.00	3.0E-03
粒子状	Co-58	ND	-	-	ND	-	-	ND	-	-	1.0E-02
	I-131	3.2E-04	1.1E-05	0.32	2.6E-04	1.1E-05	0.26	2.1E-04	9.5E-06	0.21	1.0E-03
	I-132	ND	-	-	ND	-	-	ND	-	-	7.0E-02
	Cs-134	1.6E-05	9.5E-06	0.01	1.8E-05	9.8E-06	0.01	1.6E-05	8.8E-06	0.01	2.0E-03
	Cs-136	ND	-	-	ND	-	-	ND	-	-	1.0E-02
	Cs-137	1.6E-05	9.2E-06	0.01	1.6E-05	1.0E-05	0.01	1.4E-05	9.5E-06	0.00	3.0E-03
その他の検出核種	Zr-95	ND	-	-	ND	-	-	ND	-	-	8.0E-02
	Ru-105	3.1E-04	4.4E-05	0.00	6.0E-05	3.9E-05	0.00	ND	-	-	8.0E-02
	Te-129	ND	-	-	5.2E-02	3.4E-02	0.13	2.6E-02	2.2E-02	0.07	4.0E-01
	Te-129m	ND	-	-	ND	-	-	1.9E-04	1.5E-04	0.05	4.0E-03
	Te-132	8.2E-05	1.0E-05	0.01	1.6E-04	6.0E-06	0.02	1.2E-04	5.7E-06	0.02	7.0E-03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。

※ ○.○E−○とは、$○.○\times10^{-○}$と同じ意味である。

福島第一原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第一_西門		
	日時	3/28 2:00～2:20	3/29 2:22～2:42	
	採取方法	モニタリングカーにてダスト採取		
	風向・風速	N 0.5m/s (2:00現在)	WNW 1.2m/s (2:30現在)	
試料測定	日時	3/28 11:41～	3/29 12:17～	
	測定方法	試料を2Fに持ち込みGe半導体型核種分析装置にて分析		
	測定時間	1000s		

2. 結果

	核種	3/28採取分			3/29採取分						③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)				
揮発性	Co-58	ND	-	-	ND	-	-				1.0E-02
	I-131	3.6E-04	8.9E-06	0.36	2.4E-04	1.6E-05	0.24				1.0E-03
	I-132	2.5E-04	1.8E-04	0.00	ND	-	-				7.0E-02
	I-133	ND	-	-	ND	-	-				5.0E-03
	Cs-134	8.9E-06	5.3E-06	0.00	2.3E-05	1.3E-05	0.01				2.0E-03
	Cs-136	ND	-	-	ND	-	-				1.0E-02
	Cs-137	8.1E-06	5.0E-06	0.00	2.3E-05	1.4E-05	0.01				3.0E-03
粒子状	Co-58	ND	-	-	ND	-	-				1.0E-02
	I-131	2.1E-04	8.9E-06	0.21	1.2E-04	8.7E-06	0.12				1.0E-03
	I-132	ND	-	-	ND	-	-				7.0E-02
	Cs-134	ND	-	-	1.1E-05	7.5E-06	0.01				2.0E-03
	Cs-136	ND	-	-	ND	-	-				1.0E-02
	Cs-137	7.5E-06	7.3E-06	0.00	1.4E-05	7.7E-06	0.00				3.0E-03
その他の検出核種	Zr-95	ND	-	-	ND	-	-				8.0E-02
	Ru-105	ND	-	-	ND	-	-				8.0E-02
	Te-129	ND	-	-	ND	-	-				4.0E-01
	Te-129m	ND	-	-	ND	-	-				4.0E-03
	Te-132	9.7E-06	7.4E-06	0.00	ND	-	-				7.0E-03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。
※ ○.○E－○とは、○.○×10$^{-○}$と同じ意味である。

福島第二原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第二 情報棟東側	福島第二 免震建屋1階入口
	日時	3月16日	3月16日
		7:56～8:06	10:00～10:10
	採取方法	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取
	風向・風速	—	—
試料測定	日時	3/16 8:47～	3/16 11:59～
	測定方法	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析
	測定時間	500s	500s

2. 結果

	核種	3月16日 採取分①			3月16日 採取分②			③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	
揮発性	I-131	3.432E-04	2.559E-05	0.34	6.889E-04	1.268E-05	0.69	1.0E-03
	I-132	1.149E-03	2.812E-05	0.02	7.528E-04	1.986E-05	0.01	7.0E-02
	I-133	3.448E-05	2.687E-05	0.01	4.395E-05	1.497E-05	0.01	5.0E-03
粒子状	Co-58	ND	—	—	4.943E-05	2.685E-05	0.00	1.0E-02
	Cs-134	1.237E-04	1.449E-05	0.06	4.163E-04	2.459E-05	0.21	2.0E-03
	Cs-136	2.699E-05	9.412E-06	0.003	7.504E-05	1.495E-05	0.01	1.0E-02
	Cs-137	1.227E-04	1,311E-05	0.04	3.861E-04	2.057E-05	0.13	3.0E-03
その他の検出核種	Ge-75m	2.762E-04	4.217E-04		ND	—	—	
	Br-83	8.078E-03	2.756E-03		4.594E-03	1.565E-03		
	Ru-105	ND	—	—	4.057E-05	2.883E-05		
	Ru-106	4.081E-04	1.920E-04		ND	—	—	6.0E-04
	Te-129	ND	—	—	ND	—	—	4.0E-01
	Te-129m	ND	—	—	ND	—	—	4.0E-03
	Te-132	1.855E-03	1.757E-05		2.947E-04	9.710E-06		7.0E-03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。

福島第二原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第二 MP−1	福島第二 MP−1	福島第二 MP−1
	日時	3月17日	3月18日	3月18日
		13:50〜14:00	8:22〜8:32	15:09〜15:19
	採取方法	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取
	風向・風速	−	−	−
試料測定	日時	3/17 22:01〜	3/18 9:40〜	3/18 17:12〜
	測定方法	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析
	測定時間	1000s	1000s	1000s

2. 結果

	核種	3月17日 採取分①			3月18日 採取分①			3月18日 採取分②			③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	
揮発性	I-131	9.432E-05	3.351E-06	0.09	8.630E-04	3.145E-05	0.86	4.298E-03	4.993E-05	4.30	1.0E-03
	I-132	ND	−	−	1.720E-03	3.821E-05	0.02	2.625E-03	9.359E-05	0.04	7.0E-02
	I-133	3.304E-06	4.478E-06	0.00	ND	−	−	5.246E-05	4.213E-05	0.01	5.0E-03
粒子状	Co-58	2.494E-05	2.081E-05	0.00	3.080E-05	2.048E-05	0.00	1.578E-04	1.435E-05	0.02	1.0E-02
	Cs-134	3.314E-04	1.680E-05	0.17	3.345E-04	1.666E-05	0.17	4.883E-04	1.538E-05	0.24	2.0E-03
	Cs-136	6.107E-05	1.298E-05	0.01	5.882E-05	1.012E-05	0.01	8.416E-05	1.436E-05	0.01	1.0E-02
	Cs-137	3.232E-04	1.702E-05	0.11	3.147E-04	1.683E-05	0.10	4.308E-04	1.715E-05	0.14	3.0E-03
その他の検出核種	Cl-38m	ND	−	−	ND	−	−	3.180E+00	3.292E-02		
	Ga-72	ND	−	−	ND	−	−	2.101E-03	1.180E-04		
	Ge-75m	1.135E-04	1.143E-04		ND	−	−	ND	−	−	
	Ru-105	ND	−	−	6.401E-05	5.018E-05		ND	−	−	
	Ru-106	2.523E-04	2.828E-05		2.797E-04	2.630E-04		ND	−	−	6.0E-04
	Te-129	4.603E-02	3.978E-02		1.234E-03	1,052E-03		3.605E-03	7.033E-04		4.0E-01
	Te-129m	ND	−	−	8.680E-04	7.250E-04		1.355E-03	3.745E-04		4.0E-03
	Te-132	2.824E-04	2.743E-06		2.329E-03	2.546E-05		6.470E-03	1.399E-05		7.0E-03
	Pr-144	5.780E+04			9.299E-02			ND	−	−	
	La-140	ND	−	−	ND	−	−	4.537E-05	8.315E-06		7.0E-03
	Eu-152	1.588E-04	1.003E-04		ND	−	−	ND	−	−	
	Bi-212	1.031E-04	8.878E-05		ND	−	−	ND	−	−	
	Ac-228	ND	−	−	7.764E-05	6.890E-05		ND	−	−	

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。
※ O.OE−Oとは、O.O×10^−Oと同じ意味である。

福島第二原子力発電所敷地内における空気中放射性物質の核種分析結果について

1．採取・測定条件

試料採取	場所	福島第二 MP－1	福島第二 MP－1	福島第二 MP－1	福島第二 MP－1
	日時	3月19日	3月19日	3月20日	3月20日
		9:15～9:25	18:18～18:28	11:27～11:37	17:10～17:20
	採取方法	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取
	風向・風速	－	－	－	－
試料測定	日時	3/19 10:39～	3/19 19:08～	3/20 16:17～	3/20 21:11～
	測定方法	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析
	測定時間	1000s	1000s	500s	500s

2．結果

	核種	3月19日 採取分①			3月19日 採取分②			3月20日 採取分①			3月20日 採取分②			③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度 (Bq/cm3)	②検出限界濃度 (Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度 (Bq/cm3)	②検出限界濃度 (Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度 (Bq/cm3)	②検出限界濃度 (Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度 (Bq/cm3)	②検出限界濃度 (Bq/cm3)	空気中濃度限度に対する割合(①/③)	
揮発性	I-131	2.7E-04	5.6E-05	0.27	2.5E-04	5.7E-05	0.25	5.3E-05	1.2E-05	0.05	2.2E-04	4.3E-05	0.22	1.0E-03
	I-132	2.4E-04	1.7E-04	0.00	1.2E-04	1.2E-04	0.00	ND	－	－	2.6E-04	2.5E-04	0.00	7.0E-02
	I-133	ND	－	－	ND	－	－	ND	－	－	ND	－	－	5.0E-03
	Cs-134	6.3E-05	5.9E-05	1.06	ND	－	－	ND	－	－	ND	－	－	2.0E-03
	Cs-136	ND	－	－	1.7E-04	1.6E-04	0.02	ND	－	－	ND	－	－	1.0E-02
粒子状	Co-58	ND	－	－	ND	－	－	ND	－	－	ND	－	－	1.0E-02
	I-131	1.4E-04	3.1E-05	0.14	1.3E-04	3.1E-05	0.13	2.6E-05	6.0E-06	0.03	ND	－	－	1.0E-03
	I-132	1.2E-04	9.0E-05	0.00	ND	－	－	ND	－	－	1.8E-03	8.9E-04	0.03	7.0E-02
	I-133	ND	－	－	2.4E-04	2.2E-04	0.05	ND	－	－	ND	－	－	5.0E-03
	Cs-134	ND	－	－	ND	－	－	ND	－	－	ND	－	－	2.0E-03
	Cs-136	ND	－	－	ND	－	－	ND	－	－	ND	－	－	1.0E-02
	Cs-137	ND	－	－	ND	－	－	ND	－	－	ND	－	－	3.0E-03
その他核種	Ru-105	ND	－	－	2.1E-04	2.0E-04	0.00	ND	－	－	ND	－	－	8.0E-02
	Te-132	ND	－	－	ND	－	－	4.2E-06	3.4E-06	0.00	ND	－	－	7.0E-03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。
※ O.OE－Oとは、O.O×10^{-O}と同じ意味である。

福島第二原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第二 MP−1	福島第二 MP−1	福島第二 MP−1	福島第二 MP−1
	日時	3月21日	3月21日	3月22日	3月22日
		10:40〜10:50	18:11〜18:19	10:02〜10:10	16:43〜16:51
	採取方法	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取
	風向・風速	−	−	−	−
試料測定	日時	3/21 12:15〜	3/21 19:00〜	3/22 11:53〜	3/22 17:32〜
	測定方法	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析
	測定時間	500s	500s	500s	500s

2. 結果

	核種	3月21日 採取分①			3月21日 採取分②			3/22採取分①			3/22採取分②			③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	
揮発性	Co−58	ND	−	−	2.9E−05	2.1E−05	0.00	ND	−	−	ND	−	−	4.0E−01
	I−131	2.3E−04	1.7E−05	0.23	1.6E−04	1.9E−05	0.16	1.416E−04	2.272E−05	0.14	1.349E−04	2.216E−05	0.13	1.0E−03
	I−132	2.4E−04	2.4E−05	0.003	8.1E−04	1.9E−05	0.01	ND	−	−	ND	−	−	7.0E−02
	I−133	ND	−	−	ND	−	−	ND	−	−	ND	−	−	5.0E−03
	Cs−134	ND	−	−	1.7E−05	1.7E−05	0.01	2.646E−05	1.838E−05	0.01	1.865E−05	1.747E−05	0.01	2.0E−03
	Cs−137	1.8E−05	1.3E−05	0.01	ND	−	−	2.316E−05	1.739E−05	0.01	2.146E−05	1.731E−05	0.01	3.0E−03
粒子状	Co−58	ND	−	−	1.3E−05	9.9E−06	0.00	ND	−	−	ND	−	−	1.0E−02
	I−131	1.5E−04	9.6E−06	0.151	1.2E−04	1.0E−05	0.12	6.939E−05	1.155E−05	0.07	7.919E−05	1.190E−05	0.08	1.0E−03
	I−132	2.5E−04	1.3E−05	0.004	3.9E−04	1.6E−05	0.01	ND	−	−	4.153E−05	3.357E−05	0.00	7.0E−02
	Cs−134	4.4E−05	9.3E−06	0.02	3.0E−05	1.0E−05	0.02	1.293E−05	9.476E−06	0.01	1.353E−05	9.812E−06	0.01	2.0E−03
	Cs−136	ND	−	−	ND	−	−	ND	−	−	ND	−	−	1.0E−02
	Cs−137	4.7E−05	8.0E−06	0.02	3.3E−05	9.7E−06	0.01	1.024E−05	8.838E−06	0.00	1.369E−05	8.361E−06	0.00	3.0E−03
その他核種	Ru−105	ND	−	−	1.2E−04	8.6E−05	0.00	ND	−	−	ND	−	−	8.0E−02
	Ru−106	ND	−	−	1.4E−04	7.6E−05	0.24	ND	−	−	ND	−	−	6.0E−04
	Te−129	4.5E−04	2.9E−04	0.00	9.3E−04	2.2E−04	0.00	2.316E−03	1.784E−03	0.01	ND	−	−	4.0E−01
	Te−129m	6.4E−04	9.0E−04	0.16	ND	−	−	ND	−	−	ND	−	−	4.0E−03
	Te−132	7.6E−04	6.6E−04	0.11	1.4E−03	6.8E−05	0.21	2.191E−05	1.649E−05	0.00	ND	−	−	7.0E−03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。
※ O.OE−Oとは、O.O×10^{-O}と同じ意味である。

福島第二原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第二 MP−1	福島第二 MP−1	福島第二 MP−1	福島第二 MP−1
	日時	3/23 9:40〜9:48	3/23 16:06〜16:14	3/24 9:47〜9:55	3/24 17:46〜17:54
	採取方法	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取
	風向・風速	—	—	—	—
試料測定	日時	3/23 15:00〜	3/23 17:38〜	3/24 10:39〜	3/25 0:40〜
	測定方法	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析
	測定時間	500s	500s	500s	500s

2. 結果

	核種	3/23採取分①			3/23採取分②			3/24採取分①			3/24採取分②			③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度 (Bq/cm3)	②検出限界濃度 (Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度 (Bq/cm3)	②検出限界濃度 (Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度 (Bq/cm3)	②検出限界濃度 (Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度 (Bq/cm3)	②検出限界濃度 (Bq/cm3)	空気中濃度限度に対する割合(①/③)	
揮発性	Co-58	ND	—	—	1.460E-05	1.353E-05	0.00	ND	—	—	ND	—	—	1.0E-02
	I-131	2.7E-04	3.9E-05	0.27	2.1E-04	1.4E-05	0.21	1.9E-04	1.5E-05	0.19	1.7E-04	1.4E-05	0.17	1.0E-03
	I-132	2.8E-04	2.2E-04	0.00	2.8E-04	2.8E-05	0.00	3.0E-04	2.5E-05	0.00	ND	—	—	7.0E-02
	I-133	ND	—	—	ND	—	—	ND	—	—	ND	—	—	5.0E-03
	Cs-134	4.3E-05	3.0E-05	0.02	2.3E-05	1.2E-05	0.01	2.8E-05	1.3E-05	0.01	1.6E-05	1.2E-05	0.01	2.0E-03
	Cs-137	ND	-	-	2.0E-05	1.3E-05	0.01	3.0E-05	1.2E-05	0.01	2.9E-05	1.1E-05	0.01	3.0E-03
粒子状	Co-58	ND	-	-	ND	-	-	ND	—	—	ND	—	—	1.0E-02
	I-131	1.5E-04	2.1E-05	0.15	8.2E-05	7.9E-06	0.08	1.1E-04	7.3E-06	0.11	6.4E-05	2.1E-05	0.06	1.0E-03
	I-132	ND	—	—	2.6E-04	1.5E-05	0.00	1.7E-04	1.0E-05	0.00	ND	—	—	7.0E-02
	Cs-134	ND	—	—	1.7E-05	8.5E-06	0.01	2.1E-05	6.7E-06	0.01	ND	—	—	2.0E-03
	Cs-136	ND	—	—	ND	-	-	ND	—	—	ND	—	—	1.0E-02
	Cs-137	ND	-	-	1.7E-05	6.9E-06	0.01	2.0E-05	6.6E-06	0.01	2.1E-05	1.7E-05	0.01	3.0E-03
その他の検出核種	Ru-106	ND	-	-	8.210E-05	5.694E-05	0.14	ND	—	—	ND	—	—	6.0E-04
	Te-129	ND	—	—	9.278E-04	2.649E-04	2.320E-03	7.6E-04	1.3E-04	1.894E-03	1.4E-02	9.5E-03	0.04	4.0E-01
	Te-129m	ND	—	—	ND	—	—	5.7E-04	1.7E-04	0.14	4.6E-04	2.8E-04	0.11	4.0E-03
	Te-132	1.6E-04	2.2E-05	0.02	7.064E-04	6.527E-06	1.009E-01	5.6E-04	5.7E-06	0.08	3.5E-04	1.1E-05	0.05	7.0E-03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。

※ ○.○E−○とは、○.○×10$^{-○}$と同じ意味である。

福島第二原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第二 MP−1	福島第二 MP−1	福島第二 MP−1	福島第二 MP−1
	日時	3/25 9:41〜9:48	3/25 17:32〜17:40	3/26 10:52〜10:59	3/26 16:22〜16:29
	採取方法	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取
	風向・風速	−	−	−	−
試料測定	日時	2011/3/25 12:20〜	2011/3/25 12:33〜	2011/3/26 12:35〜	2011/3/26 19:19〜
	測定方法	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析
	測定時間	500s	500s	500s	500s

2. 結果

	核種	3/25採取分①			3/25採取分②			3/26採取分①			3/26採取分②			③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	
揮発性	Co-58	ND	−	−	ND	−	−	ND	−	−	ND	−	−	1.0E-02
	I-131	2.1E-04	3.2E-05	0.21	1.7E-04	1.3E-05	0.17	1.0E-04	1.3E-05	0.10	1.6E-04	3.4E-05	0.16	1.0E-03
	I-132	1.6E-04	1.0E-04	0.00	2.2E-04	2.0E-05	0.00	1.6E-04	2.4E-05	0.00	ND	−	−	7.0E-02
	I-133	ND	−	−	ND	−	−	ND	−	−	ND	−	−	5.0E-03
	Cs-134	6.9E-05	3.2E-05	0.03	2.6E-05	1.2E-05	0.01	1.3E-05	1.3E-05	0.01	ND	−	−	2.0E-03
	Cs-137	ND	−	−	3.5E-05	1.1E-05	0.01	1.6E-05	1.0E-05	0.01	ND	−	−	3.0E-03
粒子状	Co-58	ND	−	−	ND	−	−	ND	−	−	ND	−	−	1.0E-02
	I-131	1.0E-04	1.6E-05	0.10	6.8E-05	7.0E-06	0.07	8.4E-05	1.7E-05	0.08	8.8E-04	1.7E-04	0.88	1.0E-03
	I-132	6.0E-05	5.0E-05	0.00	1.1E-04	1.2E-05	0.00	ND	−	−	ND	−	−	7.0E-02
	Cs-134	ND	−	−	1.0E-05	6.1E-06	0.01	1.8E-05	1.6E-05	0.01	1.8E-04	1.6E-04	0.09	2.0E-03
	Cs-136	ND	−	−	ND	−	−	ND	−	−	ND	−	−	1.0E-02
	Cs-137	ND	−	−	1.1E-05	5.8E-06	0.00	1.7E-05	1.6E-05	0.01	2.1E-04	1.6E-04	0.07	3.0E-03
その他の検出核種	Ru-105	ND	−	−	7.3E-05	5.3E-05	0.00	ND	−	−	ND	−	−	8.0E-02
	Ru-106	ND	−	−	ND	−	−	ND	−	−	ND	−	−	6.0E-04
	Te-129	ND	−	−	5.7E-04	1.5E-04	0.00	5.9E-04	3.4E-04	1.475E-03	ND	−	−	4.0E-01
	Te-129m	ND	−	−	4.4E-04	1.3E-04	0.11	4.1E-04	2.4E-04	1.025E-01	ND	−	−	4.0E-03
	Te-132	1.1E-04	1.6E-05	0.02	3.9E-04	4.8E-06	0.08	2.3E-04	8.4E-06	0.03	3.5E-04	3.0E-05	0.05	7.0E-03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。
※ ○.○E−○とは、○.○×10$^{-○}$と同じ意味である。

福島第二原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第二 MP−1	福島第二 MP−1	福島第二 MP−1	福島第二 MP−1
	日時	3/27 10:52〜11:00	3/27 17:02〜17:10	3/28 10:46〜10:54	3/28 17:04〜17:12
	採取方法	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取
	風向・風速	−	−	−	−
試料測定	日時	2011/3/27 11:56〜	2011/3/27 18:03〜	2011/3/28 13:10〜	2011/3/28 17:49〜
	測定方法	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析
	測定時間	500s	500s	1000s	1000s

2. 結果

	核種	3/27採取分①			3/27採取分②			3/28採取分①			3/28採取分②			③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①/③)	
揮発性	Co−58	ND	−	−	ND	−	−	−	−	−	−	−	−	1.0E−02
	I−131	1.3E−04	1.3E−05	0.13	4.3E−05	1.9E−05	0.04	3.1E−05	1.4E−05	0.03	4.6E−05	1.4E−05	0.05	1.0E−03
	I−132	1.4E−04	1.6E−05	0.00	ND	−	−	−	−	−	2.8E−05	2.2E−05	0.00	7.0E−02
	I−133	ND	−	−	ND	−	−	−	−	−	−	−	−	5.0E−03
	Cs−134	1.9E−05	1.0E−05	0.01	ND	−	−	−	−	−	−	−	−	2.0E−03
	Cs−137	1.9E−05	9.5E−06	0.01	ND	−	−	−	−	−	−	−	−	3.0E−03
粒子状	Co−58	ND	−	−	ND	−	−	−	−	−	−	−	−	1.0E−02
	I−131	7.3E−05	1.6E−05	0.07	7.6E−05	6.4E−06	0.08	−	−	−	−	−	−	1.0E−03
	I−132	3.2E−05	2.7E−05	−	6.3E−05	8.8E−06	0.00	−	−	−	−	−	−	7.0E−02
	Cs−134	2.3E−05	1.5E−05	0.01	9.9E−06	5.7E−06	0.00	−	−	−	−	−	−	2.0E−03
	Cs−136	ND	−	−	ND	−	−	−	−	−	−	−	−	1.0E−02
	Cs−137	1.6E−05	1.6E−05	0.01	ND	−	−	−	−	−	−	−	−	3.0E−03
その他の検出核種	Ru−105	ND	−	−	ND	−	−	−	−	−	−	−	−	8.0E−02
	Ru−106	ND	−	−	ND	−	−	−	−	−	−	−	−	6.0E−04
	Te−129	2.6E−04	2.2E−04	0.00	2.1E−04	1.1E−04	0.00	−	−	−	−	−	−	4.0E−01
	Te−129m	3.3E−04	2.2E−04	0.08	1.2E−04	1.1E−04	0.03	−	−	−	−	−	−	4.0E−03
	Te−132	1.9E−04	7.8E−06	0.03	7.5E−05	3.7E−06	0.01	−	−	−	1.4E−05	1.1E−05	0.00	7.0E−03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。

※ ○.○E−○とは、○.○×$10^{-○}$と同じ意味である。

福島第二原子力発電所敷地内における空気中放射性物質の核種分析結果について

1. 採取・測定条件

試料採取	場所	福島第二 MP−1	福島第二 MP−1		
	日時	3/29 9:51～9:59	3/29 15:56～16:04		
	採取方法	モニタリングカーにてダスト採取	モニタリングカーにてダスト採取		
	風向・風速	−	−		
試料測定	日時	2011/3/29 13:24～	2011/3/29 18:18～		
	測定方法	Ge半導体型核種分析装置にて分析	Ge半導体型核種分析装置にて分析		
	測定時間	500s	500s		

2. 結果

	核種	3/29採取分②			3/29採取分②									③放射線業務従事者の呼吸する空気中の濃度限度(Bq/cm3)※
		①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①／③)	①放射能濃度(Bq/cm3)	②検出限界濃度(Bq/cm3)	空気中濃度限度に対する割合(①／③)							
揮発性	Co−58	ND	−	−	ND	−	−							1.0E−02
	I−131	2.0E−04	1.9E−05	0.20	1.4E−04	1.2E−05	0.14							1.0E−03
	I−132	ND	−	−	8.3E−05	2.1E−05	0.00							7.0E−02
	I−133	ND	−	−	ND	−	−							5.0E−03
	Cs−134	3.3E−05	1.5E−05	0.02	6.0E−05	9.2E−06	0.03							2.0E−03
	Cs−137	4.3E−05	1.4E−05	0.01	6.3E−05	9.5E−06	0.02							3.0E−03
粒子状	Co−58	ND	−	−	ND	−	−							1.0E−02
	I−131	1.3E−04	1.9E−05	0.13	7.9E−05	6.3E−06	0.08							1.0E−03
	I−132	ND	−	−	3.9E−05	1.1E−05	0.00							7.0E−02
	Cs−134	1.6E−04	1.8E−05	0.08	4.3E−05	5.9E−06	0.02							2.0E−03
	Cs−136	1.6E−05	7.1E−06	0.00	4.2E−06	3.8E−06	0.00							1.0E−02
	Cs−137	1.8E−04	1.7E−05	0.06	3.9E−05	5.2E−06	0.01							3.0E−03
その他の検出核種	Ru−105	ND	−	−	ND	−	−							8.0E−02
	Ru−106	ND	−	−	ND	−	−							6.0E−04
	Te−129	ND	−	−	1.5E−03	2.1E−04	0.00							4.0E−01
	Te−129m	ND	−	−	1.3E−04	9.2E−05	0.03							4.0E−03
	Te−132	ND	−	−	1.5E−04	3.6E−06	0.02							7.0E−03

※ 人が呼吸する空気中の放射性核種の3ヶ月間についての平均濃度に対して、法令にて定められている濃度限度。
※ ○.○E−○とは、○.○×10$^{-○}$と同じ意味である。

東京電力福島第一原子力発電所敷地内の核種分析結果

採取場所：1F南放水口付近（1～4u放水口から南側約330m地点）
採取方法：海水を汲みあげ採取
測定方法：試料500mlを福島第二に運搬し、Ge半導体検出器で測定
測定時間：1，000秒

核種	3月21日 14:30 1F南放水口付近（1～4u放水口から南側約100m地点）			3月22日 6:30 1F南放水口付近（1～4u放水口から南側約330m地点）			3月23日 8:50 1F南放水口付近（1～4u放水口から南側約330m地点）			③周辺監視区域外の水中の濃度限度 (Bq/cm³)
	①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	
Co-58	5.955E-02	3.349E-02	0.1	N.D	2.138E-02	−	5.0E-02	2.6E-02	0.1	1E+00
I-131	5.066E+00	4.245E-02	126.7	1.190E+00	2.293E-02	29.8	5.9E+00	3.6E-02	146.9	4E-02
I-132	2.136E+00	1.925E-01	0.7	1.362E+00	7.721E-02	0.5	5.4E+00	1.4E-01	1.8	3E+00
Cs-134	1.486E+00	4.030E-02	24.8	1.504E-01	1.769E-02	2.5	2.5E-01	2.7E-02	4.2	6E-02
Cs-136	2.132E-01	2.358E-02	0.7	2.350E-02	1.056E-02	0.1	2.5E-02	2.4E-02	0.1	3E-01
Cs-137	1.484E+00	4.204E-02	16.5	1.535E-01	1.626E-02	1.7	2.5E-01	2.7E-02	2.8	9E-02
Zr-95							2.3E-01	7.8E-02	0.3	9E-01
Ru-105							8.7E-01	6.2E-01	0.3	3E+00
Ru-106							3.7E-01	2.0E-01	3.7	1E-01
Te-129							4.0E+00	3.9E+00	0.4	1E+01
Te-132							4.0E-01	3.6E-02	2.0	2E-01
La-140							1.3E-02	1.0E-02	0.0	4E-01

核種	3月24日 10:25 1F南放水口付近（1～4u放水口から南側約330m地点）			3月25日 8:30 1F 南放水口付近（1～4u放水口から南側に約330m地点）			3月26日 8:20 1F 南放水口付近（1～4u放水口から南側に約330m地点）			③周辺監視区域外の水中の濃度限度 (Bq/cm³)
	①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	
Co-60				5.9E-02	2.0E-02	0.3				2.0E-01
Mo-99				2.1E-01	1.7E-01	0.2				1.0E+00
I-131	4.2E+00	2.3E-02	103.9	5.0E+01	6.2E-02	1250.8	3.0E+01	4.0E-02	750.0	4.0E-02
I-132	1.7E+00	4.3E-01	0.6	3.3E+00	7.7E-02	1.1	2.0E+00	6.3E-02	0.7	3.0E+00
Cs-134	4.5E-01	1.7E-02	7.4	7.0E+00	3.9E-02	117.3	4.7E+00	3.1E-02	78.3	6.0E-02
Cs-136	6.1E-02	1.7E-02	0.2	8.0E-01	3.9E-02	2.7	5.2E-01	3.1E-02	1.7	3.0E-01
Cs-137	4.4E-01	1.5E-02	4.9	7.2E+00	3.5E-02	79.6	4.8E+00	2.7E-02	53.3	9.0E-02
Tc-99m							6.8E-02	4.4E-02	0.0	4.0E+01
Te-132	8.0E-02	2.1E-02	0.4	2.2E-01	4.0E-02	1.1				2.0E-01
Ba-140				1.2E+00	1.5E-01	3.9	7.7E-01	1.2E-01	2.6	3.0E-01
La-140	2.1E-02	1.2E-02	0.1	5.8E-01	1.3E-02	1.4	3.5E-01	1.0E-02	0.9	4.0E-01

採取場所：1F南放水口付近（1～4u放水口から南側約330m地点）
採取方法：海水を汲みあげ採取
測定方法：試料500mlを福島第二に運搬し、Ge半導体検出器で測定
測定時間：1，000秒

核種	3月26日 14:30			3月27日 8:30			3月27日 13:50			③周辺監視区域外の水中の濃度限度(Bq/cm^3)
	1F南放水口付近（1～4u放水口から南側約330m地点）			1F南放水口付近（1～4u放水口から南側約330m地点）			1F南放水口付近（1～4u放水口から南側約330m地点）			
	①放射能濃度(Bq/cm^3)	②検出限界濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm^3)	②検出限界濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm^3)	②検出限界濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	
Co-58	7.3E-02	4.7E-02	0.1							1.0E+00
Co-60										2.0E-01
Mo-99										1.0E+00
I-131	7.4E+01	6.5E-02	1850.5	1.1E+01	2.4E-02	275.0	1.0E+01	3.8E-02	250.0	4.0E-02
I-132	3.8E+00	7.4E-02	1.3	3.4E-01	3.4E-02	0.1	3.5E-01	6.3E-02	0.1	3.0E+00
Cs-134	1.2E+01	4.9E-02	196.7	1.9E+00	2.0E-02	31.7	1.9E+00	2.8E-02	31.7	6.0E-02
Cs-136	1.3E+00	5.2E-02	4.2	2.1E-01	2.0E-02	0.7	1.9E-01	3.0E-02	0.6	3.0E-01
Cs-137	1.2E+01	4.9E-02	133.4	1.9E+00	1.8E-02	21.1	1.8E+00	2.7E-02	20.0	9.0E-02
Tc-99m	1.2E-01	6.0E-02	0.0							4.0E+01
Te-129	3.0E+00	2.5E+00	0.3							1.0E+01
Te-129m	1.3E+00	1.0E+00	4.3							3.0E-01
Te-132	1.0E+00	5.2E-02	5.2							2.0E-01
Ba-140	1.8E+00	2.0E-01	6.0	3.0E-01	7.2E-02	1.0	2.6E-01	8.7E-02	0.9	3.0E-01
La-140	8.7E-01	1.6E-01	2.2	2.1E-01	6.5E-03	0.5	1.4E-01	5.5E-02	0.4	4.0E-01

核種	3月28日 8:20			3月28日 14:20			3月29日 8:20			③周辺監視区域外の水中の濃度限度(Bq/cm^3)
	1F南放水口付近（1～4u放水口から南側約330m地点）			1F南放水口付近（1～4u放水口から南側約330m地点）			1F南放水口付近（1～4u放水口から南側約330m地点）			
	①放射能濃度(Bq/cm^3)	②検出限界濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm^3)	②検出限界濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm^3)	②検出限界濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	
Co-58										1E+00
I-131	1.4E+00	1.8E-02	33.9	1.1E+00	1.7E-02	27.9	1.0E+02	7.7E-02	2572.5	4E-02
I-132	5.6E-02	5.4E-02	0.0							3E+00
Cs-134	2.8E-01	1.2E-02	4.6	2.4E-01	1.1E-02	4.1	2.4E+01	6.6E-02	395.5	6E-02
Cs-136	2.6E-02	9.5E-03	0.1	2.4E-02	1.1E-02	0.1	2.2E+00	6.2E-02	7.3	3E-01
Cs-137	2.9E-01	1.1E-02	3.3	2.4E-01	1.0E-02	2.7	2.4E+01	5.5E-02	268.0	9E-02
Tc-99m							1.2E-01	7.8E-02	0.0	4E+01
Te-129										1E+01
Te-129m										3E-01
Te-132										2E-01
Ba-140							3.7E+00	2.3E-01	12.4	3E-01
La-140	2.7E-02	5.6E-03	0.1	1.7E-02	3.7E-03	0.0	2.0E+00	1.9E-02	5.0	4E-01

採取場所：1F南放水口付近(1～4u放水口から南側約330m地点)
採取方法：海水を汲みあげ採取
測定方法：試料500mlを福島第二に運搬し、Ge半導体検出器で測定
測定時間：1，000秒

核種	3月29日 13:55 1F南放水口付近(1～4u放水口から南側約330m地点) ①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)							③周辺監視区域外の水中の濃度限度 (Bq/cm³)
Co-58										1E+00
I-131	1.3E+02	8.7E-02	3355.0							4E-02
I-132										3E+00
Cs-134	3.1E+01	7.4E-02	520.2							6E-02
Cs-136	2.8E+00	7.3E-02	9.5							3E-01
Cs-137	3.2E+01	6.3E-02	352.4							9E-02
Tc-99m	1.6E-01	8.4E-02	0.0							4E+01
Te-129										1E+01
Te-129m										3E-01
Te-132										2E-01
Ba-140	5.0E+00	2.9E-01	16.7							3E-01
La-140	2.5E+00	2.3E-02	6.3							4E-01

核種										③周辺監視区域外の水中の濃度限度
Co-58										1E+00
I-131										4E-02
I-132										3E+00
Cs-134										6E-02
Cs-136										3E-01
Cs-137										9E-02
Tc-99m										4E+01
Te-129										1E+01
Te-129m										3E-01
Te-132										2E-01
Ba-140										3E-01
La-140										4E-01

採取場所：1F 5～6放水口北側(5～6u放水口から北側約30m地点)
採取方法：海水を汲みあげ採取
測定方法：試料500mlを福島第二に運搬し、Ge半導体検出器で測定
測定時間：1，000秒

核種	3月23日 9:10 1F 5～6放水口北側(5～6u放水口から北側約30m地点) ①放射能濃度(Bq/cm³)	②検出限界濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	3月24日 10:40 1F 5～6放水口北側(5～6u放水口から北側約30m地点) ①放射能濃度(Bq/cm³)	②検出限界濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	3月25日 8:50 1F 5～6放水口北側(5～6u放水口から北側約30m地点) ①放射能濃度(Bq/cm³)	②検出限界濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	③周辺監視区域外の水中の濃度限度(Bq/cm³)
Co-58	5.7E-02	3.1E-02	0.1							1E+00
I-131	2.7E+00	2.5E-02	66.6	9.5E-01	1.3E-02	23.7	1.1E+01	2.3E-02	283.8	4E-02
I-132	2.9E+00	7.7E-02	1.0	4.5E-01	2.1E-01	0.2	1.9E-01	4.1E-02	0.1	3E+00
Cs-134	1.8E+00	2.4E-02	29.9	1.1E-01	9.2E-03	1.8	1.7E+00	1.9E-02	28.0	6E-02
Cs-136	2.3E-01	2.5E-02	0.8	1.1E-02	6.5E-03	0.0	2.0E-01	1.7E-02	0.7	3E-01
Cs-137	1.9E+00	2.4E-02	21.4	1.1E-01	8.7E-03	1.2	1.7E+00	1.8E-02	18.5	9E-02
Tc-99m	8.3E-02	2.5E-02	0.0				3.4E-02	2.5E-02	0.0	4E+01
Te-129	7.3E+00	3.8E+00	0.7							1E+01
Te-129m	1.3E+00	6.1E-01	4.2							3E-01
Te-132	1.6E+00	2.1E-02	7.8	1.4E-01	1.0E-02	0.7	1.3E-01	2.1E-02	0.6	2E-01
Ba-140	1.3E-01	9.4E-02	0.4				2.8E-01	7.2E-02	0.9	3E-01
La-140	5.5E-02	1.2E-02	0.1				1.3E-01	6.8E-03	0.3	4E-01

核種	3月26日 8:40 1F 5～6放水口北側(5～6u放水口から北側約30m地点) ①放射能濃度(Bq/cm³)	②検出限界濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	3月26日 14:50 1F 5～6放水口北側(5～6u放水口から北側約30m地点) ①放射能濃度(Bq/cm³)	②検出限界濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	3月27日 8:50 1F 5～6放水口北側(5～6u放水口から北側約30m地点) ①放射能濃度(Bq/cm³)	②検出限界濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	③周辺監視区域外の水中の濃度限度(Bq/cm³)
Co-58										1.0E+00
I-131	2.9E+01	3.6E-02	725.0	1.3E+01	3.7E-02	314.3	8.1E+00	3.2E-02	202.5	4.0E-02
I-132	1.1E-01	5.7E-02	0.0	3.2E-01	5.9E-02	0.1				3.0E+00
I-135	1.0E+00	2.6E-01	1.3							8.0E-01
Cs-134	5.0E+00	3.1E-02	83.3	2.2E+00	3.0E-02	36.3	1.6E+00	2.6E-02	27.2	6.0E-02
Cs-136	5.4E-01	2.9E-02	1.8	2.5E-01	3.0E-02	0.8	1.8E-01	2.0E-02	0.6	3.0E-01
Cs-137	5.1E+00	2.6E-02	56.7	2.2E+00	2.9E-02	24.2	1.7E+00	2.6E-02	18.9	9.0E-02
Tc-99m										4.0E+01
Te-129										1.0E+01
Te-129m										3.0E-01
Te-132				6.7E-02	3.6E-02	0.3				2.0E-01
Ba-140	8.6E-01	1.2E-01	2.9	3.4E-01	1.0E-01	1.1	2.7E-01	8.8E-02	0.9	3.0E-01
La-140	3.2E-01	8.3E-03	0.8	1.5E-01	7.8E-03	0.4	1.1E-01	5.3E-03	0.3	4.0E-01

採取場所：1F 5～6放水口北側(5～6u放水口から北側約30m地点)
採取方法：海水を汲みあげ採取
測定方法：試料500mlを福島第二に運搬し、Ge半導体検出器で測定
測定時間：1，000秒

核種	3月27日 14:05 1F 5～6放水口北側(5～6u放水口から北側約30m地点) ①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	3月28日 8:40 1F 5～6放水口北側(5～6u放水口から北側約30m地点) ①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	3月28日 14:40 1F 5～6放水口北側(5～6u放水口から北側約30m地点) ①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	③周辺監視区域外の水中の濃度限度 (Bq/cm³)
Co-58										1E+00
I-131	4.6E+01	5.2E-02	1150.0	3.3E+01	5.7E-02	816.0	2.7E+01	4.2E-02	665.8	4E-02
I-132										3E+00
Cs-134	9.8E+00	4.1E-02	163.3	6.6E+00	4.5E-02	110.3	5.6E+00	3.2E-02	93.8	6E-02
Cs-136	9.8E-01	3.8E-02	3.3	6.8E-01	4.3E-02	2.3	5.6E-01	3.0E-02	1.9	3E-01
Cs-137	9.8E+00	3.4E-02	108.9	6.6E+00	4.1E-02	73.9	5.7E+00	2.8E-02	63.5	9E-02
Tc-99m										4E+01
Te-129										1E+01
Te-129m										3E-01
Te-132										2E-01
Ba-140	1.6E+00	1.6E-01	5.3	1.1E+00	1.6E-01	3.6	8.8E-01	1.2E-01	2.9	3E-01
La-140	5.5E-01	1.1E-02	1.4	5.2E-01	1.2E-02	1.3	3.7E-01	8.5E-03	0.9	4E-01

核種	3月29日 8:40 1F 5～6放水口北側(5～6u放水口から北側約30m地点) ①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)	3月29日 14:10 1F 5～6放水口北側(5～6u放水口から北側約30m地点) ①放射能濃度 (Bq/cm³)	②検出限界濃度 (Bq/cm³)	水中濃度限度に対する割合 (①/③)				③周辺監視区域外の水中の濃度限度 (Bq/cm³)
Co-58										1E+00
I-131	4.9E+01	5.2E-02	1234.5	5.1E+01	5.2E-02	1262.5				4E-02
I-132										3E+00
Cs-134	1.2E+01	4.5E-02	191.8	1.2E+01	4.6E-02	202.2				6E-02
Cs-136	1.1E+00	4.3E-02	3.6	1.1E+00	4.3E-02	3.6				3E-01
Cs-137	1.2E+01	3.8E-02	129.8	1.2E+01	3.9E-02	137.0				9E-02
Tc-99m	6.6E-02	5.4E-02	0.0	6.4E-02	4.9E-02	0.0				4E+01
Te-129										1E+01
Te-129m										3E-01
Te-132										2E-01
Ba-140	1.9E+00	1.8E-01	6.2	2.0E+00	1.8E-01	6.7				3E-01
La-140	6.6E-01	1.2E-02	1.7	6.9E-01	1.3E-02	1.7				4E-01

東京電力福島第二原子力発電所敷地内の核種分析結果

採取場所：2F北放水口付近（3、4号放水口付近）（1Fから約10km）
採取方法：海水をくみ上げ採取
測定方法：試料500mlをGe半導体検出器で測定
測定時間：1，000秒

核種	3月21日 23:15 2F北放水口付近(3、4号放水口付近)(1Fから約10km) ①放射能濃度(Bq/cm^3)	②検出限界濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	3月22日 14:28 2F北放水口付近(3、4号放水口付近)(1Fから約10km) ①放射能濃度(Bq/cm^3)	②検出限界濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	3月23日 13:51 2F北放水口付近(3、4号放水口付近)(1Fから約10km) ①放射能濃度(Bq/cm^3)	②検出限界濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	③周辺監視区域外の水中の濃度限度(Bq/cm^3)
Te-132										3.0E+00
Co-58	5.704E-03	7.570E-03	0.0	N.D	1.526E-02	―				1.0E+00
Ru-105							3.4E-02	2.5E-02	0.01	3E+00
Ru-106										1E-01
I-131	1.085E+00	1.284E-02	27.1	1.138E+00	1.993E-02	28.5	7.4E-01	2.7E-02	18.6	4.0E-02
I-132	1.597E-01	4.392E-02	0.1	N.D	8.791E-02	―	2.0E-01	5.8E-02	0.1	3.0E+00
Cs-134	4.815E-02	9.213E-03	0.8	4.631E-02	1.350E-02	0.8	5.1E-02	2.0E-02	0.8	6.0E-02
Cs-136	6.682E-03	4.722E-03	0.0	N.D	7.849E-03	―				3.0E-01
Cs-137	5.283E-02	8.822E-03	0.6	3.962E-02	1.406E-02	0.4	5.5E-02	2.0E-02	0.6	9.0E-02

核種	3月24日 9:30 2F北放水口付近(3、4号放水口付近)(1Fから約10km) ①放射能濃度(Bq/cm^3)	②検出限界濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	3月25日 10:00 2F北放水口付近(3、4号放水口付近)(1Fから約10km) ①放射能濃度(Bq/cm^3)	②検出限界濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	3月26日 15:15 2F 北放水口付近(3,4号放水口付近)(1Fから約10km) ①放射能濃度(Bq/cm^3)	②検出限界濃度(Bq/cm^3)	水中濃度限度に対する割合(①/③)	③周辺監視区域外の水中の濃度限度(Bq/cm^3)
Te-132				1. 3E-02	7. 4E-03	0.004				3.0E+00
Co-58										1.E+00
Ru-105	5.6E-02	4.4E-02	0.02							3E+00
Ru-106										1E-01
I-131	1.1E+00	5.2E-02	28.4	4. 3E-01	1. 0E-02	10. 7	4. 1E-01	2. 1E-02	10.3	4E-02
I-132	1.2E-01	8.8E-02	0.04	5. 8E-02	2. 2E-02	0. 02				3E+00
Cs-134	9.9E-02	3.8E-02	1.6	2. 6E-02	7. 4E-03	0. 4	2. 6E-02	1. 8E-02	0.4	6E-02
Cs-136	6.8E-02	4.9E-02	0.2	4. 4E-03	3. 2E-03	0. 01	2. 7E-02	1. 9E-02	0.3	3E-01
Cs-137	9.4E-02	4.1E-02	1.0	3. 4E-02	5. 9E-03	0. 4				9E-02

※ ○.○E−○とは、○.○×１０−○と同じ意味である。

採取場所：2F北放水口付近（3、4号放水口付近）（1Fから約10km）
採取方法：海水をくみ上げ採取
測定方法：試料500mlをGe半導体検出器で測定
測定時間：1，000秒

検出核種（半減期）	3月27日 14:30 2F 北放水口付近(3,4号放水口付近)(1Fから約10km) ①放射能濃度(Bq/cm³)	②検出限界濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	3月28日 9:35 2F 北放水口付近(3,4号放水口付近)(1Fから約10km) ①放射能濃度(Bq/cm³)	②検出限界濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	3月29日 10:15 2F 北放水口付近(3,4号放水口付近)(1Fから約10km) ①放射能濃度(Bq/cm³)	②検出限界濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	③周辺監視区域外の水中の濃度限度(Bq/cm³)
Te-132										3.0E+00
Co-58										1.E+00
Ru-105										3.0E+00
Ru-106										1E-01
I-131	3.8E+00	1.5E-02	95.0	3.8E+00	3.0E-02	95.5	1.6E+00	1.7E-02	40.9	4.0E-02
I-132	1.5E-02	1.3E-02	0.005							3.0E+00
Cs-134	5.4E-01	1.2E-02	9.0	6.1E-01	2.3E-02	10.1	3.2E-01	1.3E-02	5.4	6.0E-02
Cs-136	5.5E-02	1.0E-03	0.2	6.3E-02	1.7E-02	0.2	2.5E-02	9.4E-03	0.1	3.0E-01
Cs-137	5.7E-01	1.0E-02	6.3	6.2E-01	2.2E-02	6.9	3.2E-01	1.2E-02	3.6	9.0E-02
Ba-140				9.5E-02	5.7E-02	0.3	5.3E-02	3.1E-02	0.2	3.0E-01
La-140				4.5E-02	6.2E-03	0.1	2.4E-02	3.6E-03	0.1	4.0E-01

核種	①放射能濃度(Bq/cm³)	②検出限界濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	②検出限界濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	②検出限界濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	③周辺監視区域外の水中の濃度限度(Bq/cm³)
Te-132										3.0E+00
Co-58										1.E+00
Ru-105										3.0E+00
Ru-106										1E-01
I-131										4.0E-02
I-132										3.0E+00
Cs-134										6.0E-02
Cs-136										3.0E-01
Cs-137										9.0E-02

※ ○．○E−○とは、○．○×１０−○と同じ意味である。

採取場所：2F岩沢海岸付近（1,2号放水口から南側に約7，000m地点）
採取方法：海水をくみ上げ採取
測定方法：試料500mlをGe半導体検出器で測定
測定時間：1，000秒

検出核種（半減期）	3月21日 23:45 2F岩沢海岸付近（1,2号放水口から南側に約7，000m地点）			3月22日 15:06 2F岩沢海岸付近（1,2号放水口から南側に約7，000m地点）			3月23日 14:25 2F岩沢海岸付近（1,2号放水口から南側に約7，000m地点）			③周辺監視区域外の水中の濃度限度（Bq/cm^3）
	①放射能濃度（Bq/cm^3）	②検出限界濃度（Bq/cm^3）	水中濃度限度に対する割合（①/③）	①放射能濃度（Bq/cm^3）	②検出限界濃度（Bq/cm^3）	水中濃度限度に対する割合（①/③）	①放射能濃度（Bq/cm^3）	②検出限界濃度（Bq/cm^3）	水中濃度限度に対する割合（①/③）	
Te-132										3.0E+00
Co-58	N.D	6.845E-03	－	N.D	1.301E-02					1.E+00
Ru-105							3.3E-02	2.8E-02	0.01	3.0E+00
Ru-106							1.2E-01	1.2E-01	1.25	1E-01
I-131	6.558E-01	1.226E-02	16.4	6.664E-01	1.862E-02	16.7	7.6E-01	2.7E-02	19.1	4.0E-02
I-132	1.205E-01	4.146E-02	0.0	N.D	7.915E-02		3.3E-01	5.3E-02	0.1	3.0E+00
Cs-134	3.110E-02	8.657E-03	0.5	3.925E-02	1.135E-02	0.7	3.3E-02	2.1E-02	0.5	6.0E-02
Cs-136	5.474E-03	4.840E-03	0.0	N.D	6.784E-03					3.0E-01
Cs-137	3.292E-02	8.303E-03	0.4	4.361E-02	1.129E-02	0.5	4.3E-02	2.1E-02	0.5	9.0E-02

核種	3月24日 8:45 2F岩沢海岸付近（1,2号放水口から南側に約7，000m地点）（1Fから約16km）			3月25日 9:10 2F 岩沢海岸付近（1,2号放水口から南側に約7,000m地点）（1Fから約16km）			3月26日 15:50 2F 岩沢海岸付近（1,2号放水口から南側に約7,000m地点）（1Fから約16km）			③周辺監視区域外の水中の濃度限度（Bq/cm^3）
	①放射能濃度（Bq/cm^3）	②検出限界濃度（Bq/cm^3）	水中濃度限度に対する割合（①/③）	①放射能濃度（Bq/cm^3）	②検出限界濃度（Bq/cm^3）	水中濃度限度に対する割合（①/③）	①放射能濃度（Bq/cm^3）	②検出限界濃度（Bq/cm^3）	水中濃度限度に対する割合（①/③）	
Te-132										3.0E+00
Co-58										1.E+00
Ru-105										3.0E+00
Ru-106										1E-01
I-131	5. 0E-01	1. 0E-02	12.6	3. 7E-01	1. 0E-02	9. 2	3.0E-01	9.6E-03	7.6	4.0E-02
I-132	N.D	1.9E-02	－	1. 2E-01	2. 6E-02	0. 04				3.0E+00
Cs-134	3.5E-02	7.0E-03	0.6	2. 0E-02	6. 7E-03	0. 3	1.3E-02	7.1E-03	0.2	6.0E-02
Cs-136	5.3E-03	5.1E-03	0.02	4. 2E-03	3. 3E-03	0. 01				3.0E-01
Cs-137	3.8E-02	7.0E-03	0.4	2. 2E-02	6. 0E-03	0. 2	1.4E-02	6.8E-03	0.2	9.0E-02

※ ○.○E−○とは、○.○×１０−○と同じ意味である。

採取場所：2F岩沢海岸付近（1,2号放水口から南側に約7，000m地点）
採取方法：海水をくみ上げ採取
測定方法：試料500mlをGe半導体検出器で測定
測定時間：1，000秒

検出核種（半減期）	3月27日 08:45 2F岩沢海岸付近（1,2号放水口から南側に約7，000m地点）			3月28日 8:45 2F岩沢海岸付近（1,2号放水口から南側に約7，000m地点）			3月29日 9:20 2F岩沢海岸付近（1,2号放水口から南側に約7，000m地点）			③周辺監視区域外の水中の濃度限度 (Bq/cm^3)
	①放射能濃度 (Bq/cm^3)	②検出限界濃度 (Bq/cm^3)	水中濃度限度に対する割合（①/③）	①放射能濃度 (Bq/cm^3)	②検出限界濃度 (Bq/cm^3)	水中濃度限度に対する割合（①/③）	①放射能濃度 (Bq/cm^3)	②検出限界濃度 (Bq/cm^3)	水中濃度限度に対する割合（①/③）	
Te-132										3.0E+00
Co-58										1.E+00
Ru-105										3.0E+00
Ru-106										1E-01
I-131	2.9E-01	1.0E-02	7.4	2.4E+00	2.7E-02	58.8	1.3E+00	1.7E-02	31.9	4.0E-02
I-132										3.0E+00
Cs-134	2.0E-02	6.0E-03	0.3	3.3E-01	2.1E-02	5.5	2.3E-01	1.2E-02	3.9	6.0E-02
Cs-136	2.3E-03	2.1E-03	0.01	2.5E-02	1.7E-02	0.08	1.7E-02	9.3E-03	0.06	3.0E-01
Cs-137	2.4E-02	5.7E-03	0.3	3.8E-01	2.1E-02	4.2	2.3E-01	1.2E-02	2.6	9.0E-02
Ba-140							3.6E-02	3.0E-02	0.1	3.0E-01
La-140				2.8E-02	5.3E-03	0.1	1.6E-02	4.4E-03	0.0	4.0E-01

核種										③周辺監視区域外の水中の濃度限度 (Bq/cm^3)
	①放射能濃度 (Bq/cm^3)	②検出限界濃度 (Bq/cm^3)	水中濃度限度に対する割合（①/③）	①放射能濃度 (Bq/cm^3)	②検出限界濃度 (Bq/cm^3)	水中濃度限度に対する割合（①/③）	①放射能濃度 (Bq/cm^3)	②検出限界濃度 (Bq/cm^3)	水中濃度限度に対する割合（①/③）	
Te-132										3.0E+00
Co-58										1.E+00
Ru-105										3.0E+00
Ru-106										1E-01
I-131										4.0E-02
I-132										3.0E+00
Cs-134										6.0E-02
Cs-136										3.0E-01
Cs-137										9.0E-02

※　○.○E－○とは、○.○×１０－○と同じ意味である。

採取場所：2F富岡川河口付近（3,4u放水口から北側約2，000m地点）（IFから約8km）
採取方法：海水をくみ上げ採取
測定方法：試料500mlをGe半導体検出器で測定
測定時間：1，000秒

検出核種（半減期）	3月22日 0:38 2F富岡川河口付近（3,4u放水口から北側約2，000m地点）（IFから約8km）									③周辺監視区域外の水中の濃度限度(Bq/cm³)
	①放射能濃度(Bq/cm³)	②検出限界濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	②検出限界濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	②検出限界濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	
Te-132										3.0E+00
Co-58	1.028E-02	1.253E-02	0.0							1.E+00
Ru-105										3.0E+00
Ru-106										1E-01
I-131	3.211E+00	1.694E-02	80.3							4.0E-02
I-132	8.761E-01	4.236E-02	0.3							3.0E+00
Cs-134	7.535E-02	1.102E-02	1.3							6.0E-02
Cs-136	1.159E-02	7.718E-03	0.0							3.0E-01
Cs-137	7.760E-02	1.186E-02	0.9							9.0E-02

核種	①放射能濃度(Bq/cm³)	②検出限界濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	②検出限界濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	①放射能濃度(Bq/cm³)	②検出限界濃度(Bq/cm³)	水中濃度限度に対する割合(①/③)	③周辺監視区域外の水中の濃度限度(Bq/cm³)
Te-132										3.0E+00
Co-58										1.E+00
Ru-105										3.0E+00
Ru-106										1E-01
I-131										4.0E-02
I-132										3.0E+00
Cs-134										6.0E-02
Cs-136										3.0E-01
Cs-137										9.0E-02

※ ○.○E－○とは、○.○×１０－○と同じ意味である。

平成２３年３月３０日
原子力安全・保安院

地震被害情報（第６３報）
（３月３０日１５時３０分現在）

原子力安全・保安院が現時点で把握している東京電力(株)福島第一原子力発電所、福島第二原子力発電所、東北電力㈱女川原子力発電所、日本原子力発電（株）東海第二、電気、ガス、熱供給、コンビナート被害の状況は、以下のとおりです。

前回からの変更点は以下のとおり。

１．原子力発電所関係

○福島第一原子力発電所

・１号機において、復水器の水位が満水に近いことが確認されたため、復水器への排水を停止（29 日 07:30）。

・２号機において、使用済燃料プールへの注入をしていた仮設電動ポンプの不調が確認されたため、消防ポンプによる切り替えを行ったが、ホースの亀裂を確認（30 日 12:47、13:10）したため、現在注入は中断中。

・４号機の使用済燃料プールについて、コンクリートポンプ車による淡水の放水を開始（30 日 14:04）。

２．産業保安関係

別紙参照

３．原子力安全・保安院等の対応

・各電気事業者等に対し、平成２３年福島第一・第二原子力発電所事故を踏まえた他の発電所の緊急安全対策の実施に係る指示文書を発出し、手交。

・原子力災害被災者支援の体制強化のため、経済産業大臣をチーム長とする「原子力被災者生活支援チーム」を設置。

（別紙）

1　発電所の運転状況【自動停止号機数：１０基】

○東京電力(株)福島第一原子力発電所（福島県双葉郡大熊町及び双葉町）

（１）運転状況

１号機（46 万 kW）（自動停止）
２号機（78 万 4 千 kW）（自動停止）
３号機（78 万 4 千 kW）（自動停止）
４号機（78 万 4 千 kW）（定検により停止中）
５号機（78 万 4 千 kW）（定検により停止中、20 日 14:30 冷温停止）
６号機（110 万 kW）（定検により停止中、20 日 19:27 冷温停止）

（２）モニタリングの状況

別添参照

（３）主なプラントパラメーター（30 日 14:00 現在）

	１号機	２号機	３号機	４号機	５号機	６号機
原子炉圧力＊１［MPa］	0.441(A) 0.592(B)	0.078(A) 0.078(B)	0.119(A) 0.006(C)	－	0.108	0.104
原子炉格納容器圧力（D/W）［kPa］	230	100	106.4	－	－	－
原子炉水位＊２［mm］	-1600(A) -1600(B)	-1500(A) 不明（B）	-1850(A) -2250(B)	－	2161	1766
原子炉格納容器内 S/C 水温［℃］	－	－	－	－	－	－
原子炉格納容器内 S/C 圧力［kPa］	230	D/S (調査中)	177.5	－	－	－
使用済燃料プール水温度［℃］	計器不良	48	計器不良	計器不良	37.2	26.5
備　考	3/30 13:00 現在の値	3/30 13:00 現在の値	3/30 13:30 現在の値	3/30 現在	3/30 14:00 現在の値	3/30 14:00 現在の値

＊１：絶対圧に換算
＊２：燃料頂部からの数値

（４）各プラントの状況

＜１号機関係＞

・原子力災害対策特別措置法第１５条（非常用炉心冷却装置注水不能）通報（11 日 16:36）
・ベント操作（12 日 10:17）
・１号機の原子炉圧力容器内に消火系ラインを用いて海水注入開始(12 日 20:20)→14 日 01:10 一時中断
・１号機で爆発音。(12 日 15:36)
・消火系に加え、給水系を使うことにより炉心への注水量を増量（$2m^3$／h→$18m^3$／h）(23 日 02:33)。その後、給水系のみに切替（約 11 m^3／h）（23 日 9:00）
・中央制御室の照明が復帰（24 日 11:30）
・タービン建屋地下の溜まり水を測定した結果、主な核種として ^{131}I（ヨウ素）が 2.1×10^5Bq/cm³、^{137}Cs（セシウム）が 1.8×10^6 Bq/cm³、検出された。溜まり水は、復水器へ移送中（3/24　17 時頃～）
・１号機において、復水器の水位が満水に近いことが確認されたため、復水器への排水を停止（29 日 07:30)。
・消防ポンプによる淡水の原子炉圧力容器への注入を仮設電動ポンプに切り替え（29 日 8:32）
・引き続き白煙の吐出確認（30 日 06:30 現在）
・原子炉圧力容器へ淡水注入中。(30 日　15:30 現在)

＜２号機関係＞

・原子力災害対策特別措置法第１５条（非常用炉心冷却装置注水不能）通報（11 日 16:36）
・ベント操作（13 日 11:00）
・３号機の建屋の爆発に伴い、原子炉建屋ブローアウトパネル開放（14 日 11 時過ぎ）
・原子炉圧力容器の水位が低下傾向（14 日 13:18)。原子力災害対策特別措置法第１５条事象（原子炉冷却機能喪失）である旨、受信（14 日 13:49）
・原子炉圧力容器内に消火系ラインを用いて海水注入作業開始(14 日 16:34)
・原子炉圧力容器の水位が低下傾向（14 日 22:50）
・ベント操作（15 日 0:02）
・２号機で爆発音するとともに、サプレッションプール（圧力抑制室）の圧力低下（15 日 6:10)。同室に異常が発生したおそれ（15 日 6:20 頃）
・外部送電線から予備電源変電設備までの受電を完了し、そこから負荷側へのケーブル敷設を実施（19 日 13:30 現在）

・使用済燃料プールに海水を 40ｔ注入（冷却系配管に消防車のポンプを接続）（20 日 15:05～17:20）
・２号機のパワーセンター受電（20 日 15:46）
・白煙が発生（21 日 18:22）
・白煙はほとんど見えない程度に減少（22 日 7:11 現在）
・使用済燃料プールに海水を 18ｔ注入（22 日 16:07～17:01）
・使用済燃料プールに、使用済燃料プール冷却系を用いて海水を注入（25 日 10:30～12:19）
・中央制御室の照明が復帰（26 日 16:46）
・消防ポンプによる淡水の原子炉圧力容器への注入を仮設電動ポンプに切り替え（27 日 18:31）
・２号機について、３月２７日に東京電力(株)が発表した福島第一原子力発電所２号機タービン建屋地下階溜まり水の測定結果について、ヨウ素１３４の測定値に誤りがあるとの判断を踏まえた再度の採取及び分析・評価の結果、ヨウ素１３４を含むガンマ核種の濃度については、検出限界値未満であることの報告（28 日 0:07）
・消防ポンプによる海水の使用済燃料プールへの注入を仮設電動ポンプによる淡水に切り替え注入（29 日 16:30～18:25）
・２号機において、使用済燃料プールへの注入をしていた仮設電動ポンプの不調が確認されたため、消防ポンプによる切り替えを行ったが、ホースの亀裂を確認（30 日 12:47、13:10）したため、現在注入は中断中。
・引き続き白煙の吐出確認（30 日 06:30 現在）
・原子炉圧力容器へ淡水注入中（30 日 15:30 現在）

＜３号機関係＞
・原子力災害対策特別措置法第１５条（非常用炉心冷却装置注水不能）通報（13 日 05:10）
・ベント操作（13 日 8:41）
・３号機の原子炉圧力容器内に消火系ラインから真水注入開始(13 日 11:55)
・３号機の原子炉圧力容器内に消火系ラインから海水注入開始(13 日 13:12)
・３号機及び１号機の注入をくみ上げ箇所の海水が少なくなったため停止(14 日 1:10)
・３号機の海水注入を再開(14 日 3:20)
・ベント操作（14 日 5:20）
・３号機の格納容器圧力が異常上昇(14 日 7:44)。原子力災害対策特別措置法第１５条事象である旨、受信（14 日 7:52）
・３号機で１号機と同様に原子炉建屋付近で爆発（14 日 11:01）

・３号機から白い湯気のような煙が発生（16 日 8:30 頃）
・３号機の格納容器が破損しているおそれがあるため、中央制御室（共用）から作業員退避（16 日 10:45）。その後、作業員は中央制御室に復帰し、注水作業再開（16 日 11:30）
・自衛隊ヘリにより３号機への海水の投下を４回実施（17 日 9:48、9:52、9:58、10:01）
・警察庁機動隊が放水のため現場到着（17 日 16:10）
・自衛隊消防車により放水（17 日 19:35）。
・警察庁機動隊による放水（17 日 19:05～19:13）
・自衛隊消防車５台が放水（17 日 19:35、19:45、19:53、20:00、20:07）
・自衛隊消防車６台（６ｔ放水／台）が放水（18 日 14 時前～14:38）
・米軍消防車１台が放水（18 日 14:45 終了）
・東京消防庁ハイパーレスキュー隊が放水（20 日 3:40 終了）
・３号機の格納容器内圧力が上昇（20 日 11:00 現在 320kPa）。圧力下げるための準備を進めていたが、直ちに放出を必要とする状況ではないと判断し、圧力監視を継続（21 日 12:15 120 kPa）
・ケーブル引き込みの現地調査（20 日 11:00～16:00）
・東京消防庁ハイパーレスキュー隊が３号機の使用済燃料プールに放水（20 日 21:30～21 日 03:58）
・灰色がかった煙が発生（21 日 15:55 頃）
・煙が収まっていることを確認（21 日 17:55）
・灰色がかった煙は白みがかった煙に変化し終息に向かっていると思われる（22 日 7:11 現在）
・東京消防庁及び大阪市消防局が放水（約 180t）（22 日 15:10～16:00）
・中央制御室の照明が復帰（22 日 22:43）
・使用済燃料プールに使用済燃料プール冷却系から海水 35t 注入（23 日 11:03～13:20）
・原子炉建屋からやや黒色がかった煙が発生（23 日 16:20 頃）。23 日 23:30 頃及び 24 日 4:50 頃に確認したところ止んでいる模様。
・使用済燃料プールに使用済燃料プール冷却系を用いて海水約１２０ｔを注入（24 日 5:35 頃～16:05 頃）
・３号機タービン建屋１階及び地下１階において、ケーブル敷設作業を行っていた作業員が踏み入れた水について調査した結果、水表面の線量率は約 400mSv/h、採取水のガンマ線核種分析の結果、試料の濃度は各核種合計で約 3.9×10^{6}Bq/cm^{3} であった。
・東京消防庁の支援を受けた川崎市消防局が放水（２５日 13:28～16:00）
・コンクリートポンプ車（50ｔ／ｈ）が約１００ｔ放水（27 日 12:34～14:36）

・消防ポンプによる淡水の原子炉圧力容器への注入を仮設電動ポンプに切り替え（28日 20:30）
・コンクリートポンプ車（50ｔ／ｈ）が約１００ｔ放水（淡水）（29日 14:17～18:18）
・引き続き白煙の吐出確認（30日 06:30現在）
・原子炉圧力容器へ淡水注入中。（30日 15:30現在）

＜４号機関係＞
・原子炉圧力容器のシュラウド工事中のため、原子炉圧力容器内に燃料はなし。
・使用済燃料プール水温度が上昇（3月14日 4:08時点 84℃）
・４号機のオペレーションエリアの壁が一部破損していることを確認（15日 6:14）。
・４号機で火災発生。（15日 9:38）事業者によると、自然に火が消えていることを確認（15日 11:00頃）
・４号機で火災が発生（16日 5:45頃）。事業者は現場での火災は確認できず（16日 6:15頃）。
・自衛隊が使用済燃料プールへ放水（20日 9:43）
・ケーブル引き込みの現地調査（20日 11:00～16:00）
・自衛隊が使用済燃料プールへ放水（20日 18:30頃～19:46）
・自衛隊消防車１３台が使用済燃料プールに放水（21日 06:37～08:41）
・パワーセンターまでのケーブル敷設工事完了（21日 15:00頃）
・パワーセンター受電（22日 10:35）
・コンクリートポンプ車（50ｔ／ｈ）が約150ｔ放水（22日 17:17～20:32）
・コンクリートポンプ車（50ｔ／ｈ）が約130ｔ放水（23日 10:00～13:02）
・コンクリートポンプ車（50ｔ／ｈ）が約150ｔ放水（24日 14:36～17:30）。
・コンクリートポンプ車（50ｔ／ｈ）が約150ｔ放水（25日 19:05～22:07）
・使用済燃料プールに、使用済燃料プール冷却系を用いて海水を注入（25日 06:05～10:20）
・コンクリートポンプ車（50ｔ／ｈ）が約１２５ｔ放水（27日 16:55～19:25）
・中央制御室の照明復帰（29日 11:50）
・引き続き白煙の吐出確認（29日 6:30現在）
・コンクリートポンプ車（50ｔ／ｈ）が放水を開始（30日 14:04）。

＜５号機，６号機関係＞
・６号機の非常用ディーゼル発電機（D/G）１台目（B）は運転により電力供給。復水補給水系（MUWC）を用いて原子炉圧力容器及び使用済燃料プールへ注水。

・６号機の非常用ディーゼル発電機（D/G）２台目（A）起動。(19 日 4:22)
・５号機の残留熱除去系（ＲＨＲ）ポンプ（C）(19 日 5:00) 及び６号機の残留熱除去系（ＲＨＲ）ポンプ（B）(19 日 22:14) が起動し、除熱機能回復。使用済燃料プールを優先的に冷却（電源：6 号の非常用ディーゼル発電機）(19 日 5:00)
・５号機、冷温停止（20 日 14:30）
・６号機、冷温停止（20 日 19:27）
・５号機及び６号機、起動用変圧器まで受電（20 日 19:52）
・５号機、電源を非常用ディーゼル発電機から外部電源に切り替え（21 日 11:36）
・６号機、電源を非常用ディーゼル発電機から外部電源に切り替え（22 日 19:17）
・５号機の仮設の残留熱除去海水系（ＲＨＲＳ）ポンプが、仮設から本設の電源への切り替えの際、自動停止（23 日 17:24）。
・５号機の仮設のＲＨＲＳポンプの修理が完了（24 日 16:14）し、冷却を再開（24 日 16:35）。
・６号機の仮設の残留熱除去海水系（ＲＨＲＳ）ポンプが、仮設から本設の電源へ切り替え（２５日 15:38、15:42）

＜使用済燃料共用プール＞
・１８日６：００過ぎ、プールはほぼ満水であることを確認
・共用プールに注水（21 日 10:37～15:30）
・電源供給を開始（24 日 15:37）し、冷却を開始（24 日 18:05）。
・２９日 8:30 時点でのプール水温度は３２℃程度

＜その他＞
・南放水口付近の海水核種分析の結果、^{131}I（ヨウ素）が 7.4×10^{1}Bq/cm^{3}、（周辺監視区域外の水中濃度限度の 1850.5 倍）検出された。(26 日 14:30)
（３月２７日に計測した結果、水中濃度限度の２５０倍となった。(27 日 13:50) 一方、１Ｆ放水口北側の海水核種分析の結果、^{131}I（ヨウ素）が 4.6×10^{1}Bq/cm^{3}（同 1,150 倍）検出された。(27 日 14:05)）
・１～３号機タービン建屋外のトレンチ（配管を布設しているトンネル状の地下構造物）の立坑に水が溜まっていることを確認。水表面の線量は、１号機が 0.4mSv/h、２号機が 1,000 mSv/h 以上、３号機はがれきがあり測定できず（27 日 15:30 頃）。
・福島第一原子力発電所の敷地内（５地点）の土壌から、平成２３年３月２１日及び２２日に採取した試料の中に、プルトニウム 238、プルトニウム 239、プルトニウム 240 を検出（28 日 23 時 45 分 東京電力発表）。検

出されたプルトニウムの濃度は、過去の大気圏内核実験において国内で観測されたフォールアウト（放射性降下物）と同様、通常の環境レベルで人体に問題となるものではない。

・３号機建屋外において、残留熱除去海水系配管のフランジを取り外した際、協力企業作業員３名が、配管に溜まった水を被ったが、水を拭き取った結果、身体への放射性物質の付着はなかった。(29 日 12:03)

○東京電力(株)福島第二原子力発電所（福島県双葉郡楢葉町及び富岡町）

（１）運転状況

１号機（110 万 kW）（自動停止、14 日 17:00 冷温停止）

２号機（110 万 kW）（自動停止）14 日 18:00 冷温停止）

３号機（110 万 kW）（自動停止、12 日 12:15 冷温停止）

４号機（110 万 kW）（自動停止、15 日 7:15 冷温停止）

（２）モニタリングポスト等の指示値

別添参照

（３）主なプラントパラメーター（30 日 14:00 現在）

	単位	１号機	２号機	３号機	４号機
原子炉圧力＊1	MPa	0.12	0.06	0.10	0.14
原子炉水温	℃	51.4	62.3	34.5	27.0
原子炉水位＊2	mm	7196	7446	7826	7904
原子炉格納容器内 ｻﾌﾟﾚｯｼｮﾝﾌﾟｰﾙ水温	℃	24	25	27	27
原子炉格納容器内 ｻﾌﾟﾚｯｼｮﾝﾌﾟｰﾙ圧力	kPa (abs)	106	107	103	102
備　考		冷温停止中	冷温停止中	冷温停止中	冷温停止中

＊１：絶対圧に換算

＊２：燃料頂部からの数値

（４）その他異常等に関する報告

・１号機にて原子力災害対策特別措置法第１０条通報（11 日 18:08）

・１、２、４号機にて同法第１０条通報（11 日 18:33）

・１号機にて原子力災害対策特別措置法第１５条事象（圧力抑制機能喪失）発生（12 日 5:22）

・２号機にて原子力災害対策特別措置法第１５条事象（圧力抑制機能喪失）発生（12 日 5:32）

・４号機にて原子力災害対策特別措置法第１５条事象（圧力抑制機能喪失）発生（12 日 6:07）

○東北電力(株)女川原子力発電所（宮城県牡鹿郡女川町、石巻市）

（１）運転状況

１号機（52 万 4 千 kW）（自動停止、12 日 0:58 冷温停止）

２号機（82 万 5 千 kW）（自動停止、地震時点で冷温停止）

３号機（82 万 5 千 kW）（自動停止、12 日 1:17 冷温停止）

（２）モニタリングポスト等の指示値

MP２付近（敷地最北敷地境界）：

約 0.62μSv/h（29 日 16:00）→約 0.58μSv/h（30 日 16:00）

（３）その他異常に関する報告

・タービン建屋地下 1 階の発煙は消火確認（11 日 22:55）

・原子力災害対策特別措置法第１０条通報（13 日 13:09）

２　産業保安

○電気（3 月 30 日 11:30 現在）

・東北電力（3 月 30 日 10:00 現在）

停電戸数：約１９万戸　（延べ停電戸数　約４８６万戸）

停電地域：青森県　三八の一部地域（約３百戸）

岩手県　一部地域（約３万３千戸）

宮城県　一部地域（約１１万３千戸）

福島県　一部地域（約３万８千戸）

・東京電力

停電は 3 月 19 日 01:00 までに復旧済（延べ停電戸数　約４０５万戸）

・北海道電力

停電は 3 月 12 日 14:00 までに復旧済　（延べ停電戸数　約３千戸）

・中部電力

停電は 3 月 12 日 17:11 に復旧済　（延べ停電戸数　約４百戸）

[参考情報] 現在停止中の発電所（原子力発電所を除く）

・東京電力（29 日 16:00 現在）※地震により停止中の発電所

広野火力発電所　２，４号機

常陸那珂火力発電所　１号機

鹿島火力発電所　２，３，５，６号機

・東北電力（30 日 10:00 現在）

仙台火力発電所　４号機

新仙台火力発電所　１，２号機

原町火力発電所　１，２号機

○都市ガス（3 月 29 日 20:00 現在）

・供給停止戸数※約３８万戸（延べ供給停止戸数　約５０万戸）

※供給停止戸数には、家屋倒壊等が確認された戸数を含む。

○一般ガス（3 月 29 日 20:00 現在）

死亡事故：地震との関係も含め原因詳細調査中。

・盛岡ガス（盛岡市）死者 1 名、負傷者 10 名

14 日 08:00　デパートの地下での爆発

・東部ガス（いわき市）死者 1 名

12 日 11:30　一般住宅での漏えいガスに着火

北海道、山形県、秋田県においては、供給停止の報告はない。

各社の供給停止状況は以下の通り。（家屋倒壊等が確認された戸数は含まない。）

・仙台市営ガス　283,022 戸供給停止
・塩釜ガス(塩釜市)9,291 戸供給停止
・釜石ガス（釜石市）6,058 戸供給停止
・常磐共同ガス（いわき市）8,035 戸供給停止
・京葉ガス（浦安市）105 戸供給停止
・東北ガス（白河市）12 戸供給停止
・常磐都市ガス（いわき市）294 戸供給停止
・気仙沼市営ガス（気仙沼市）990 戸供給停止
・石巻ガス（石巻市）8,542 戸供給停止

○簡易ガス（3 月 29 日 20:00 現在）

各社の供給停止状況は以下の通り。（家屋倒壊等が確認された戸数は含まない。）

・宮城ガス（仙台市）970 戸供給停止
・釜石瓦斯（釜石市）580 戸供給停止
・仙台プロパン（亘理郡山元町）161 戸供給停止
・仙南ガス（柴田郡柴田町）1,216 戸供給停止
・カメイ（東松島市矢本町）66 戸供給停止
・いわきガス（いわき市）155 戸供給停止
・相馬ガス（相馬市）85 戸供給停止
・三重商会（大船渡市）12 戸供給停止
・八木又商店（大船渡市）100 戸供給停止

・名取岩沼農業協同組合（岩沼市）163 戸供給停止
（名取市）65 戸供給停止
・ガス＆ライフ（東松島市）341 戸供給停止
・鳴瀬ガス（東松島市）217 戸供給停止
・富久屋商会（双葉郡大熊町）5 戸供給停止

○熱供給（3 月 29 日 20:00 現在）
・小名浜配湯（いわき市小名浜）供給停止

○ＬＰガス（3 月 27 日 15:30 現在）
死亡事故：地震との関係も含め原因詳細調査中
・福島県いわき市　死者１名
１３日午前中　共同住宅でガス爆発

○コンビナート（3 月 27 日 15:30 現在）
・コスモ石油千葉製油所（千葉県市原市）
ＬＰＧ貯槽の支柱が折れ、破損。ガス漏れ火災。
重傷者１名、軽傷５名。3 月 21 日午前鎮火。
・JX 日鉱日石エネルギー(株)仙台製油所（宮城県仙台市）
出荷設備エリアで爆発、火災が発生。3 月 15 日午後鎮火。

３　原子力安全・保安院等の対応

【3 月 11 日】

１４：４６　地震発生と同時に原子力安全・保安院に災害対策本部設置
１５：４２　福島第一原子力発電所にて原子力災害対策特別措置法第１０条通報
１６：３６　福島第一原子力発電所１、２号機にて事業者が同法第１５条事象（非常用炉心冷却装置注水不能）発生判断（16:45 通報）
１８：０８　福島第二原子力発電所１号機にて原子力災害対策特別措置法第１０条通報
１８：３３　福島第二原子力発電所１、２、４号機にて原子力災害対策特別措置法第１０条通報
１９：０３　緊急事態宣言（政府原子力災害対策本部及び同現地対策本部設置）
２０：５０　福島県対策本部は、福島第一原子力発電所１号機の半径２ｋｍの住人に避難指示を出した。（２ｋｍ以内の住人は 1,864 人）
２１：２３　内閣総理大臣より、福島県知事、大熊町長及び双葉町長に対し、東京電力(株)福島第一原子力発電所で発生した事故に関し、原子力

災害対策特別措置法第１５条第３項の規定に基づく指示を出した。

・福島第一原子力発電所から半径３ｋｍ圏内の住民に対する避難指示。

・福島第一原子力発電所から半径１０ｋｍ圏内の住民に対する屋内退避指示。

２４：００　池田経済産業副大臣現地対策本部到着

【3 月 12 日】

５：２２　福島第二原子力発電所１号機にて事業者が原子力災害対策特別措置法第１５条事象（圧力抑制機能喪失）発生判断（6:27 通報）

５：３２　福島第二原子力発電所２号機にて事業者が原子力災害対策特別措置法第１５条事象（圧力抑制機能喪失）発生判断（6:27 通報）

５：４４　総理指示により福島第一原子力発電所の１０ｋｍ圏内に避難指示

６：０７　福島第二原子力発電所４号機にて原子力災害対策特別措置法第１５条事象（圧力抑制機能喪失）発生

６：５０　原子炉等規制法第６４条第３項の規定に基づき、福島第一原子力発電所第１号機及び第２号機に設置された原子炉格納容器内の圧力を抑制することを命じた。

７：４５　内閣総理大臣より、福島県知事、広野町長、楢葉町長、富岡町長及び大熊町長に対し、東京電力(株)福島第二原子力発電所で発生した事故に関し、原子力災害対策特別措置法第１５条第３項の規定に基づく指示を出した。

・福島第二原子力発電所から半径３ｋｍ圏内の住民に対する避難指示。

・福島第二原子力発電所から半径１０ｋｍ圏内の住民に対する屋内退避指示。

１７：００　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信

１７：３９　内閣総理大臣が福島第二原子力発電所の避難区域

・福島第二原子力発電所から半径１０ｋｍ圏内の住民に対する避難を指示。

１８：２５　内閣総理大臣が福島第一原子力発電所の避難区域

・福島第一原子力発電所から半径２０ｋｍ圏内の住民に対する避難を指示。

１９：５５　福島第一原子力発電所１号機の海水注入について総理指示

２０：０５　総理指示を踏まえ、原子炉等規制法第６４条第３項の規定に基づき、福島第一原子力発電所第１号機の海水注入等を命じた。

２０：２０　福島第一原子力発電所１号機の海水注入を開始

【3月13日】

５：３８　福島第一原子力発電所３号機にて原子力災害対策特別措置法第１５条事象（全注水機能喪失）である旨、受信。
当該サイトについて、東京電力において現在、電源及び注水機能の回復と、ベントのための作業を実施中。

９：０１　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信

９：０８　福島第一原子力発電所３号機の圧力抑制及び真水注入を開始

９：２０　福島第一原子力発電所３号機の耐圧ベント弁開放

９：３０　福島県知事、大熊町長、双葉町長、富岡町長、浪江町長に対し、原子力災害対策特別措置法に基づき、放射能除染スクリーニングの内容について指示

１３：０９　女川原子力発電所にて原子力災害対策特別措置法第１０条通報

１３：１２　福島第一原子力発電所３号機の注入を真水から海水に切り替え

１４：３６　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信

【3月14日】

１：１０　福島第一原子力発電所１号機及び３号機の注入をくみ上げ箇所の海水が少なくなったため停止。

３：２０　福島第一原子力発電所３号機の海水注入を再開

４：４０　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信

５：３８　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信

７：５２　福島第一原子力発電所３号機にて原子力災害対策特別措置法第１５条事象（格納容器圧力異常上昇）である旨、受信。

１３：２５　福島第一原子力発電所２号機にて原子力災害対策特別措置法第１５条事象（原子炉冷却機能喪失）である旨、受信。

２２：１３　福島第二原子力発電所にて原子力災害対策特別措置法第１０条通報

２２：３５　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信

【3月15日】

０：００　国際原子力機関（ＩＡＥＡ）専門家派遣の受け入れを決定
　ＩＡＥＡ天野事務局長による原子力発電所の被害に関する専門家派遣の意向を受け、原子力安全・保安院はＩＡＥＡによる知見ある専門家の派遣を受け入れることとした。なお、実際の受け入れ日

程等については、今後調整を行う。

０：００　米国原子力規制委員会（ＮＲＣ）専門家派遣の受け入れを決定

７：２１　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信

７：２４　（独）日本原子力研究開発機構東海研究開発センター核燃料サイクル工学研究所にて原子力災害対策特別措置法第１０条通報

７：４４　（独）日本原子力研究開発機構原子力科学研究所にて原子力災害対策特別措置法第１０条通報

８：５４　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信

１０：３０　経済産業大臣が原子炉等規制法に基づき、４号機の消火及び再臨界の防止、２号機の原子炉内への早期注水及びドライウェルのベントの実施について指示

１０：５９　今後の事態の長期化を考慮し、現地対策本部の機能を福島県庁内へ移転することを決定。

１１：００　内閣総理大臣が福島第一原子力発電所の避難区域
・炉内の状況を考慮して、新たに福島第一原子力発電所から半径２０ｋｍ圏～３０ｋｍ圏内の住民に対する屋内退避を指示

１６：３０　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信

２２：００　経済産業大臣が原子炉等規制法に基づき、４号機の使用済燃料プールへの注水の実施を指示

２３：４６　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信

【3 月 18 日】

１３：００　文部科学省にて、福島第一、第二原子力発電所の緊急時における全国的モニタリング調査の強化を決定

１５：５５　原子炉等規制法第６２条の３に基づき、東京電力(株)福島第一原子力発電所第１・２・３・４号機における事故故障等（原子炉建屋内の放射性物質の非管理区域への漏えい）の報告を受理

１６：４８　原子炉等規制法第６２条の３に基づき、日本原子力発電(株)東海第二発電所における事故故障等(非常用ディーゼル発電機２Ｃ海水ポンプ用電動機の故障）の報告を受理

【3 月 19 日】

７：４４　６号機の非常用ディーゼル発電機２台目（Ａ）起動
５号機の残留熱除去系（ＲＨＲ）ポンプ（Ｃ）が起動し、使用済燃料プールの冷却を開始（電源：６号機の非常用ディーゼル発電

機)）の旨を受信

８：５８　福島第一原子力発電所にて原子力災害対策特別措置法第１５条事象（敷地境界放射線量異常上昇）である旨、受信

【3月20日】

２３：３０　原子力災害対策現地本部から、放射能除染スクリーニングレベルの基準を以下のとおり変更する旨、県知事及び関係市町村長（富岡町、双葉町、大熊町、浪江町、川内村、楢葉町、南相馬市、田村市、葛尾村、広野町、いわき市、飯舘村）宛に指示

【3月21日】

７：４５　原子力災害対策現地本部から「安定ヨウ素剤の服用について」として、安定ヨウ素剤の服用は、本部の指示を受け、医療関係者の立ち会いのもとで服用するものであり、個人の判断で服用しない旨の指示を、県知事及び関係市町村長（富岡町、双葉町、大熊町、浪江町、川内村、楢葉町、南相馬市、田村市、葛尾村、広野町、いわき市、飯舘村）宛に発出

１６：４５　原子力災害対策現地本部長から「屋内退避圏内での暖房器具の使用に係る換気について」として、一酸化炭素中毒等の防止の観点及び被ばく低減の観点から、屋内において換気を必要とする暖房器具を使用する場合の対応について屋内退避圏内の住民に周知する旨の指示を福島県知事及び市町村長（いわき市、田村市、南相馬市、広野町、川内村、浪江町、葛尾村、飯舘村）宛に発出。

１７：５０　原子力災害対策本部長から、ホウレンソウ及びカキナ、原乳について当分の間、出荷を控えるよう、関係事業者等に要請することの指示を福島県、茨城県、栃木県及び群馬県の各知事宛に発出。

【3月22日】

１６：００　原子力安全委員会緊急技術助言組織から、3月22日付け東京電力の「海水分析結果について」に関する原子力安全・保安院からの助言依頼について、回答（助言）を受理。

【3月25日】

原子力安全・保安院は、東京電力株式会社に対し、3月24日に発生した福島第一原子力発電所３号機タービン建屋における作業員の被ばくに関し、再発防止の観点から、直ちに放射線管理を見直し、改善するよう、口頭で指示。

【3月28日】

原子力安全・保安院は、東京電力株式会社に対し、3月27日に東京電力(株)が発表した福島第一原子力発電所２号機タービン建屋地下階溜まり水の測定に係る評価の誤りについて、再発防止を図

るよう、口頭で指示。

１３：５０　原子力安全・保安院は、原子力安全委員会臨時会議助言（福島第一発電所２号機タービン建屋地下１階の滞留水について）を受け、東京電力株式会社に対し、海水モニタリングポイントの追加や地下水モニタリングの実施について、口頭で指示。

原子力安全・保安院は、東京電力(株)に対し、タービン建屋の屋外で確認された水に係る報告が遅れたことに対し、重要な情報については、社内の情報伝達をスムーズにするとともに、適時適切に報告が行われるように指導。

【3 月 29 日】

１１：１６　原子炉等規制法第６２条の３及び電気関係報告規則第３条に基づき、東北電力(株)女川原子力発電所における事故故障等（津波による２号機原子炉補機冷却水ポンプ(B)等の故障及び１号機補助ボイラー重油タンクの倒壊）についての報告を受理。

【3 月 30 日】

各電気事業者等に対し、平成２３年福島第一・第二原子力発電所事故を踏まえた他の発電所の緊急安全対策の実施に係る指示文書を発出し、手交。

原子力災害被災者支援の体制強化のため、経済産業大臣をチーム長とする「原子力被災者生活支援チーム」を設置。

＜被ばくの可能性（3 月 30 日 15:30 現在）＞

１．住民の被ばく

（１）二本松市福島県男女共生センターにおいて、双葉厚生病院からの避難者約 60 名を含む 133 名の測定を行い、13,000cpm 以上の 23 名に除染を実施した。

（２）この他、福島県が用意した民間バスで、双葉厚生病院から川俣町済生会川俣病院へ移動した 35 名については、県対策本部は被ばくしていないと判断。

（３）バスにより避難した双葉町の住民約 100 名について、100 名のうち、9 名について測定した結果、以下の通りだった。県外（宮城県）に分かれて避難したが、その後合流して二本松市福島男女共生センターへ移動。

カウント数	人数
18,000cpm	１名
30,000～36,000cpm	１名
40,000cpm	１名

40,000cpm 弱※	１名
ごく小さい値	５名

※（１回目の測定では 100,000cpm を超え、その後靴を脱いで測定した結果計測されたもの）

（４）３月１２日から３月１５日にかけて、大熊町のオフサイトセンターにおいて、スクリーニングを開始。現在までに 162 名が検査済み。初め除染の基準値を 6,000cpm とし、110 名が 6,000cpm 未満、41 名が 6,000cpm 異常の値を示した。後に基準値を 13,000cpm と引き上げた際には、８名が 13,000cpm 未満、３名が 13,000cpm 以上の値を示した。

検査を受けた 162 名のうち、５名が除染処置を施した後、病院へ搬送された。

（５）福島県において、避難した１０ｋｍ圏内の入院患者と病院関係者の避難を実施。関係者のスクリーニングを行った結果、3 名について除染後も高い数値が検出されたため、第２次被ばく医療機関へ搬送。この搬送に関係した消防職員 60 名のスクリーニングで 3 名について、バックグランドの２倍以上程度の放射線が検出されたため、60 名に対し除染を行った。

（６）福島県は３月１３日からスクリーニングを開始。避難所を巡回、保健所等１３ヶ所（常設）で実施中。３月２８日までに１０２，３４２人に対し実施。そのうち、100,000cpm 以上の値を示した者は１０１人であったが、100,000cpm 以上の数値を示した者についても脱衣等をし、再計測したところ、100,000cpm 以下に減少し、健康に影響を及ぼす事例はみられなかった。

２．従業員等の被ばく

福島第一原子力発電所で作業していた従業員で 100mSv を超過した作業員は、計１９名。

なお、当該作業員３名のうち、２名については、両足の皮膚に放射性物質の付着を確認し、ベータ線熱傷の可能性があると判断されたことから、２４日に福島県立医科大学附属病院へ搬送し、その後、２５日に作業員３名とも千葉県にある放射線医学総合研究所に到着。検査の結果、２人の足の被ばく量は２～３Sv と推定され、足及び内部被ばく共に治療が必要となるレベルではなかったが、３名とも、入院して経過を見ることとなった。２８日正午頃３名の方がすべて退院した。

３．その他

（１）福島第一原発で作業していた自衛隊員４名が爆発により負傷。うち、1 名は放医研に搬送され、検査の結果、外傷のみで、被ばくによる健康被

害はないと判断され、３月１７日に退院。防衛省において、その他自衛官の被ばくは確認されず。

（２）警察官について、警察庁において２名の除染の実施を確認。異常の報告はなし。

（３）３月２４日、川俣町保健センター等において、１～１５歳までの６６名の小児に対する甲状腺の検査を実施。問題となるレベルではなかった。

（４）３月２６日～２７日、いわき市保健所において、１～１５歳までの１３７名の小児に対する甲状腺の検査を実施。問題となるレベルではなかった。

＜放射能除染スクリーニングレベルに関する指示＞

（１）３月２０日、原子力災害対策現地本部から、放射能除染スクリーニングレベルの基準を以下のとおり変更する旨、県知事及び関係市町村長（富岡町、双葉町、大熊町、浪江町、川内村、楢葉町、南相馬市、田村市、葛尾村、広野町、いわき市、飯舘村）宛に指示。

旧：γ線サーベイメーターにより 40 ベクレル/c ㎡または 6,000cpm

新：1 マイクロシーベルト／時（10cm 離れた場所での線量率）またはこれに相当する 100,000cpm

＜避難時における安定ヨウ素剤投与の指示＞

（１）３月１６日、原子力災害対策現地本部から、「避難区域（半径２０ｋｍ）からの避難時における安定ヨウ素剤投与の指示」を県知事及び市町村（富岡町、双葉町、大熊町、浪江町、川内村、楢葉町、南相馬市、田村市、葛尾村、広野町、いわき市、飯舘村）宛に発出。

（２）３月２１日、原子力災害対策現地本部から「安定ヨウ素剤の服用について」として、安定ヨウ素剤の服用は、本部の指示を受け、医療関係者の立ち会いのもとで服用するものであり、個人の判断で服用しない旨の指示を、県知事及び関係市町村長（富岡町、双葉町、大熊町、浪江町、川内村、楢葉町、南相馬市、田村市、葛尾村、広野町、いわき市、飯舘村）宛に発出。

＜負傷者の状況（3 月 30 日 8:00 現在）＞

１．３月１１日の地震による負傷者

・社員２名（軽傷、既に仕事復帰）

・協力会社２名（うち１名両足骨折で入院中）

・行方不明２名（社員。４号タービン建屋内）

２．３月１２日の福島第一原子力発電所１号機の爆発による負傷者

・１号機付近で爆発と発煙が発生した際に４名（社員２名、協力会社２名）が１号タービン建屋付近（管理区域外）で負傷。川内診療所で診療。社員２名は既に仕事復帰。協力会社の２名は自宅療養中。

３．３月１４日の福島第一原子力発電所３号機の爆発による負傷者

・社員４名（既に仕事復帰）
・協力会社３名（既に仕事復帰）
・自衛隊４名（うち１名は内部被ばくの可能性を考慮し、「(独）放射線医学総合研究所」へ搬送。診察の結果内部被ばくはなし。３月１７日退院）

４．その他の被害

・３月２２日、２３日に共用プールで仮設電源盤の作業中に協力会社の２名が負傷し、産業医のいる福島第二原子力発電所へ搬送。（１名は既に仕事復帰、残り１名は自宅療養中）
・３月１２日に急病人１名発生（脳梗塞、救急車搬送、入院中）
・３月１２日に管理区域外にて社員１名が左胸の痛みを訴えて救急車を要請（意識あり、現在、自宅療養中。）
・３月１３日に社員２名が中央制御室での全面マスク着用中に不調を訴え、福島第二の産業医の受診を受けるべく搬送（１名は既に仕事復帰、残り１名は自宅療養中）

＜住民避難の状況（3月30日8:00現在）＞

３月１５日11:00、内閣総理大臣の指示により、福島第一原子力発電所半径２０ｋｍから３０ｋｍ圏内の住民に対して、屋内退避を指示。その旨を福島県及び関係自治体へ連絡。

福島第一原子力発電所２０ｋｍ圏外及び福島第二原子力発電所１０ｋｍ圏外への避難は、措置済。

・福島第一原子力発電所２０ｋｍから３０ｋｍ圏内の屋内退避について、徹底中。
・福島県と連携して、屋内退避圏内の住民の生活支援等を実施。
・３月２８日、官房長官から福島第一原子力発電所から半径２０ｋｍ圏内の立ち入り規制の継続について発言。同日、原子力災害現地対策本部から関係市町村に対して、２０ｋｍ圏内の避難地域への立入禁止について通知。

＜飲食物への指示＞

原子力災害対策本部長より、福島県、茨城県、栃木県、群馬県の知事に対して、以下の品目について、当分の間、出荷等を控えるよう指示。

（１）出荷制限・摂取制限品目（3 月 29 日現在）

都道府県	出荷制限品目	摂取制限品目
福島県	非結球性葉菜類、結球性葉菜類、アブラナ科の花蕾類（ホウレンソウ、キャベツ、ブロッコリー、カリフラワー、小松菜、茎立菜、信夫冬菜、アブラナ、ちぢれ菜、山東菜、紅菜苔、カキナなど）、カブ、原乳	非結球性葉菜類、結球性葉菜類及びアブラナ科の花蕾類（ホウレンソウ、キャベツ、ブロッコリー、カリフラワー、小松菜、茎立菜、信夫冬菜、アブラナ、アブラナ、ちぢれ菜、山東菜、紅菜苔、カキナなど）
茨城県	ホウレンソウ、カキナ、パセリ、原乳	
栃木県	ホウレンソウ、カキナ	
群馬県	ホウレンソウ、カキナ	

（２）水道水の飲用制限の要請（3 月 29 日 15:00 現在）

制限範囲	水道事業（対象自治体）
利用するすべての住民	飯舘村飯舘簡易水道事業（福島県飯舘村）
乳児 ・対応を継続している水道事業	南相馬市原町水道事業（福島県南相馬市） いわき市上水道事業（福島県いわき市） 伊達市月舘簡易水道事業（福島県伊達市）
・対応を継続している水道用水供給事業	なし

＜屋内退避圏内での暖房器具の使用に係る換気についての指示＞

３月２１日、原子力災害対策現地本部長から「屋内退避圏内での暖房器具の使用に係る換気について」として、一酸化炭素中毒等の防止の観点及び被ばく低減の観点から、屋内において換気を必要とする暖房器具を使用する場合の対応について屋内退避圏内の住民に周知する旨の指示を福島県知事及び市町村長（いわき市、田村市、南相馬市、広野町、川内村、浪江町、葛尾村、飯舘村）宛に発出。

＜消防機関の活動状況＞

・３月２２日、11:00～14:00 頃：新潟市消防局及び浜松市消防局が大型除染システムの東京電力による設営を指導。

・３月２３日、8:30～9:30、13:30～14:30：新潟市消防局及び浜松市消防局が大型除染システムの東京電力による運用を指導。

（本発表資料のお問い合わせ）
原子力安全・保安院
原子力安全広報課：渡辺、金城
電話：０３－３５０１－１５０５
０３－３５０１－５８９０

（参考）

【東北地方太平洋沖地震】

1．災害概要

（１）　発生日時：平成23年3月11日（金）　１４：４６発生

（２）　発生場所：震源三陸沖（北緯38度、東経142.9度）
　　　　深さ10km、マグニチュード9.0

（３）　各地の震度

○震度４以上の地域

震度７　宮城県北部
震度６強　茨城県北部、茨城県南部
震度５強　青森県三八上北
震度５弱　新潟県中越
震度４

○震度４以上の市町村

震度６強　福島県楢葉町、富岡町、大熊町、双葉町
震度６弱　宮城県石巻市、女川町（発電所の震度計による）、東海村
震度５弱　新潟県刈羽村
震度４　青森県六ケ所村、東通村、新潟県柏崎市、神奈川県横須賀市
震度１　北海道泊村

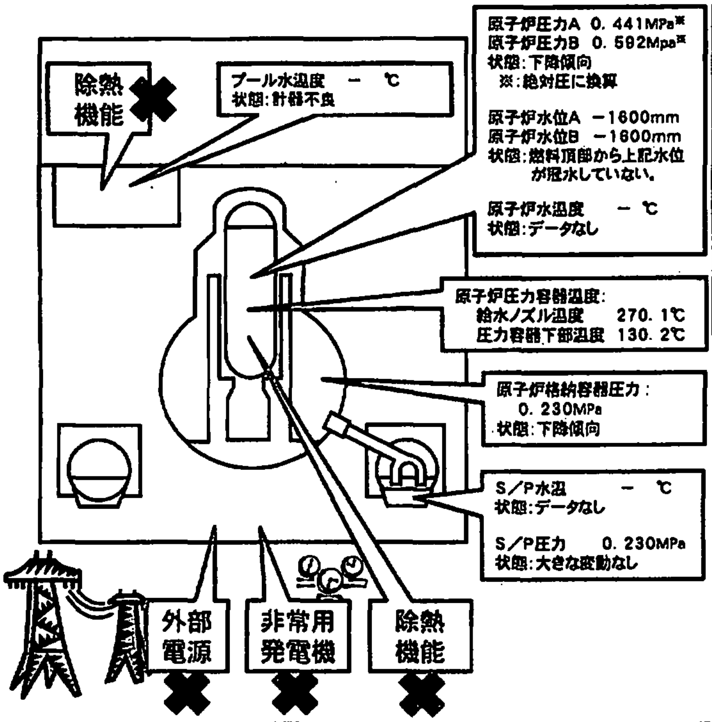
福島第一原子力発電所　プラント関連パラメータ
3月30日　14:00現在

※1：計器不良
※2：データ採取対象外

号機	1u	2u	3u	4u	5u	6u
注水状況	給水ラインを用いた淡水注入中。 流量 133l/min (3/29 8:32)　仮設計器	消火系ラインを用いた淡水注入中。 流量 133l/min (3/30 10:14)　仮設計器	消火系ラインを用いた淡水注入中。 流量 116l/min (3/29 14:39)　仮設計器	停止中	停止中	停止中
原子炉水位	燃料域A：−1600mm 燃料域B：−1600mm (3/30 13:00 現在)	燃料域A：−1500mm (3/30 13:00 現在)	燃料域A：−1850mm 燃料域B：−2250mm (3/30 13:30 現在)	※2	停止域 2161mm (3/30 14:00 現在)	停止域 1766mm (3/30 14:00 現在)
原子炉圧力	0.340MPa g (A) 0.491MPa g (B) (3/30 13:00 現在)	−0.023MPa g (A) −0.023MPa g (B) (3/30 13:00 現在)	0.018MPa g (A) −0.095MPa g (C) (3/30 13:30 現在)	※2	0.007MPa g (3/30 14:00 現在)	0.003MPa g (3/30 14:00 現在)
原子炉水温度	（系統流量がないため採取不可）			※2	29.9℃ (3/30 14:00 現在)	32.6℃ (3/30 14:00 現在)
原子炉圧力容器温度	給水ノズル温度：270.1℃ 圧力容器下部温度：130.2℃ (3/30 13:00 現在)	給水ノズル温度：174.3℃ 圧力容器下部温度 ※1 (3/30 13:00 現在)	給水ノズル温度：76.7℃(調査中) 圧力容器下部温度：115.4℃ (3/30 13:30 現在)	4u:原子炉内に発熱体（燃料）なし 5,6u:原子炉水温度にて監視中		
D/W・S/C 圧力	D/W 0.230MPa abs S/C 0.230MPa abs (3/30 13:00 現在)	D/W 0.100MPa abs S/C ダウンスケール(調査中) (3/30 13:00 現在)	D/W 0.1064MPa abs S/C 0.1775MPa abs (3/30 13:30 現在)	※2		
CAMS	D/W 3.77×10^{1}Sv/h S/C 1.82×10^{1}Sv/h (3/30 13:00 現在)	D/W 3.96×10^{1}Sv/h S/C 1.26×10^{0}Sv/h (3/30 13:00 現在)	D/W 2.68×10^{1}Sv/h S/C 1.09×10^{0}Sv/h (3/30 13:30 現在)	※2		
D/W 設計使用圧力	0.384MPa g(0.485MPa abs)	0.384MPa g(0.485MPa abs)	0.384MPa g(0.485MPa abs)	※2		
D/W 最高使用圧力	0.427MPa g(0.528MPa abs)	0.427MPa g(0.528MPa abs)	0.427MPa g(0.528MPa abs)			
使用済燃料プール	※1	48.0℃ (3/30 13:00 現在)	※1	※1	37.2℃ (3/30 14:00 現在)	26.5℃ (3/30 14:00 現在)
FPC スキマーサージタンクレベル	4500mm (3/30 13:00 現在)	5650mm (3/30 13:00 現在)	※1	5250mm (3/30 13:30 現在)	※2	
電源	外部電源受電中（P/C2C）		外部電源受電中（P/C4D）		外部電源受電中	
その他情報	・3号機　原子炉圧力容器温度について、データ採取を行い、状況推移を継続調査中。 ・2号機　S/C 圧力について、状況推移を継続調査中。			共用プール： 32℃程度 (3/29 08:30)	5u：SHC モード (3/29 22:01～)	6u：非常モード (3/30 9:58～)

圧力換算　ゲージ圧(MPa g) ＝ 絶対圧(MPa abs) − 大気圧(標準大気圧 0.1013 MPa)
絶対圧(MPa abs) ＝ ゲージ圧(MPa g) ＋ 大気圧(標準大気圧 0.1013 MPa)

福島第一原子力発電所1号機の状況
（3月30日　14:00現在）

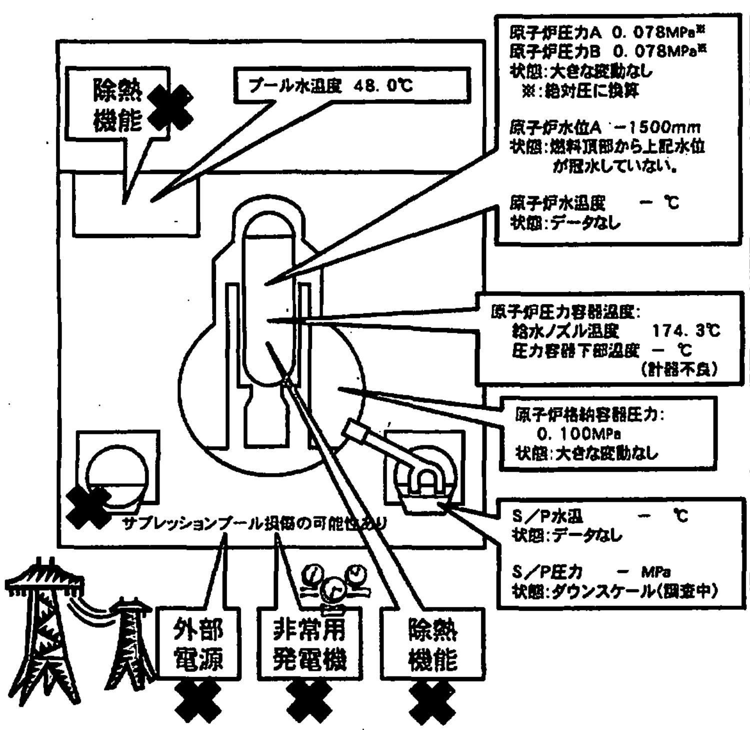


発生後の主要なできごと

11日14:46 運転中、地震により自動停止
11日15:42 10条通報（全交流電源喪失）
11日16:36 15条事象の発生（非常用炉心冷却装置注水不能）
12日01:20 15条事象の発生（格納容器圧力異常上昇）
12日10:17 ベント開始
12日15:36 爆発音
12日20:20 海水及びホウ酸の炉心注入開始
23日02:33 消火系に加え、給水系を使うことにより炉心への注水量を増量（$2m^3/h \rightarrow 18m^3/h$）。9:00に給水系のみに切替（$18m^3/h \rightarrow 11m^3/h$）
24日11:30 中央制御室の照明復帰
25日15:37 淡水の炉心注入開始
29日08:32 仮設電動ポンプでの炉心注水に切替

現状:炉心への淡水注入を継続

福島第一原子力発電所2号機の状況
（3月30日　14:00現在）

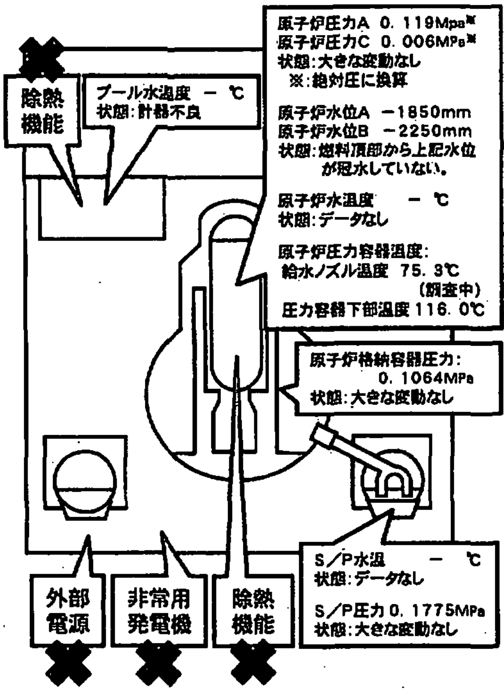


発生後の主要なできごと

11日14:46 運転中、地震により自動停止
11日15:42 10条通報（全交流電源喪失）
11日16:36 15条事象の発生（非常用炉心冷却装置注水不能）
13日11:00 ベント開始
14日13:25 15条事象の発生（原子炉冷却機能喪失）
14日16:34 海水の炉心注入開始
14日22:50 15条事象の発生（格納容器圧力異常上昇）
15日0:02 ベント開始
15日06:10 爆発音発生
15日06:20頃 サプレッションプール（圧力抑制室）損傷の可能性あり
20日15:05～17:20 使用済燃料プール冷却系（FPC）から使用済燃料プール（SFP）に約40tの海水を注水
20日15:46 パワーセンター受電
21日18:22 白煙が発生
22日7:11にほとんど見えない程度に減少
22日16:07 SFPに約18tの海水を注水
25日10:30～12:19 FPCからSFPに海水を注水
26日10:10 淡水の炉心注入開始
26日16:46 中央制御室の照明復帰
27日18:31 仮設電動ポンプでの炉心注水に切替
29日16:30～18:25 仮設電動ポンプに切替、SFPに淡水注入
30日9:45頃 SFPへ注入していた仮設電動ポンプの不調を確認
30日12:45頃 消防ポンプに切替て注入するが、ホース破損により注入中断

現状:プールへの海水注入及び炉心への淡水注入を継続

福島第一原子力発電所3号機の状況
（3月30日　14:00現在）



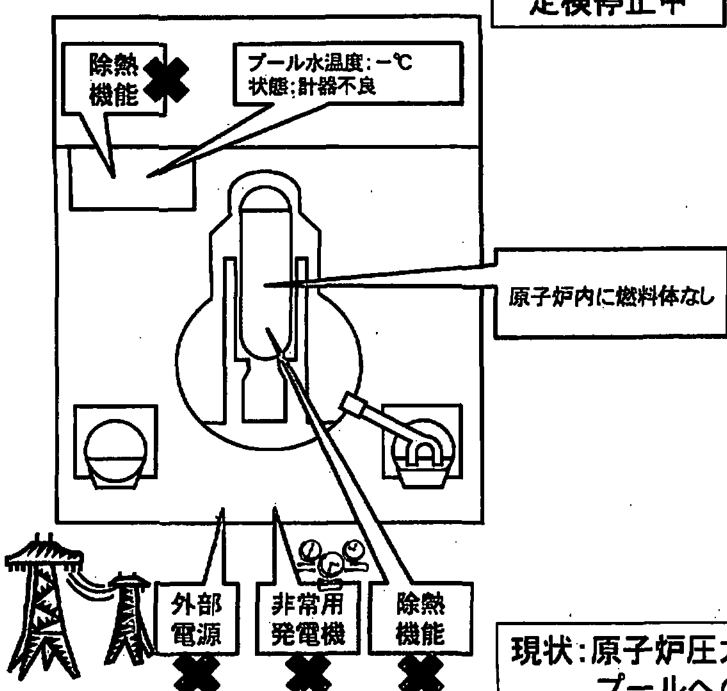
発生後の主要なできごと

11日14:46　運転中、地震により自動停止
11日15:42　10条通報（全交流電源喪失）
13日05:10　15条事象の発生（非常用炉心冷却装置注水不能）
13日08:41　ベント開始
13日13:12　海水及びホウ酸の炉心注入開始
14日05:20　ベント開始
14日07:44　15条事象の発生（格納容器圧力異常上昇）
14日11:01　爆発音
16日08:30頃　白煙が発生
17日09:48～10:01　自衛隊ヘリによる放水
17日19:05～19:15　警察の高圧放水車による散水
17日19:35～20:09　自衛隊の消防車により放水
18日14時前～14:38　自衛隊消防車6台による地上放水～14:45　米軍消防車1台による地上放水
19日0:30～01:10　東京消防庁ハイパーレスキュー隊放水
19日14:10～20日3:40　東京消防庁ハイパーレスキュー隊放水
20日 11:00　格納容器内圧力が上昇（320kPa）。その後、低下。
20日21:36～21日3:58　東京消防庁ハイパーレスキュー隊放水
21日15:55頃　灰色がかった煙が発生。17:55に煙が収まっていることを確認
22日15:10～16:00　東京消防庁ハイパーレスキュー隊及び大阪市消防局放水
22日22:46　中央制御室の照明復帰
23日11:03-13:20 使用済燃料プール冷却系(FPC)から使用済燃料プール(SFP)に約35tの海水を注水
23日16:20頃　黒煙が発生。23:30頃及び24日4:50に煙の発生が止んでいることを確認。
24日05:35～16:05　FPCからSFPに約120tの海水を注水
25日13:28～16:00　東京消防庁の支援を受けた川崎市消防局による放水
25日18:02　淡水の炉心注入開始
27日12:34～14:36 コンクリートポンプ車による放水
28日20:30　仮設電動ポンプでの炉心注水に切替
29日14:17～18:18 コンクリートポンプ車による放水（淡水）

現状：
プール及び炉心への淡水注入を継続

福島第一原子力発電所4号機の状況
（3月30日　14:00現在）

定検停止中



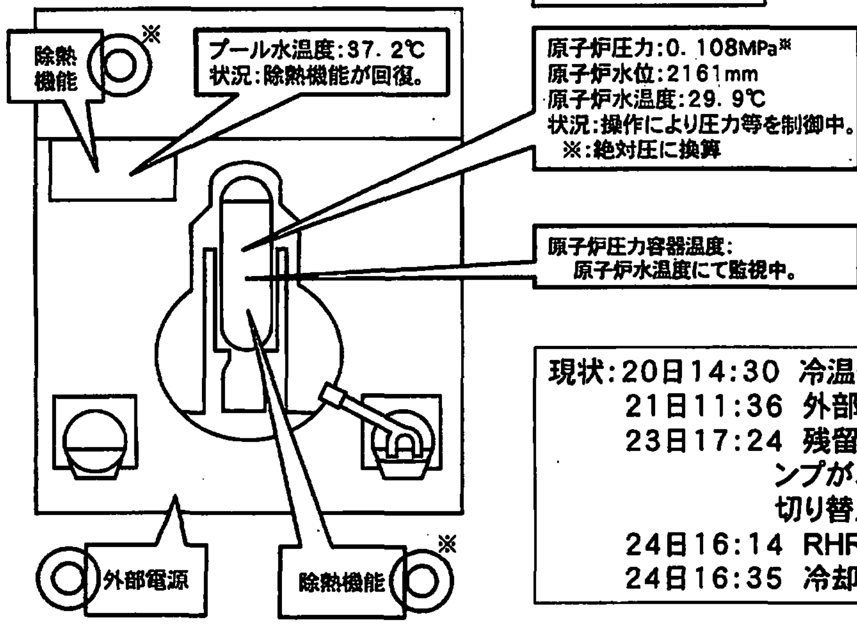
発生後の主要なできごと

地震発生時、定期検査により停止中
14日04:08　使用済燃料プール温度84℃
15日06:14　4Fの壁が一部破損の確認
15日09:38　3階部分で火災(12:25鎮火)
16日05:45　4号機で火災。事業者によると現場での火は確認できず(06:15)
20日08:21～9:40　自衛隊による使用済燃料プール（SFP）への放水
20日18:30頃 ～ 19:46　自衛隊によるSFPへの放水
21日06:37～08:41　自衛隊によるSFPへの放水
21日15:00頃　パワーセンターまでのケーブル敷設完了
22日10:35　パワーセンター受電
22日17:17～20:32　コンクリートポンプ車による放水
23日10:00～13:02　コンクリートポンプ車による放水
24日14:36～17:30　コンクリートポンプ車による放水
25日06:05～10:20　使用済燃料プール冷却系（FPC）からSFPに海水を注入
25日19:05～22:07 コンクリートポンプ車による放水
27日16:55～19:25 コンクリートポンプ車による放水
29日11:50　中央制御室の照明復帰

現状：原子炉圧力容器に燃料体が存在しない
プールへの海水注入を継続

福島第一原子力発電所5号機の状況
（3月30日　14:00現在）

定検停止中

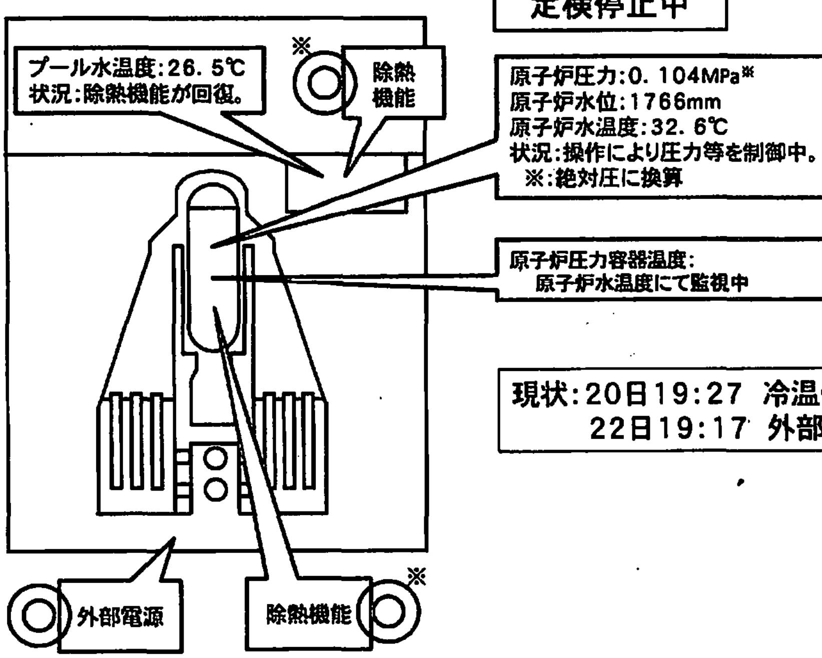


現状:20日14:30　冷温停止。
21日11:36　外部電源から受電開始。
23日17:24　残留熱除去海水系(RHRS)ポンプが、仮設から本設の電源への切り替えの際に自動停止。
24日16:14　RHRSポンプの修理完了。
24日16:35　冷却開始。

※　炉水とプール水を切替えて除熱

福島第一原子力発電所6号機の状況
（3月30日　14:00現在）

定検停止中



現状:20日19:27　冷温停止。
22日19:17　外部電源から受電開始。

※　炉水とプール水を切替えて除熱

From: PMT01 Hoc
Sent: Wednesday, March 23, 2011 6:25 PM
To: PMT07 Hoc; Hoc, PMT12; PMT02 Hoc; PMT11 Hoc
Subject: FW: FYI - Japan evacuations
Attachments: Japan evacuation.doc

FYI

From: Weber, Michael
Sent: Wednesday, March 23, 2011 6:12 PM
To: LIA06 Hoc; LIA08 Hoc; PMT01 Hoc
Cc: OST02 HOC; ET01 Hoc; ET05 Hoc
Subject: FYI - Japan evacuations

Please find attached and below a summary of the protective actions issued by other nations with respect to their citizens in affected areas of Japan.

From: Leeds, Eric
Sent: Wednesday, March 23, 2011 2:24 PM
To: Brenner, Eliot; Hayden, Elizabeth
Cc: Borchardt, Bill; Virgilio, Martin; Weber, Michael; Johnson, Michael; Holahan, Gary; Wiggins, Jim; Evans, Michele; Miller, Charles; Sheron, Brian; Uhle, Jennifer; Doane, Margaret; Mamish, Nader; Grobe, Jack; Boger, Bruce; Ruland, William; Dean, Bill; McCree, Victor; Pederson, Cynthia; Howell, Art; Batkin, Joshua
Subject: Heads up: Japan evacuations

FYI - I asked our contact at the NEA for info on other countries evacuating around Fukushima. Some other members of the international community followed the US recommendation. Some did other things See below and attached.

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

From: Diane.JACKSON@oecd.org [mailto:Diane.JACKSON@oecd.org]
Sent: Wednesday, March 23, 2011 1:22 PM
To: Leeds, Eric
Subject: Your question about Japan evacuations

Eric –

I did some web searching. Canada, South Korea, UK and Australia stated an evacuation distance of 80 km/ 50 miles.

Many countries, such as France, urged their citizens in the north-east Japan and Tokyo to evacuate. In most reports, most countries do not state the reason is nuclear and they do not give a defined distance.

Attached are excerpts from reports with web sources.

Hope that helps,
Diane

KKKK-57

From: LIA04 Hoc
Sent: Wednesday, March 23, 2011 6:40 PM
To: OST05 Hoc; LIA04 Hoc; Barker, Allan; Browder, Rachel; Erickson, Randy; Logaras, Harral; Maier, Bill; McNamara, Nancy; Tifft, Doug; Trojanowski, Robert; Woodruff, Gena
Cc: Piccone, Josephine; Jackson, Deborah; Easson, Stuart; Flannery, Cindy; Lukes, Kim; Maupin, Cardelia; Noonan, Amanda; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtil, Richard; Virgilio, Rosetta
Subject: FYI - Japan evacuations
Attachments: Japan evacuation.doc

FYI – attached contains excerpts regarding other countries evacuation recommendations for their citizens. We have also requested that OIP develop a talking point or points regarding the coordination that occurred between the U.S. and Japanese government prior to the release of the 50 mile PAR.

Alison Rivera
State Liaison
NRC HQ Operations Center
301-816-5193

From: LIA08 Hoc
Sent: Wednesday, March 23, 2011 6:30 PM
To: LIA01 Hoc; LIA04 Hoc; LIA02 Hoc
Subject: FW: FYI - Japan evacuations

For your info. Jeff

From: Weber, Michael
Sent: Wednesday, March 23, 2011 6:12 PM
To: LIA06 Hoc; LIA08 Hoc; PMT01 Hoc
Cc: OST02 HOC; ET01 Hoc; ET05 Hoc
Subject: FYI - Japan evacuations

Please find attached and below a summary of the protective actions issued by other nations with respect to their citizens in affected areas of Japan.

From: Leeds, Eric
Sent: Wednesday, March 23, 2011 2:24 PM
To: Brenner, Eliot; Hayden, Elizabeth
Cc: Borchardt, Bill; Virgilio, Martin; Weber, Michael; Johnson, Michael; Holahan, Gary; Wiggins, Jim; Evans, Michele; Miller, Charles; Sheron, Brian; Uhle, Jennifer; Doane, Margaret; Mamish, Nader; Grobe, Jack; Boger, Bruce; Ruland, William; Dean, Bill; McCree, Victor; Pederson, Cynthia; Howell, Art; Batkin, Joshua
Subject: Heads up: Japan evacuations

FYI - I asked our contact at the NEA for info on other countries evacuating around Fukushima. Some other members of the international community followed the US recommendation. Some did other things See below and attached.

Eric J. Leeds, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission

301-415-1270

From: Diane.JACKSON@oecd.org [mailto:Diane.JACKSON@oecd.org]
Sent: Wednesday, March 23, 2011 1:22 PM
To: Leeds, Eric
Subject: Your question about Japan evacuations

Eric –

I did some web searching. Canada, South Korea, UK and Australia stated an evacuation distance of 80 km/ 50 miles.

Many countries, such as France, urged their citizens in the north-east Japan and Tokyo to evacuate. In most reports, most countries do not state the reason is nuclear and they do not give a defined distance.

Attached are excerpts from reports with web sources.

Hope that helps,
Diane

From: Weber, Michael
Sent: Wednesday, March 23, 2011 6:12 PM
To: LIA06 Hoc; LIA08 Hoc; PMT01 Hoc
Cc: OST02 HOC; ET01 Hoc; ET05 Hoc
Subject: FYI - Japan evacuations
Attachments: Japan evacuation.doc

Please find attached and below a summary of the protective actions issued by other nations with respect to their citizens in affected areas of Japan.

From: Leeds, Eric
Sent: Wednesday, March 23, 2011 2:24 PM
To: Brenner, Eliot; Hayden, Elizabeth
Cc: Borchardt, Bill; Virgilio, Martin; Weber, Michael; Johnson, Michael; Holahan, Gary; Wiggins, Jim; Evans, Michele; Miller, Charles; Sheron, Brian; Uhle, Jennifer; Doane, Margaret; Mamish, Nader; Grobe, Jack; Boger, Bruce; Ruland, William; Dean, Bill; McCree, Victor; Pederson, Cynthia; Howell, Art; Batkin, Joshua
Subject: Heads up: Japan evacuations

FYI - I asked our contact at the NEA for info on other countries evacuating around Fukushima. Some other members of the international community followed the US recommendation. Some did other things See below and attached.

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

From: Diane.JACKSON@oecd.org [mailto:Diane.JACKSON@oecd.org]
Sent: Wednesday, March 23, 2011 1:22 PM
To: Leeds, Eric
Subject: Your question about Japan evacuations

Eric –

I did some web searching. Canada, South Korea, UK and Australia stated an evacuation distance of 80 km/ 50 miles.

Many countries, such as France, urged their citizens in the north-east Japan and Tokyo to evacuate. In most reports, most countries do not state the reason is nuclear and they do not give a defined distance.

Attached are excerpts from reports with web sources.

Hope that helps,
Diane

From: LIA05 Hoc
Sent: Thursday, March 24, 2011 9:31 AM
To: Dan Feighert; Andrew Seward; Harry Sherwood; John Simpson; Michelle Ralston; Steve Horwitz; Tim Greten; Vanessa E. Quinn
Subject: FW: FYI - Japan evacuations
Attachments: Japan evacuation.doc

Per your request.

Bonnie Sheffield Dayshift 0700-1500
Ken Wierman Nightshift 1500-2300
FEMA REP Liaison
NRC Operations Center
(301) 816-5187

~~******FOR OFFICIAL USE ONLY******~~
~~DO NOT RELEASE OUTSIDE OF THE FEDERAL FAMILY~~

From: LIA01 Hoc
Sent: Thursday, March 24, 2011 9:17 AM
To: LIA05 Hoc
Subject: FW: FYI - Japan evacuations

Otis, I ran across this and thought you might want to see this, too.

Bethany

From: LIA08 Hoc
Sent: Wednesday, March 23, 2011 6:30 PM
To: LIA01 Hoc; LIA04 Hoc; LIA02 Hoc
Subject: FW: FYI - Japan evacuations

For your info. Jeff

From: Weber, Michael
Sent: Wednesday, March 23, 2011 6:12 PM
To: LIA06 Hoc; LIA08 Hoc; PMT01 Hoc
Cc: OST02 HOC; ET01 Hoc; ET05 Hoc
Subject: FYI - Japan evacuations

Please find attached and below a summary of the protective actions issued by other nations with respect to their citizens in affected areas of Japan.

From: Leeds, Eric
Sent: Wednesday, March 23, 2011 2:24 PM
To: Brenner, Eliot; Hayden, Elizabeth
Cc: Borchardt, Bill; Virgilio, Martin; Weber, Michael; Johnson, Michael; Holahan, Gary; Wiggins, Jim; Evans, Michele; Miller, Charles; Sheron, Brian; Uhle, Jennifer; Doane, Margaret; Mamish, Nader; Grobe, Jack; Boger, Bruce; Ruland,

William; Dean, Bill; McCree, Victor; Pederson, Cynthia; Howell, Art; Batkin, Joshua
Subject: Heads up: Japan evacuations

FYI - I asked our contact at the NEA for info on other countries evacuating around Fukushima. Some other members of the international community followed the US recommendation. Some did other things See below and attached.

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

From: Diane.JACKSON@oecd.org [mailto:Diane.JACKSON@oecd.org]
Sent: Wednesday, March 23, 2011 1:22 PM
To: Leeds, Eric
Subject: Your question about Japan evacuations

Eric –

I did some web searching. Canada, South Korea, UK and Australia stated an evacuation distance of 80 km/ 50 miles.

Many countries, such as France, urged their citizens in the north-east Japan and Tokyo to evacuate. In most reports, most countries do not state the reason is nuclear and they do not give a defined distance.

Attached are excerpts from reports with web sources.

Hope that helps,
Diane

CANADIAN NUCLEAR SAFETY COMMISSION (CNSC): March 17, 2011 19:08 EDT: "Given the evolving situation, Canadians located within 80 km of the Fukushima Nuclear Power Plant should consider, as a further precautionary measure, evacuating this area. The directions of the Japanese government and local emergency response personnel should also be followed by all Canadians in Japan."

CANADA FOREIGN AFFAIRS AND INTERNATIONAL TRADE: 23 March, 2011 "Following damage to the Fukushima nuclear power station in Okumacho, Canadians are strongly advised to follow the advice issued by the Japanese authorities. An evacuation order is in effect for the zone within 20 km of the Fukushima Nuclear Power Plant. Japanese authorities recommend that people between 20 km and 30 km from the plant remain indoors with windows and doors closed and refrain from using ventilation systems. Given the evolving situation, Canadians located within 80 km of the plant are advised that they should, as a further precautionary measure, evacuate this area. The directions of the Japanese government and local emergency response personnel should also be followed by all Canadians in Japan. "

Kyodo News: March 18, Kyodo

http://english.kyodonews.jp/news/2011/03/79157.html

"S. Korea to mobilize military planes to evacuate nationals from Japan"

On Thursday, South Korea upgraded a safety advisory telling its citizens in Japan to stay at least 80 kilometers away from the crippled nuclear reactors in Fukushima Prefecture, more than doubling the previous evacuation distance of 30 km amid rising fears of exposure to radiation.

Australian Business Traveller: 18 March 2011

http://www.ausbt.com.au/australian-government-to-japan-travellers-leave-now-tokyo-unsafe

ARPANSA [the Australian Radiation Protection and Nuclear Safety Agency] recommended that Australians within 80 kilometres of the Fukushima Nuclear Power Plant move out of the area as a precautionary measure.

Travel Weekly: Mar 17, 2011 07:43

"Nuclear fears in Japan prompt FCO warning"

http://www.travelweekly.co.uk/Articles/2011/03/17/36516/nuclear-fears-in-japan-prompt-fco-warning.html

The Government is chartering aircraft to evacuate Britons from Japan to Hong Kong as concerns heighten over fallout from the stricken Fukushima nuclear plant.

The Foreign and Commonwealth Office updated its travel advice today, saying: "Due to the evolving situation at the Fukushima nuclear facility and potential disruptions to the supply of goods, transport, communications, power and other infrastructure, British nationals currently in Tokyo and to the north of Tokyo should consider leaving the area.

"The UK government is chartering flights from Tokyo to Hong Kong to supplement commercially available options for those wishing to leave Japan."

Britons were urged to remain outside an 80km radius of the nuclear plant "as an additional precautionary measure," saying the call was in line with the US government's advice to its citizens in Japan.

"If you are currently between 30km and 80km from the facility, we advise you to leave the area or take shelter indoors if you are unable to travel," the FCO said. Britons seeking to leave Japan were advised to use commercial flights as their first option or register interest in the charter option to Hong Kong.

BBC report: 18 march 2011

http://www.bbc.co.uk/news/world-asia-pacific-12775329

"Foreign evacuations"

- US - providing flights for people who wish to leave, advising 50-mile exclusion zone around Fukushima
- France - urging people to leave northern Japan and Tokyo, sending government planes to fly French out
- UK - advising nationals to leave north-east and Tokyo, chartering flights out
- China - bringing thousands to Niigata for evacuation
- Australia - people with non-essential roles to leave Japan

China says it has evacuated more than 6,000 of its nationals from quake-hit areas, mostly to Niigata on Japan's west coast, and is laying on six to eight additional flights to bring them home.

South Korea has said it will mobilise military ships and aircraft to evacuate its citizens if the situation worsens. At the moment it has told its nationals to stay 50 miles away from the plant.

Most other countries have also advised their nationals to evacuate from the north-eastern region of Japan or to leave the country altogether if they can.

Financial Times report Published: March 17 2011 17:14

"Foreign governments step up evacuations"

http://www.ft.com/cms/s/0/592cdc28-50b1-11e0-9227-00144feab49a.html#axzz1HRMbjqdg

In the clearest sign yet that foreign governments are losing confidence in the Japanese government's ability to contain radioactivity from the crippled reactors, embassies including Australia, China, South Korea and Thailand upgraded their warnings to nationals in Japan.

The US and UK governments on Thursday said they were arranging charter flights for their nationals to leave Japan. The UK and Australia also expanded the evacuation zone to 80km in line with advice from the US to its nationals.

World News Company report: March 17 2011

http://www.worldnewsco.com/4528/residents-radius-80-km-fukushima-nuclear-power-plant/

The government of United States called on their citizens within a radius of 80 kilometers from the **Fukushima nuclear power plant** to leave the area. U.S. warning shows the evacuation radius which is wider than the evacuation order issued by Japanese government.

The Japanese government had previously urged people living within a radius of 20 kilometers from the *Fukushima nuclear power plant* to flee to other places.

The Japanese government also urged people residing within a radius of 32 kilometers from the Fukushima nuclear power plant to not leave the house if they can not leave the area.

While the British Foreign Office said, English people should now consider to go from Tokyo and the northeast region of Japan.

"Concerning the situation in the Fukushima nuclear facilities, the last suggestion of The UK Government Chief Scientific Adviser (GCSA) is for those who are outside the exclusion zone established by the Japanese authorities, no real problems to worry about the **health** of human society. This advice is kept under review constantly," the statement of British Foreign Office.

"However, due to the situation that developed at the Fukushima nuclear facilities and potential disruptions to supply of goods, transportation, communications, electricity and other infrastructure, British citizens who currently resides in Tokyo and the north of Tokyo to consider leaving the area," thus, the official statement of British Foreign Office as reported by the Daily Telegraph on Thursday (March 17, 2011).

The Swiss government also urged its citizens to leave Tokyo and northeastern Japan. Previously, the Australian government had also urged its citizens residing in Tokyo, near Fukushima nuclear power plant and other areas affected by earthquake and tsunami to go to

evacuate. The call of evacuation of residents also issued by the governments of South Korea and France.

International Business Time: March 17, 2011 9:45 PM AEST

http://au.ibtimes.com/articles/123822/20110318/uk-japan.htm

As foreigners in Japan become increasingly desperate to flee the country, the British government has chartered planes to fly Britons in the country from Tokyo to Hong Kong.

"The UK government is chartering flights from Tokyo to Hong Kong to supplement commercially available options for those wishing to leave Japan," said a spokesman for the Foreign Office.

"Due to the evolving situation at the Fukushima nuclear facility and potential disruptions to the supply of goods, transport, communications, power and other infrastructure, British nationals in Tokyo and to the north of Tokyo should consider leaving the area," a UK government spokesman stated.

Britain follows other nations, including France, Turkey and China, which have already advised its nations to leave Japan

From: LIA10 Hoc
Sent: Wednesday, March 23, 2011 5:31 PM
To: LIA02 Hoc; LIA03 Hoc
Subject: Nikkei article: TEPCO says it is difficult to do simulation on the spread of radioactive materials 2:56am March 24 2011 (japan time)

Source: Nikkei 2:56 March 24

Heading: It is difficult to do simulation on the spread of radioactive materials, TEPCO says

In the press conference which took place in the early hours of March 24, TEPCO made its view clear that it is difficult to estimate how extensively radioactive materials could spread from Fukushima Dai-ichi Nuclear Power Plant. In the press conference on March 23, TEPCO said that it would try its best to come up with an estimate (according to Public Relations Dept of TEPCO). However, it determined not to make such information public due to insufficiency of data needed for calculation.

Although TEPCO owns software which can simulate the spread of radioactive materials, in order to come up with an estimate, it is required to input the amount of release of radioactive materials and the meteorological information such as wind directions. For meteorological data, TEPCO could use data monitored at Fukushima Dai-ni Nuclear Power Plant, however, there is no sufficient data available for the amount of radioactive release because the monitoring instruments have not been functioning properly as a result of power outage and the effect of Tsunami.

TEPCO decided not to calculate using hypothetical information because of the concern that such results could deviate significantly from what actually happened. The spokesperson from the Public Relations Dept. said that "TEPCO will continue to make efforts in trying to estimate the amount of radioactive release from the information obtained from the area surrounding the nuclear power plant.

東電「放射性物質の拡散シミュレーションは困難」

2011/3/24 2:56

東京電力は24日未明の会見で、福島第1原子力発電所から放射性物質がどの地域まで広がるかを推計するのは難しいとの見解を明らかにした。23日までの会見では「できる限り（推計をして結果を）明らかにする」（広報部）としていた。計算の前提になるデータが現時点ではそろわないため、公表方針を実質的に撤回した。

東電は放射性物質の拡散具合をシミュレーションするソフトウエアを持っているが、実際の計算には放射性物質の放出量と風向などの気象情報を入力する必要がある。気象情報については福島第2原子力発電所で測定したデータを流用することができるが、放射性物質の放出量は、電源不足や津波の影響で計測機器が動かなかったため、情報がそろわないという。

KKKK-58

また何パターンかの仮置きの情報で算出するなどの措置は、変化の幅が大きすぎて事実とかけ離れる懸念が大きいとして断念。「放射性物質の放出量を周辺情報などから推計できないか今後努力する（広報部）としている。

From: Kolb, Timothy
Sent: Wednesday, March 23, 2011 5:53 AM
To: LIA03 Hoc; Liaison Japan
Cc: O'Donnell, John
Subject: RE: Dosimeter Numbers

I provided the paperwork for the Japan team to Roger Pedersen on Monday with the appropriate signatures. He should have what you need.
Thank you,
Tim Kolb

From: LIA03 Hoc
Sent: Tuesday, March 22, 2011 8:50 PM
To: Liaison Japan
Cc: O'Donnell, John
Subject: RE: Dosimeter Numbers

Dear Team – As a follow-up to our previous email, we only need the dosimeter numbers from the original team members in Japan, not the relief team arriving there over the next few days. As well, you can find your dosimeter number on the back of your dosimeter of you snap it out of its holder. There are two numbers on the back. Please send us both, as we are not sure which number the RSO is requesting.

Please let us know if you have any additional questions,
NRC International Liaison Team

From: LIA03 Hoc
Sent: Tuesday, March 22, 2011 7:56 PM
To: Liaison Japan
Cc: O'Donnell, John
Subject: Dosimeter Numbers

Dear Team – When you get the chance, please email the International Liaison Team your dosimeter number. In our haste to get you out to Japan, we neglected to get that information from you and the RSO needs it for NRC records. In addition, if you are planning to stay past the end of March, please let us know, as we will need to get you a new dosimeter. The ones you have now are only for use during the second quarter.

Thank you for your help.
The International Liaison Team

KKK/K-59

From: LIA02 Hoc
Sent: Wednesday, March 23, 2011 7:47 AM
To: Shaffer, Mark R
Cc: LIA03 Hoc; Schwartzman, Jennifer
Subject: RE: List of offers

I will get this to the ET after they're done with their morning briefing/turnover.

From: Shaffer, Mark R [mailto:ShafferMr@state.gov]
Sent: Wednesday, March 23, 2011 3:48 AM
To: LIA02 Hoc
Cc: LIA03 Hoc; Schwartzman, Jennifer
Subject: FW: List of offers

See below from IEC (Elena Buglova). Since NRC asked them to consider being the "clearinghouse," the IEC posted its list on ENAC yesterday afternoon. Now they are asking for the U.S. to provide them with information to feed the table.

This email is UNCLASSIFIED.

From: E.Buglova@iaea.org [mailto:E.Buglova@iaea.org]
Sent: Wednesday, March 23, 2011 8:44 AM
To: Shaffer, Mark R
Subject: List of offers

Morning Marc

You have seen the table. Now we are updating it based on the more detail info from few MSs. Please, let me know if there is anything we need to update for US.

Thanks
Elena

KKKK-60

From: Brusoe, Eric
Sent: Wednesday, March 23, 2011 9:31 AM
To: TSC Resource; CSC
Cc: LIA02 Hoc; LIA03 Hoc; Sullivan, Allen; Turner, Joseph; Reyes, Debra; Heard, Robert; ET02 Hoc; Padilla, William; Heard, Robert
Subject: RE: Jim Trapp's BB

CSC/TSC please take immediate action to include removing BB from the BES.

Bill will you please track this.

Eric Brusoe, PMP, CHE
Infrastructure Services Planning Team
Senior IT Specialist
Infrastructure and Computer Operations Division
Office of Information Services
U.S. Nuclear Regulatory Commission
301-415-5053

From: ET02 Hoc
Sent: Wednesday, March 23, 2011 9:29 AM
To: Heard, Robert; Reyes, Debra; Turner, Joseph; Sullivan, Allen; Brusoe, Eric
Cc: LIA02 Hoc; LIA03 Hoc
Subject: FW: Jim Trapp's BB

Just wanted to make certain that OIS had been informed of the information contained in the e-mail message below. Thanks...karen

---

From: LIA02 Hoc
Sent: Wednesday, March 23, 2011 5:50 AM
To: ET02 Hoc; Stransky, Robert
Cc: LIA02 Hoc; Jackson, Karen
Subject: RE: Jim Trapp's BB

Please see below

From: LIA02 Hoc
Sent: Wednesday, March 23, 2011 5:27 AM
To: Jackson, Karen
Subject: Jim Trapp's BB

In case you haven't heard, Jim Trapp lost his blackberry at a Japan Government building. Please take whatever appropriate actions are necessary as a result of this.

Thanks!
Eric

KKKK-61

From:	CSC
Sent:	Wednesday, March 23, 2011 9:46 AM
To:	Brusoe, Eric; TSC Resource
Cc:	LIA02 Hoc; LIA03 Hoc; Sullivan, Allen; Turner, Joseph; Reyes, Debra; Heard, Robert; ET02 Hoc; Padilla, William; Heard, Robert
Subject:	RE: Jim Trapp's BB

The Customer Support Center has received your support request.

A reference number has been assigned to your request. Your reference number is **507882**. Please use this referral number when contacting the Customer Support Center regarding your current support request.

Please feel free to e-mail or call us at 301-415-1234 if you require further assistance.

Thank you for contacting the Customer Support Center.

Maurice Clark
NRC Customer Support Center
Two White Flint North, 5th floor C-14
Hours: 6:00 AM-9:00 PM (M-F)
Hours: 9:00 AM-9:00 PM (Sat-Sun)
(301) 415-1234

From: Brusoe, Eric
Sent: Wednesday, March 23, 2011 9:31 AM
To: TSC Resource; CSC
Cc: LIA02 Hoc; LIA03 Hoc; Sullivan, Allen; Turner, Joseph; Reyes, Debra; Heard, Robert; ET02 Hoc; Padilla, William; Heard, Robert
Subject: RE: Jim Trapp's BB

CSC/TSC please take immediate action to include removing BB from the BES.

Bill will you please track this.

Eric Brusoe, PMP, CHE
Infrastructure Services Planning Team
Senior IT Specialist
Infrastructure and Computer Operations Division
Office of Information Services
U.S. Nuclear Regulatory Commission
301-415-5053

From: ET02 Hoc
Sent: Wednesday, March 23, 2011 9:29 AM

KKKK-62

To: Heard, Robert; Reyes, Debra; Turner, Joseph; Sullivan, Allen; Brusoe, Eric
Cc: LIA02 Hoc; LIA03 Hoc
Subject: FW: Jim Trapp's BB

Just wanted to make certain that OIS had been informed of the information contained in the e-mail message below. Thanks...karen

---

From: LIA02 Hoc
Sent: Wednesday, March 23, 2011 5:50 AM
To: ET02 Hoc; Stransky, Robert
Cc: LIA02 Hoc; Jackson, Karen
Subject: RE: Jim Trapp's BB

Please see below

From: LIA02 Hoc
Sent: Wednesday, March 23, 2011 5:27 AM
To: Jackson, Karen
Subject: Jim Trapp's BB

In case you haven't heard, Jim Trapp lost his blackberry at a Japan Government building. Please take whatever appropriate actions are necessary as a result of this.

Thanks!
Eric

From: Shaffer, Mark R <ShafferMr@state.gov>
Sent: Wednesday, March 23, 2011 3:48 AM
To: LIA02 Hoc
Cc: LIA03 Hoc; Schwartzman, Jennifer
Subject: FW: List of offers

See below from IEC (Elena Buglova). Since NRC asked them to consider being the "clearinghouse," the IEC posted its list on ENAC yesterday afternoon. Now they are asking for the U.S. to provide them with information to feed the table.

This email is UNCLASSIFIED.

From: E.Buglova@iaea.org [mailto:E.Buglova@iaea.org]
Sent: Wednesday, March 23, 2011 8:44 AM
To: Shaffer, Mark R
Subject: List of offers

Morning Marc

You have seen the table. Now we are updating it based on the more detail info from few MSs. Please, let me know if there is anything we need to update for US.

Thanks
Elena

KKKK-63

From: Henderson, Pamela
Sent: Wednesday, March 23, 2011 3:58 PM
To: Sheehan, Neil; Screnci, Diane; McNamara, Nancy; Tifft, Doug
Cc: PMT03 Hoc; Weerakkody, Sunil; Wilson, Peter; Rogge, John; Dionne, Bruce; Furia, Joseph; Hinson, Felicia; McKinley, Raymond; Moslak, Thomas; Nimitz, Ronald; Noggle, James; Rolph, Ronald
Subject: EPA press release

EPA press release

From: U.S. EPA [mailto:usaepa@govdelivery.com]
Sent: Tuesday, March 22, 2011 8:45 PM
To: Nimitz, Ronald
Subject: Air News Release (HQ): CORRECTION: UPDATED - please note the addition of "hundreds of thousands" in the second and sixth paragraphs

CONTACT:
EPA Press Office
press@epa.gov

FOR IMMEDIATE RELEASE:
March 22, 2011

CORRECTION: UPDATED – please note the addition of "hundreds of thousands" in the second and sixth paragraphs

Radiation Monitors Continue to Confirm That No Radiation Levels of Concern Have Reached the United States

WASHINGTON – During a detailed analysis of four west coast RadNet air monitor filters, the U.S. Environmental Protection Agency (EPA) identified trace amounts of radioactive iodine, cesium, and tellurium consistent with the Japanese nuclear incident. These levels are consistent with the levels found by a Department of Energy monitor last week and are to be expected in the coming days.

EPA's samples were captured by three monitors in California and one in Washington State on Friday, March 18 and sent to EPA scientists for detailed laboratory analysis. The data was reviewed over the weekend and the analysis was completed Monday night. The radiation levels detected on the filters from California and Washington monitors are **hundreds of thousands** to millions of times below levels of concern.

In addition, last night preliminary monitor results in Hawaii detected minuscule levels of an isotope that is also consistent with the Japanese nuclear incident. This detection varies from background and historical data in Hawaii. This isotope was detected at our fixed monitor in Hawaii, and it is far below any level of concern for human health. The sampling filter from this monitor is being sent to our national radiation lab for further analysis.

In a typical day, Americans receive doses of radiation from natural sources like rocks, bricks and the sun that are about 100,000 times higher than what we have detected coming from Japan. For example, the levels we're seeing coming from Japan are 100,000 times lower than what you get from taking a roundtrip international flight.

KKKK-64

EPA is in the process of conducting detailed filter analyses for fixed monitors located in Oregon.

EPA's RadNet filter results for San Francisco, Seattle, Riverside and Anaheim, California detected minuscule quantities of iodine isotopes and other radioactive particles that pose no health concern at the detected levels. Below are the results of the detailed filter analysis. All of the radiation levels detected during the detailed filter analysis are **hundreds of thousands to** millions of times below levels of concern.

All units are in Picocuries per meter cubed.

- Filter results for Anaheim, Calif. found:
  - Cesium-137: 0.0017
  - Tellurium-132: 0.012
  - Iodine-132: 0.0095
  - Iodine-131: 0.046

- Filter results for Riverside, Calif. found:
  - Cesium-137: 0.00024
  - Tellurium-132: 0.0014
  - Iodine-132: 0.0015
  - Iodine-131: 0.011
- Filter results for Seattle, Wash. found:
  - Cesium-137: 0.00045
  - Tellurium-132: 0.0034
  - Iodine-132: 0.0029
  - Iodine-131: 0.013

- Filter results for San Francisco, Calif. found:
  - Cesium-137: 0.0013
  - Tellurium-132: 0.0075
  - Iodine-132: 0.0066
  - Iodine-131: 0.068

EPA's RadNet system is designed to protect the public by notifying scientists, in near real time, of elevated levels of radiation so they can determine whether protective action is required. In addition, an analysis of the filters in the monitors can identify even the smallest trace amounts of specific radioactive isotopes.

As part of the federal government's continuing effort to make our activities and science transparent and available to the public, EPA will continue to keep RadNet data available at: http://www.epa.gov/japan2011/

R102

Note: If a link above doesn't work, please copy and paste the URL into a browser.

Note: If a link above doesn't work, please copy and paste the URL into a browser.

View all news releases related to air issues

Sent by the U.S. Environmental Protection Agency · 1200 Pennsylvania Avenue NW · Washington DC 20460 · 202-564-4355

From: Virgilio, Rosetta
Sent: Wednesday, March 23, 2011 6:50 PM
To: Milligan, Patricia
Cc: Turtil, Richard; Hoc, PMT12; LIA04 Hoc; OST05 Hoc
Subject: RE: States list with KI supplies

Note that Frieda Fisher Tyler, DE indicated last week they had a supply and could possibly help

---

From: Milligan, Patricia
Sent: Wednesday, March 23, 2011 6:32 PM
To: OST05 Hoc; Virgilio, Rosetta
Cc: Turtil, Richard; Hoc, PMT12; LIA04 Hoc
Subject: RE: States list with KI supplies

No states have offered KI, I went begging my contacts- PA has 2.8 million tablets available. NY would consider but not sure how many they have. CA might be able to round some up. I haven't checked with FL but they might be a good bet because they stockpile most of theirs due to their transient populations. I only started to check with States that rec'd a large quantity and tend to stockpile.. rather than predistribute.

From: OST05 Hoc
Sent: Wednesday, March 23, 2011 6:29 PM
To: Milligan, Patricia; Virgilio, Rosetta
Cc: Turtil, Richard; Hoc, PMT12; LIA04 Hoc
Subject: RE: States list with KI supplies

The question was clarified, and PMT is looking for the States that have offered supplies to NRC. Rich will follow-up with the question.

Thanks,
-Maria

From: Milligan, Patricia
Sent: Wednesday, March 23, 2011 6:25 PM
To: Virgilio, Rosetta
Cc: Turtil, Richard; OST05 Hoc; Hoc, PMT12
Subject: RE: States list with KI supplies

these are the states and the bottles (not doses) of liquid KI (each bottle is 30 doses) DE 16000 FL 32000 MN 1800 SC 2000 NJ 4200 NY 106000 NC 12000 VA 101600 WV 2000 MD 4000 VT 1000 CT 7000 MA 85 LA 1975

As stated in earlier email the following states have not received KI for the public as part of the NRC KI program:
1. Texas
2. Washington
3. Nebraska
4. Kansas
5. Arkansas
6. Missouri

KKKK-65

7. Iowa
8. Georgia
9. Louisiana
10. Illinois

so that leaves 23 participating states:

1. NY
2. MA
3. CT
4. VT
5. DE
6. NH
7. NJ
8. PA
9.MD
10. Va
11. NC
11. SC
12. FL
13. AL
14. MS
15.CA
16.OH
17.TN
18.MI
19. MN
20.WI
21.WV
22.AZ

From: Virgilio, Rosetta
Sent: Wednesday, March 23, 2011 6:16 PM
To: Milligan, Patricia
Cc: Turtil, Richard; OST05 Hoc
Subject: FW: States list with KI supplies

Hi, Trish – Please see below; Do you have a list of States that have KI? I recognize you may not know whether they have supplies they can make available to NRC, but wondered if you have the list of those who got KI?

Thanks much.

Rosetta

From: OST05 Hoc
Sent: Wednesday, March 23, 2011 5:39 PM
To: Turtil, Richard; LIA04 Hoc; OST05 Hoc
Cc: Easson, Stuart; Flannery, Cindy; LIA04 Hoc; Lukes, Kim; Maupin, Cardelia; Noonan, Amanda; OST05 Hoc; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtil, Richard; Virgilio, Rosetta
Subject: States list with KI supplies

Rich-

PMT would like to have a list of States that currently have KI supplies that can be made available to NRC. This is not an urgent request, however PMT would like to have the list to be prepared in case it is needed. Alison, mentioned that you were working on contacting States with KI supplies last week, just following-up on it. Is there any sort of document or email listing the State supplies?

Thank you,
-Maria Arribas- Colon

From: OST05 Hoc
Sent: Wednesday, March 23, 2011 6:42 PM
To: PMT03 Hoc
Subject: FW: States list with KI supplies

FYI-

From: Milligan, Patricia
Sent: Wednesday, March 23, 2011 6:32 PM
To: OST05 Hoc; Virgilio, Rosetta
Cc: Turtil, Richard; Hoc, PMT12; LIA04 Hoc
Subject: RE: States list with KI supplies

No states have offered KI, I went begging my contacts- PA has 2.8 million tablets available. NY would consider but not sure how many they have. CA might be able to round some up. I haven't checked with FL but they might be a good bet because they stockpile most of theirs due to their transient populations. I only started to check with States that rec'd a large quantity and tend to stockpile.. rather than predistribute.

From: OST05 Hoc
Sent: Wednesday, March 23, 2011 6:29 PM
To: Milligan, Patricia; Virgilio, Rosetta
Cc: Turtil, Richard; Hoc, PMT12; LIA04 Hoc
Subject: RE: States list with KI supplies

The question was clarified, and PMT is looking for the States that have offered supplies to NRC. Rich will follow-up with the question.

Thanks,
-Maria

From: Milligan, Patricia
Sent: Wednesday, March 23, 2011 6:25 PM
To: Virgilio, Rosetta
Cc: Turtil, Richard; OST05 Hoc; Hoc, PMT12
Subject: RE: States list with KI supplies

these are the states and the bottles (not doses) of liquid KI (each bottle is 30 doses) DE 16000 FL 32000 MN 1800 SC 2000 NJ 4200 NY 106000 NC 12000 VA 101600 WV 2000 MD 4000 VT 1000 CT 7000 MA 85 LA 1975

As stated in earlier email the following states have not received KI for the public as part of the NRC KI program:

1. Texas
2. Washington
3. Nebraska
4. Kansas
5. Arkansas
6. Missouri
7. Iowa

KKKK-66

8. Georgia
9. Louisiana
10. Illinois

so that leaves 23 participating states:

1. NY
2. MA
3. CT
4. VT
5. DE
6. NH
7. NJ
8. PA
9.MD
10. Va
11. NC
11. SC
12. FL
13. AL
14. MS
15.CA
16.OH
17.TN
18.MI
19. MN
20.WI
21.WV
22.AZ

From: Virgilio, Rosetta
Sent: Wednesday, March 23, 2011 6:16 PM
To: Milligan, Patricia
Cc: Turtil, Richard; OST05 Hoc
Subject: FW: States list with KI supplies

Hi, Trish – Please see below; Do you have a list of States that have KI? I recognize you may not know whether they have supplies they can make available to NRC, but wondered if you have the list of those who got KI?

Thanks much.

Rosetta

From: OST05 Hoc
Sent: Wednesday, March 23, 2011 5:39 PM
To: Turtil, Richard; LIA04 Hoc; OST05 Hoc
Cc: Easson, Stuart; Flannery, Cindy; LIA04 Hoc; Lukes, Kim; Maupin, Cardelia; Noonan, Amanda; OST05 Hoc; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtil, Richard; Virgilio, Rosetta
Subject: States list with KI supplies

Rich-

PMT would like to have a list of States that currently have KI supplies that can be made available to NRC. This

is not an urgent request, however PMT would like to have the list to be prepared in case it is needed. Alison, mentioned that you were working on contacting States with KI supplies last week, just following-up on it. Is there any sort of document or email listing the State supplies?

Thank you,
-Maria Arribas- Colon

To: Virgilio, Rosetta; Milligan, Patricia
Cc: Turtil, Richard
Subject: Clarifiaction RE: States list with KI supplies

The question was clarified, and PMT is looking for the States that have offered supplies to NRC. Rich will follow-up with the question.

Thanks

From: Virgilio, Rosetta
Sent: Wednesday, March 23, 2011 6:16 PM
To: Milligan, Patricia
Cc: Turtil, Richard; OST05 Hoc
Subject: FW: States list with KI supplies

Hi, Trish – Please see below; Do you have a list of States that have KI? I recognize you may not know whether they have supplies they can make available to NRC, but wondered if you have the list of those who got KI?

Thanks much.

Rosetta

From: OST05 Hoc
Sent: Wednesday, March 23, 2011 5:39 PM
To: Turtil, Richard; LIA04 Hoc; OST05 Hoc
Cc: Easson, Stuart; Flannery, Cindy; LIA04 Hoc; Lukes, Kim; Maupin, Cardelia; Noonan, Amanda; OST05 Hoc; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtil, Richard; Virgilio, Rosetta
Subject: States list with KI supplies

Rich-

PMT would like to have a list of States that currently have KI supplies that can be made available to NRC. This is not an urgent request, however PMT would like to have the list to be prepared in case it is needed. Alison, mentioned that you were working on contacting States with KI supplies last week, just following-up on it. Is there any sort of document or email listing the State supplies?

Thank you,
-Maria Arribas- Colon

KKKK-67

From: Milligan, Patricia
Sent: Wednesday, March 23, 2011 6:25 PM
To: Virgilio, Rosetta
Cc: Turtil, Richard; OST05 Hoc; Hoc, PMT12
Subject: RE: States list with KI supplies
Attachments: KI states.xlsx

these are the states and the bottles (not doses) of liquid KI (each bottle is 30 doses) DE 16000 FL 32000 MN 1800 SC 2000 NJ 4200 NY 106000 NC 12000 VA 101600 WV 2000 MD 4000 VT 1000 CT 7000 MA 85 LA 1975

As stated in earlier email the following states have not received KI for the public as part of the NRC KI program:

1. Texas
2. Washington
3. Nebraska
4. Kansas
5. Arkansas
6. Missouri
7. Iowa
8. Georgia
9. Louisiana
10. Illinois

so that leaves 23 participating states:

1. NY
2. MA
3. CT
4. VT
5. DE
6. NH
7. NJ
8. PA
9.MD
10. Va
11. NC
11. SC
12. FL
13. AL
14. MS
15.CA
16.OH
17.TN
18.MI
19. MN
20.WI
21.WV
22.AZ

KKKK-68

From: Virgilio, Rosetta
Sent: Wednesday, March 23, 2011 6:16 PM
To: Milligan, Patricia
Cc: Turtil, Richard; OST05 Hoc
Subject: FW: States list with KI supplies

Hi, Trish – Please see below; Do you have a list of States that have KI? I recognize you may not know whether they have supplies they can make available to NRC, but wondered if you have the list of those who got KI?

Thanks much.

Rosetta

From: OST05 Hoc
Sent: Wednesday, March 23, 2011 5:39 PM
To: Turtil, Richard; LIA04 Hoc; OST05 Hoc
Cc: Easson, Stuart; Flannery, Cindy; LIA04 Hoc; Lukes, Kim; Maupin, Cardelia; Noonan, Amanda; OST05 Hoc; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtil, Richard; Virgilio, Rosetta
Subject: States list with KI supplies

Rich-

PMT would like to have a list of States that currently have KI supplies that can be made available to NRC. This is not an urgent request, however PMT would like to have the list to be prepared in case it is needed. Alison, mentioned that you were working on contacting States with KI supplies last week, just following-up on it. Is there any sort of document or email listing the State supplies?

Thank you,
-Maria Arribas- Colon

KI REPLENISHMENT COSTS BY QUARTER PER COMMISSION SRM

Sum of COSTS-			
FY	Quarter	Size	Total
2007	1st	65	287,468
		130	733,553
	1st Total		1,021,021
	2nd	65	95,993
		130	1,048,635
	2nd Total		1,144,628
	4th	130	147,745
	4th Total		147,745
2007 Total			2,313,394
2008	1st	130	3,951
	1st Total		3,951
	2nd	130	59,251
	2nd Total		59,251
2008 Total			63,202
Beyond	Year	65	281,151
		130	5,925
	Year Total		287,077
Beyond Total			287,077
Grand Total			2,663,673

Size (strength)	STATE	tablets
130	Maryland	161,000
130	Massachusetts	550,220
130	New York	1,200,010
130	Arizona	7,000
130	New Hampshire	350,000
130	Connecticut	449,988
130	Vermont	92,764
130	Alabama	112,210
130	Florida	784,000
130	Delaware	74,074
130	Delaware	58,002
130	New Jersey	722,008
130	Delaware	4,004
130	Ohio	639,002
130	Pennsylvania	1,929,760
130	North Carolina	723,240
130	Virginia	660,002
130	California	460,012
130	California	39,438
130	South Carolina	748,076
130	Mississippi	20,006
130	North Carolina	300,006
130	West Virginia	30,002
130	Maryland-continued	7,000
65	Mississippi	5,000
65	New York	288,000
65	Delaware	25,000
65	Arizona	3,400
65	New Hampshire	102,420
65	Florida	200,000
65	North Carolina	181,820
65	West Virginia	20,000
65	Maryland	35,040
65	Alabama	25,660
65	New Jersey	151,200
65	California	299,520
65	Tennessee	446,480
65	Minnesota	1234680
65	Virginia	73,000
65	Wisconsin	20,000

From:	OST05 Hoc
Sent:	Wednesday, March 23, 2011 6:29 PM
To:	Milligan, Patricia; Virgilio, Rosetta
Cc:	Turtil, Richard; Hoc, PMT12; LIA04 Hoc
Subject:	RE: States list with KI supplies

The question was clarified, and PMT is looking for the States that have offered supplies to NRC. Rich will follow-up with the question.

Thanks,
-Maria

From: Milligan, Patricia
Sent: Wednesday, March 23, 2011 6:25 PM
To: Virgilio, Rosetta
Cc: Turtil, Richard; OST05 Hoc; Hoc, PMT12
Subject: RE: States list with KI supplies

these are the states and the bottles (not doses) of liquid KI (each bottle is 30 doses) DE 16000 FL 32000 MN 1800 SC 2000 NJ 4200 NY 106000 NC 12000 VA 101600 WV 2000 MD 4000 VT 1000 CT 7000 MA 85 LA 1975

As stated in earlier email the following states have not received KI for the public as part of the NRC KI program:
1. Texas
2. Washington
3. Nebraska
4. Kansas
5. Arkansas
6. Missouri
7. Iowa
8. Georgia
9. Louisiana
10. Illinois

so that leaves 23 participating states:

1. NY
2. MA
3. CT
4. VT
5. DE
6. NH
7. NJ
8. PA
9.MD
10. Va
11. NC
11. SC

KKKK-69

12. FL
13. AL
14. MS
15. CA
16. OH
17. TN
18. MI
19. MN
20. WI
21. WV
22. AZ

From: Virgilio, Rosetta
Sent: Wednesday, March 23, 2011 6:16 PM
To: Milligan, Patricia
Cc: Turtil, Richard; OST05 Hoc
Subject: FW: States list with KI supplies

Hi, Trish – Please see below; Do you have a list of States that have KI? I recognize you may not know whether they have supplies they can make available to NRC, but wondered if you have the list of those who got KI?

Thanks much.

Rosetta

From: OST05 Hoc
Sent: Wednesday, March 23, 2011 5:39 PM
To: Turtil, Richard; LIA04 Hoc; OST05 Hoc
Cc: Easson, Stuart; Flannery, Cindy; LIA04 Hoc; Lukes, Kim; Maupin, Cardelia; Noonan, Amanda; OST05 Hoc; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtil, Richard; Virgilio, Rosetta
Subject: States list with KI supplies

Rich-

PMT would like to have a list of States that currently have KI supplies that can be made available to NRC. This is not an urgent request, however PMT would like to have the list to be prepared in case it is needed. Alison, mentioned that you were working on contacting States with KI supplies last week, just following-up on it. Is there any sort of document or email listing the State supplies?

Thank you,
-Maria Arribas- Colon

From: Virgilio, Rosetta
Sent: Wednesday, March 23, 2011 6:16 PM
To: Milligan, Patricia
Cc: Turtil, Richard; OST05 Hoc
Subject: FW: States list with KI supplies

Hi, Trish – Please see below; Do you have a list of States that have KI? I recognize you may not know whether they have supplies they can make available to NRC, but wondered if you have the list of those who got KI?

Thanks much.

Rosetta

From: OST05 Hoc
Sent: Wednesday, March 23, 2011 5:39 PM
To: Turtil, Richard; LIA04 Hoc; OST05 Hoc
Cc: Easson, Stuart; Flannery, Cindy; LIA04 Hoc; Lukes, Kim; Maupin, Cardelia; Noonan, Amanda; OST05 Hoc; Rautzen, William; Rivera, Alison; Ryan, Michelle; Turtil, Richard; Virgilio, Rosetta
Subject: States list with KI supplies

Rich-

PMT would like to have a list of States that currently have KI supplies that can be made available to NRC. This is not an urgent request, however PMT would like to have the list to be prepared in case it is needed. Alison, mentioned that you were working on contacting States with KI supplies last week, just following-up on it. Is there any sort of document or email listing the State supplies?

Thank you,
-Maria Arribas- Colon

KKKK-70

From: LIA10 Hoc
Sent: Thursday, March 24, 2011 11:20 AM
To: LIA02 Hoc; LIA03 Hoc
Subject: France offers simulation data
Attachments: image001.jpg

French Ambassador to Japan Philippe Fauré: France ready to provide Japan data and expertise prepared for radioactive contamination contingencies

The Government of France will respond to any and all requests related to stabilizing the NPS. Study from all perspectives including impacts to the environment and food chain should be done. France is prepared to provide Japan information, data and expertise useful for that purpose.

French electricity is 80% reliant on nuclear power, with 57 or 58 plants on our not necessarily very large territory. We have repeatedly carried out worst-accident simulations (mock tests) since 2005 to predict in detail the degree of radiation exposure to vegetables, water and fresh milk at a certain radius one week later, two weeks later, etc. We are prepared to provide Japan with this data set.

Exports will become difficult not just for food but also for industrial goods that may have suffered exposure. If steel or other materials include radioactive material, finished goods made from them will also have detectable radioactivity. We have made studies from various angles as to what actions to take, and these French data will indubitably be useful for Japan.

France' s technology and expertise are not superior to Japan' s but we have more people and time to spare than you now.

KKKK-71

フィリップ・フォール駐日フランス大使は24日、日本経済新聞記者と会い、「仏政府が放射能汚染の危機に備えて用意していたデータやノウハウを日本に提供したい」などと語った。主な一問一答は以下の通り。

——現時点の仏の支援の中身は。

「既に被災地に約130人の仏救援隊が入っている。25日に大型輸送機で150トンの救援物資が東京に届く。うち50トンが防護服、防護マスク、計測器、発電機、コンプレッサー、排水ポンプ、計測器搭載トラックなどの原発関連の技術支援の資機材だ。このほか、人道支援の物資としてミネラルウオーター10万本、マスク100万枚、医薬品５トン、乾燥スープ５トンなどが含まれる。26日に仙台から被災地に分配する段取りだ」

——検討している今後の支援策は。

「福島原発の事故が現場でとりあえず収拾した後のことを考えるべきだと思う。原発を安定させるための要望には、すべて応えたい。環境や食料連鎖への影響など、あらゆる角度から検討しておくべきだ。そのために役立つ情報やデータ、ノウハウを仏から日本に提供する用意がある」

「仏は電力の80%を原発に依存する。必ずしも広いとはいえない国土に現在57～58基がある。万が一の事態に備えて、2005年から最悪の事故の発生を想定したシミュレーション（模擬実験）を繰り返してきた。この場所で、この程度の事故が起きた場合、半径Ｘキロメートルの地点で、１週間後の野菜、水、原乳の被曝（ひばく）はどの程度か。２週間後はどうか、など詳細に予測してある。このデータのセットを日本に提供して共有したい」

「飲食物だけでなく、工業製品についても、被曝した可能性があるものは、輸出が難しくなる。鉄鋼などの素材に放射性物質が付着していれば、加工後の製品からも放射能が検知されてしまう。どうすればいいのか。そうした対策も、さまざまな角度から検討してある。仏のデータが日本で役に立つのは間違いない」

——なぜ貴重なデータを日本に開示するのか。

「仏にとって原発が極めて重要だからだ。そのために、あらゆる可能性を検討して、万が一の事態に備えている。日本は目下の問題解決に全力をあげている。日本より仏が優れた技術やノウハウがあるということではなく、いま仏は日本より人と時間に余裕がある。客観的な立場から助言もできる」

——日本に住むフランス人が一斉に退去した問題をどう考えるか。

「大使館は一時たりとも閉館していない。大使館員の３分の２は東京に残り、総務や問い合わせ電話の対応などを担当する３分の１が、京都の総領事館に移った。それも暫定的な措置だ。さらに在日仏人に対し、大使館から退避せよと呼びかけたことは一切ない。個人的にもそう助言したことはない」

「たしかに13日の夜に仏大使館のホームページに、家族と子供については東京に残る特別な理由がなければ、南の方に行って落ちついた気分になるのもよいかもしれない、というメッセージを掲載した。気象庁が大きな余震が来るとの予測を出し、原発事故のことが分かってきて、その時点で状況が不透明だったからだ」

「精神的に追い詰められた人たちが、フランス機で帰国したが、仏大使館や仏政府が帰国をあっせんしたわけではない。希望する者は、混乱なく国外に出ることができたと思っている」

KKKK-72

「こうしたフランス人の個人的な判断、企業の判断については、本音を言おう。組織の許可も無く帰国した人もいる。個人主義的な行動に出た人たちだ。原子力事故の、目に見えない恐怖にかられたためだ。他人のお手本にならない行動をとった人たちだといえる。その人たちや、仏企業に代わり、私から日本の皆さんにおわびしたい」

——仏企業の動きは。

「高級ブランド品の会社などは、リスク管理が徹底しているため、様子見のため一旦、販売店を閉め、従業員を退避させた。それは用心のためであり、日本人従業員も仏人も同じ扱いだった。責任を担う経営者が、普段から危機に真剣に、真面目に取り組んでいる証拠だと思う」

「仏各社は東京から撤退するわけではない。パリ本社の指示が出たので対応しただけだ。既に連休明けの22日から営業を再開している。日本には現在9000～１万人の仏人が住んでいるが、このうち2000人が日本国外または日本国内で退避した。退避者は企業の駐在員の家族が中心で、働く人の９割はもう職場に戻っている」

（聞き手は編集委員　太田泰彦）

From: LIA02 Hoc
Sent: Thursday, March 24, 2011 1:34 PM
To: LIA02 Hoc; Giessner, John
Cc: ET02 Hoc; LIA03 Hoc
Subject: RE: Laptop

Jack,

When you get to Japan try and log onto one of the ones there and then send an email back to us and let us know the number for the laptop staying behind.

Steve

From: LIA02 Hoc
Sent: Thursday, March 24, 2011 1:12 PM
To: Giessner, John
Cc: ET02 Hoc; LIA03 Hoc
Subject: Laptop

Jack,

We are not able to get you a laptop, as the 2 last people are carrying their own and will not be able to take you one. We are looking into having the 1st leave one of theirs for you to work on.

steve

KKKK-73

From: LIA02 Hoc
Sent: Thursday, March 24, 2011 12:18 PM
To: Carter, Mary
Cc: LIA03 Hoc
Subject: RE: ticket Tokyo-Washington Dulles march 26-Ulses

Mary,

Do you have a listing of all arrival dates for those coming back.

steve

From: Carter, Mary
Sent: Thursday, March 24, 2011 10:00 AM
To: LIA02 Hoc; LIA03 Hoc; Liaison Japan; Ulses, Anthony
Subject: ticket Tokyo-Washington Dulles march 26-Ulses

Saturday March 26, 2011
United Airlines Flight Number: 898
Class of Service: Coach Class Y
Depart: TOKYO/NARITA 4:10 Pm March 26, 2011
Arrive: WASHINGTON/DULLES 3:38 Pm March 26, 2011
Total Flight Time: 12 Hours 28 Minutes Non-Stop
Equipment: 777
Meal Service: Dinner & Lunch
Status: Confirmed Confirmation Number: MXPJJY
Reserved Seat: ULSES/ANTHONY PATRICK 31B
DEP-TERMINAL 1
STAR ALLIANCE
AISLE SEAT CONFIRMED
Friday August 26, 2011
Other Service
Aug 26, 2011 - Aug 26, 2011
INFO/FARE USD903.20 GOVT CONTRACT
Name Invoice / Ticket / Date Base Tax1 Tax2 Tax3 Total
ULSES ANTHONY
PATRICK
709/0167924235686/24MAR11 801.00 37.00YQ 16.30US 48.90XT 903.20
Trip Fee 31.49
Trip Fee 22.00
956.69

Mary Faith Carter
Office of International Programs
U. S. Nuclear Regulatory Commission
e-mail:mary.carter@nrc.gov
ph:301-415-2331
fax:301-415-2395

KKKK-74

From: Emche, Danielle
Sent: Thursday, March 24, 2011 5:16 PM
To: LIA03 Hoc
Subject: NEA table

Hi Jenny,
When you have a moment could you look on ENAC and send me the NEA comparison table of what other countries recommended for evacuation. Taiwan is requesting it and I can shoot it to them. I think NEA uploaded it 2 or 3 days ago.
Danielle

KKKK-75

From: PMT03 Hoc
Sent: Thursday, March 24, 2011 8:38 PM
To: PMT07 Hoc; Hoc, PMT12
Subject: FW: I-131 found at Oyster Creek

FYI

From: Henderson, Pamela
Sent: Thursday, March 24, 2011 5:39 PM
To: HOO Hoc
Cc: McNamara, Nancy; LIA04 Hoc; LIA03 Hoc; PMT03 Hoc; Hoc, PMT12; Tifft, Doug; Nimitz, Ronald; Screnci, Diane; Weerakkody, Sunil; Lew, David; Dean, Bill; Rogge, John; Krohn, Paul; Clifford, James; Roberts, Darrell; Dionne, Bruce; Furia, Joseph; Hinson, Felicia; McKinley, Raymond; Moslak, Thomas; Noggle, James; Rolph, Ronald; Bernardo, Robert; Shoop, Undine; OST05 Hoc
Subject: I-131 found at Oyster Creek

Folks,

Just heard from Ron Nimitz who is currently inspecting at Oyster Creek that the licensee has detected 127 pCi/l in rainwater onsite.

To provide some perspective, NRC limits for I-131 water effluent from plants is 1000 pCi/l (Part 20, Appendix B, Table 2, Column2).

KKKK-76

From: Hoc, PMT12
Sent: Thursday, March 24, 2011 6:07 PM
To: PMT07 Hoc; PMT11 Hoc
Subject: FW: I-131 found at Oyster Creek

Please add this to table.

Thanks,
Stacey

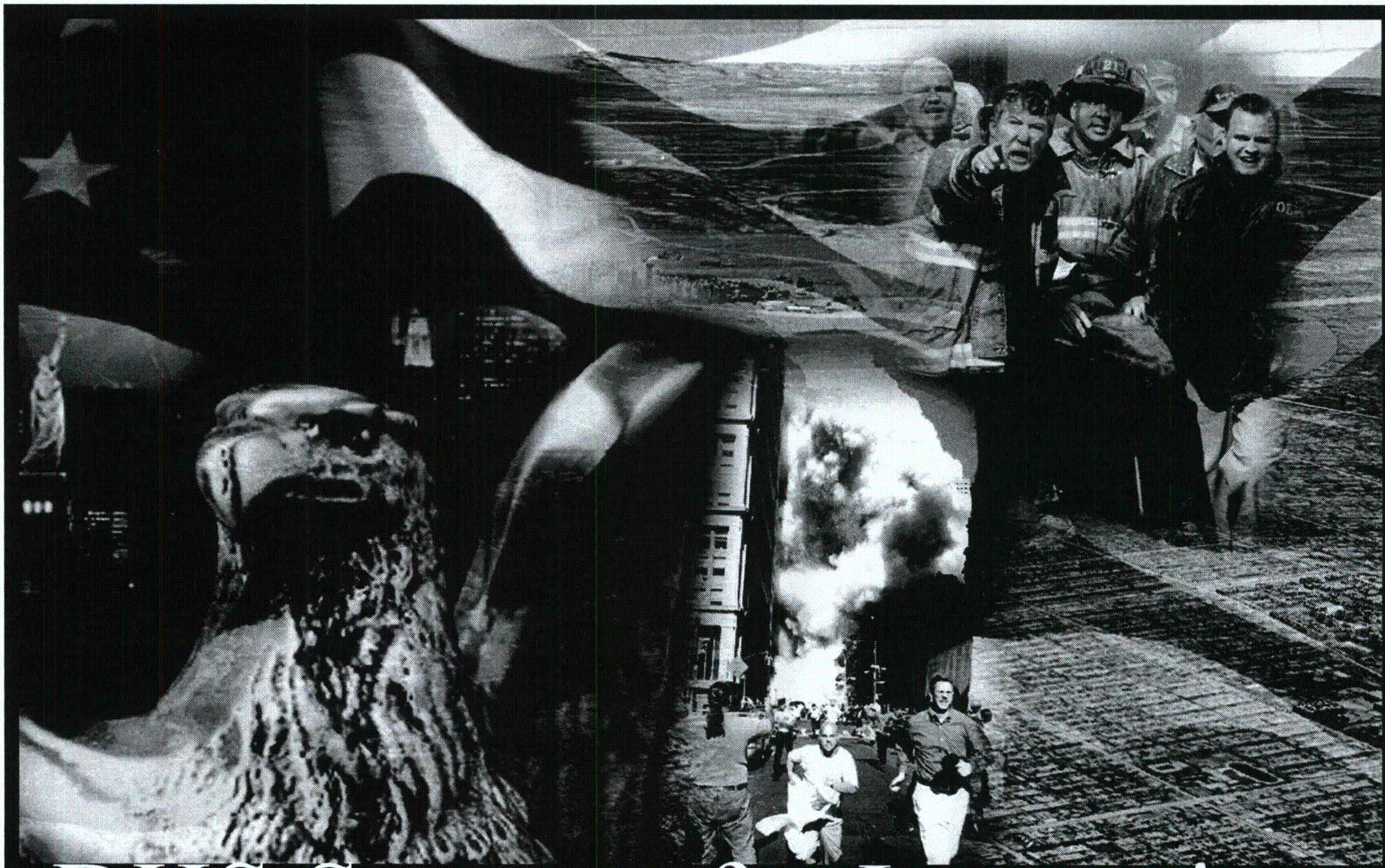
From: Henderson, Pamela
Sent: Thursday, March 24, 2011 5:39 PM
To: HOO Hoc
Cc: McNamara, Nancy; LIA04 Hoc; LIA03 Hoc; PMT03 Hoc; Hoc, PMT12; Tifft, Doug; Nimitz, Ronald; Screnci, Diane; Weerakkody, Sunil; Lew, David; Dean, Bill; Rogge, John; Krohn, Paul; Clifford, James; Roberts, Darrell; Dionne, Bruce; Furia, Joseph; Hinson, Felicia; McKinley, Raymond; Moslak, Thomas; Noggle, James; Rolph, Ronald; Bernardo, Robert; Shoop, Undine; OST05 Hoc
Subject: I-131 found at Oyster Creek

Folks,

Just heard from Ron Nimitz who is currently inspecting at Oyster Creek that the licensee has detected 127 pCi/l in rainwater onsite.

To provide some perspective, NRC limits for I-131 water effluent from plants is 1000 pCi/l (Part 20, Appendix B, Table 2, Column2).

KKKK-77



DHS Strategy for Improving the National Response and Recovery from an IND Attack

March 24, 2010

Homeland Security

FOR OFFICIAL USE ONLY

KKKK-78

Intentionally Left Blank

Contents

Acknowledgements

This strategy document represents a collaborative effort across many federal departments and agencies. The December 2008 Integrated Planning Guidance assigned leadership of this effort to FEMA. Mr. Don Daigler, Planning Division Director, led this FEMA-directed activity, while Dr. Michael Gresalfi coordinated the development of the document on behalf of FEMA and facilitated collaboration amongst DHS and external federal stakeholders.

The core project development team consisted of the following FEMA, Domestic Nuclear Detection Office, and national laboratory members:

- Chad Gorman, Sean Crawford, Ed McGuire, and Dawn Smith (FEMA)
- Mike Johnson, Don Ponikvar, and Pete Jordan (DNDO)
- Brooke Buddemeier (LLNL) and Carson Riland (RSL)

The following individuals from across the federal interagency supported critical reviews during the drafting, editing, and revising of this document:

- Manual Aponte, DoD-OASD
- Dave Bowman, DOE-NNSA
- Norm Coleman, HHS-NIH
- Robert Davis, DHS-OHA
- Sarah DeCair, EPA-ORIA
- Stan Heath, DHS-OPA
- John MacKinney, DHS-PLCY
- Janis McCarroll, DHS-OHA
- Caitlin McCarthy, DHS-FEMA (NPD)
- James McIntyre, DHS-FEMA (EA)
- Jennifer Mosser, EPA-ORIA
- Tammy Taylor, OSTP
- Ed Weber, DHS-OPS
- Chad Wood, DHS-OPA

DHS Strategy for

Improving the National Response and Recovery from an IND Attack

Executive Summary

The mission of the Department of Homeland Security (DHS) includes acting as a focal point regarding natural and manmade crises and emergency planning. In support of the Department's mission, the primary mission of the Federal Emergency Management Agency (FEMA) is to reduce the loss of life and property and protect the Nation from all hazards, including natural disasters, acts of terrorism, and other man-made disasters, by leading and supporting the Nation in a risk-based, comprehensive emergency management system of preparedness, protection, response, recovery, and mitigation. Consistent with these missions, the *Nuclear/Radiological Incident Annex* to the *National Response Framework* (June 2008) sets forth DHS as the coordinating agency for all deliberate attacks involving nuclear/radiological materials, including radiological dispersal devices (RDDs) and improvised nuclear devices (INDs). The detonation of an IND would result in a complex catastrophic disaster that would severely challenge the nation's ability to effectively respond in a timely manner. The scope, severity, and complexity of the response required for an IND incident call for a highly organized and efficient management structure. Such an event will cross geographic jurisdictional boundaries and will involve multiple levels of government (federal, state, local, tribal, and territorial), as well as the private sector. While all emergencies begin as local events, it is anticipated that state and local resources would be overwhelmed by an IND and that a rapid, well coordinated federal response would be required for life-saving activities and long-term support. However, the state emergency management infrastructure is generally still expected to exist and have sufficient capacity to control response actions in its state.

In December of 2008, the DHS Deputy Secretary signed the intra-departmental Integrated Planning Guidance (IPG) for Fiscal Years (FY) 2011-2015 that identified FEMA as the departmental lead for response and recovery efforts associated with the terrorist use of an IND. Additionally, the IPG directs FEMA to develop and implement an IND Response and Recovery Program within FEMA no later than FY 2010. FEMA has developed a Management Plan for this new program, and will rely upon the acquisition management process contained in DHS Acquisition Directive 102-01to ensure that identified gaps and associated tasks will be defined to be measureable and achievable. The Capability, Objective, Resources, and Evaluative Measures (CORE) document appended to the FY11-15 IPG provides the initial list of gaps to be addressed under the program, and specifies initial metrics and performance goals to strive towards. During the extensive discussions following publication of the CORE document, the target objectives were augmented. The improved list of objectives has been incorporated into this Strategy, and will provide the basis for the subsequent Strategic Plan and other documents that will define the IND Response and Recovery program.

Building upon the guidelines contained within the *National Response Framework* (NRF) and the IPG, this DHS Strategy for Improving the National Response and Recovery from an IND Attack (IND Response Strategy identifies those capabilities needed to respond to and recover from an IND incident within the NRF and its annexes. It does not identify specific solutions for identified capability gaps, nor does it identify the agency responsible for addressing those gaps. It sets the

goals and objectives from which a DHS led national plan may be developed to address vulnerabilities and gives strategic direction in meeting the IND response and recovery mission.

The primary goal in responding to and recovering from an IND attack is to limit the total casualties resulting from such an event. The key objectives that must be achieved in order to respond to and recover from an IND incident include:

Manage the Response: The on-scene authorities will require the capability to rapidly establish situational awareness of the scope of a nuclear event, establish communications and control measures, and coordinate the large number of response assets from local, state, federal, and perhaps international contributors required for such an event. As such, they must have the ability to establish priorities and coordination measures.

Characterize the Incident: Transfer of key incident data to decision makers is crucial to facilitate rapid activation and effective utilization of emergency response operations for an IND incident. Fully coordinated agreements and protocols that utilize any and all available national assets (e.g., Interagency Modeling and Atmospheric Center (IMAAC), Federal Radiological Monitoring and Assessment Center (FRMAC), Radiological Assistance Program (RAP) teams, Radiological Emergency Response Team, and others) will be essential to rapidly acquire key incident data and generate fallout predictions. Relevant data and predictions will be transmitted to federal, state, local, tribal, and territorial officials and the public as rapidly as possible.

Mass Evacuation and In-Place Protection: This capability involves the ability to plan for, and immediately execute, the safe and effective sheltering-in-place of an at-risk population and an organized and managed evacuation of the at-risk population to areas of safe refuge.

Medical Triage: Health physics experts will be needed to help calculate health effects and educate medical responders on recognition and treatment of radiation-induced conditions. The medical community will need to estimate triage needs based upon previously agreed-upon criteria and actual onsite information, establish triage locations, provide emergency medical stabilization, prioritize patient treatment, and institute an extensive and dynamic triage plan.

Provide Casualty and Evacuee Care: The capability to provide effective care for casualties and evacuees is key to limiting the total casualties. This capability supports the identification and tracking of individuals and the provision of necessary medical, basic, environmental, and mental health care. It provides for public health and fatality management to prevent disease outbreak, and for behavioral health support.

Stabilize and Control Impacted Area: Under this capability, federal agencies will be looked upon to provide assistance to state and local governments overburdened by the sheer magnitude and breadth of the IND incident (both geographically and due to the wide spectrum of activities). Confidence in pre-existing guidance, policy, plans and agreements, which are enacted by recognized leaders within designated Incident Command Structure(s), will support efforts to stabilize and control the affected area and facilitate the saving and sustaining of life, as well as ensuring government and private functions continue or are re-established.

Perform Site Recovery and Restore Essential Functions: Restoration of critical infrastructure is crucial to local and regional recovery and may be vital to national security. Disruption of power, communications, medical care, food, housing, etc. will present obvious obstacles to ongoing response and recovery activities. Mitigating the spread of radioactive contamination, reducing the

risk of imminent hazards, and restoring essential services provided by CIKR will help in supporting both immediate life-saving activities and ongoing recovery efforts.

In addition to the seven key objectives noted above, there are cross-cutting objectives that impact more than one area of responsibility. These objectives represent actions that enable a more effective response to an IND incident. Cross-cutting objectives will require additional focus and effort, since they apply broadly across the response and recovery spectrum. These objectives include Public Information Awareness, Stakeholder Mapping and Coordination, Modeling and Decision Support, Information Exchange and Communication, Scientific Support, and Research and Development (R&D).

A nuclear detonation in a U.S. city represents one of the most catastrophic incidents that could befall our nation, causing enormous loss of life and property and severely damaging economic viability. It is incumbent upon all levels of government, as well as public and private parties within the U.S., to prepare for this incident through focused nuclear attack response planning. Proper planning and preparation could potentially save tens of thousands of lives.

DHS Strategy for

Improving the National Response and Recovery from an IND Attack

Introduction

The mission of the Department of Homeland Security (DHS) includes acting as a focal point regarding natural and manmade crises and emergency planning. In support of the Department's mission, the primary mission of the Federal Emergency Management Agency (FEMA) is to reduce the loss of life and property and protect the Nation from all hazards, including natural disasters, acts of terrorism, and other man-made disasters, by leading and supporting the Nation in a risk-based, comprehensive emergency management system of preparedness, protection, response, recovery, and mitigation. Consistent with these missions, the *Nuclear/Radiological Incident Annex* to the *National Response Framework* (June 2008) sets forth DHS as the coordinating agency for all deliberate attacks involving nuclear/radiological materials, including radiological dispersal devices (RDDs) and improvised nuclear devices (INDs).

The detonation of an IND in a major urban area would result in a complex catastrophic disaster that would severely challenge the nation's ability to effectively respond in a timely manner. While all emergencies begin as local events, it can be anticipated that state and local resources would be overwhelmed by an IND, and a rapid well-coordinated federal response with locals and states is required for life-saving activities and long-term support.

In 2008, the DHS Office of Policy Requirements Planning Team (RPT) generated the Nuclear Response and Short-Term Recovery Capability, Objective, Resources, and Evaluative Measures (CORE) document with support from the federal interagency community. This CORE document identifies desired capabilities and associated priority objectives to effectively and efficiently respond to a terrorist nuclear attack. In December of 2008, the DHS Deputy Secretary signed the Integrated Planning Guidance (IPG) for Fiscal Years (FY) 2011-2015 that identified FEMA as the Department's lead for response and recovery efforts associated with the terrorist use of an IND. The RPT's CORE document provides the basis for the DHS Integrated Planning Guidance (IPG) and this strategy. The IPG directed FEMA to initiate an IND Response and Recovery Program to:

- Develop and issue a strategy for improving the national response and recovery from an IND attack ... The strategy shall include prioritizing and addressing capability gaps identified by the FY 2008 Nuclear Response and Short-term Recovery RPT; specifying intra and inter agency roles and responsibilities; identifying research and development and training needs; and addressing any conflicts that exist in current activities, plans and procedures.
- Develop and implement a dedicated IND Response and Recovery Program within FEMA no later than FY 2010.

During November 2009, the White House's National Security Staff, through the Domestic Readiness Group, created the IND Response Subordinate Interagency Planning Committee (SubIPC). The primary purpose of this new IND Response SubIPC is to clarify issues designated as policy priorities for the 2010 National Level Exercise (NLE2010) and to enhance our nation's response to an IND attack. The National Strategy for Improving the Response and Recovery from an IND Attack is an important input to this White House-driven effort, and particularly to the two working groups that have been established under this SubIPC: the Communications Working Group and the National Asset Integration Working Group.

The initial implementation of this strategy through the establishment of a dedicated IND Response and Recovery Program relies upon an assessment of current (existing) capabilities, and an analysis of the capabilities that are not yet achievable (gaps). FEMA is developing a Management Plan for this new program, and will rely upon the acquisition management process contained in DHS Acquisition Directive 102-01to ensure that identified gaps and associated tasks will be defined to be measureable and achievable. All tasks will be managed to performance-based metrics, and the initial performance metrics presented within the CORE document will support this task-based effort.

Annex A builds upon the CORE document from the FY11-15 IPG, and presents the initial Gap Analysis for IND Response and Recovery.

This strategy is predicated upon certain overarching policies. **Annex B** identifies policy implications for effective implementation of this strategy.

In 2008, the *Roadmap for Nuclear Defense Research and Development* identified national R&D priorities, as well as guidelines for Department and Agencies to develop comprehensive and mutually supportive research programs that were closely linked to operational requirements. **Annex C** presents a summary of the planned R&D efforts, addressing cross-cutting technologies and other efforts that support the establishment of critical response and recovery capabilities.

Document Purpose

Building upon the guidelines contained within the NRF and the IPG, this strategy identifies those capabilities needed to respond to and recover from an IND incident. It does not identify specific solutions for identified capability gaps nor does it identify the agency responsible for addressing those gaps. That information is more appropriately addressed within the follow-on IND Response and Recovery Program. This strategy document defines the direction of a DHS program specific to IND response, and supports decisions on prioritizing and allocating resources to address the gaps identified.

There are fifteen Emergency Support Functions (ESFs) in the *National Response Framework* (NRF) with federal coordinating departments and agencies. Within each ESF, there are numerous individual entities with roles and responsibilities for response to and recovery from an IND incident.

Federal departments and agencies must ensure coordinated actions under the NRF in order to: effectively respond to and recover from an IND incident to save and sustain lives; ensure the endurance of, and the nation's confidence in, our form of government; and restore and maintain Critical Infrastructure and Key Resources (CIKR). To that end, missions associated with Response and Recovery will include:

Respond to an IND incident.

1. Save and sustain life by supporting state, local and tribal response initiatives.
2. Provide federal assistance to state, local and tribal response, as warranted.
3. Ensure government and private functions are continued or re-established upon request.
4. Increase domestic public awareness of an IND.

Recover from an IND incident.

1. Provide federal assistance to state, local and tribal governments, as warranted.

FEMA, through the IND Response and Recovery Program, will work through the interagency process to identify gaps and overlaps within the IND response and recovery mission and will look to increase the resources within identified gap areas to improve support to state and local response and recovery efforts. This gap and overlap analysis will help foster a collaborative effort among the interagency.

Required Capabilities

The scope, severity, and complexity of the response and recovery measures required for an IND incident call for a highly organized and efficient management structure. Such an event will cross geographic and jurisdictional boundaries and will involve multiple levels of government (federal, state, local, tribal, and territorial), as well as the private sector. This strategy sets the goals and objectives in meeting the IND Response and Recovery mission. Subsequent programs and plans will outline the concept of operations for integrating and synchronizing existing federal capabilities to accomplish this mission.

An effective response can be accomplished through a set of high-level Capabilities and Objectives that were defined and described in the FY 2008 RPT CORE document. The following seven Capability sections describe the Objectives that must be achieved in order to meet IND response requirements.

- Capability 1: Manage the Response
- Capability 2: Characterize the Incident
- Capability 3: Mass Evacuation and/or In-Place Protection
- Capability 4: Medical Triage
- Capability 5: Provide Casualty and Evacuee Care
- Capability 6: Stabilize and Control Impacted Area
- Capability 7: Perform Site Cleanup and Recovery and Restore Essential Functions

In addition to these designated capabilities, FEMA has identified several cross-cutting objectives that impact more than one of these seven noted capability areas. These common objectives apply broadly across the response and recovery spectrum.

Capability 1: Manage the Response

In addition to the unified command structure that would be established in response to any large-scale catastrophic event, the authorities on-scene will require the capability to rapidly establish situational awareness of the scope of a nuclear event, establish communications and control measures, and coordinate the large number of response assets from local, state, federal, and perhaps international contributors required for such an event. As such, they must have the ability to establish priorities and coordination measures. This Capability consists of five objectives. These are described in the paragraphs that follow.

Objective 1.1 Manage Time-Critical Post-Nuclear Incident Information

Information is the manager's most valuable asset in the initial minutes of the response to an IND. Immediately following an IND incident, the authorities must have access to and be able to manage time-critical post-nuclear incident information. They require the ability to rapidly collect, assess, reconcile, and redistribute *in usable form* key information unique to a nuclear incident. This includes setting key priorities for the overall response.

The most pressing needs in the time immediately following an IND incident involve characterization of the event, and building a common operating picture that incorporates the most accurate available data on the scope of the event – numbers and locations of casualties, the location and degree of damaged areas, regions of contamination, the status of critical infrastructure components, locations and status of available response assets, and other such information required to support timely decisions regarding the response. This information must be timely and available in a form that can readily and understandably be shared with responders, as well as government officials nationally and internationally.

As the response to the event continues, there will be a need to maintain and disseminate critical information. Periodic status reports involving all the aforementioned key data elements will support decisions regarding resource allocations and response priorities.

Objective 1.2 Provide Emergency Public Information

A robust public awareness campaign is a critical element to the successful management of an IND incident, both prior to and following a burst. The necessity of a pre-event campaign is largely due to three factors:

- An IND is a singular threat; however the incident itself involves multiple hazards including: fire, radiation, blast and mechanical injuries.

- There are many misperceptions regarding the IND threat, including confusion with traditional thermal nuclear weaponry and the no-notice probability of an IND.

- The limited ability to quickly establish communications with the public post-incident when protective actions are most critical.

Due to the complexity of the incident, it is highly probable that during the initial minutes following an IND detonation, when the proper public response is essential to increasing the chances of survivability, the public may only be able to rely on information and training received pre-incident.

In addition to a robust public awareness campaign, accurate and transparent post-incident messaging is critical to maintaining the public's trust in a time of crisis and rapidly changing conditions. Since hazards are expected to be dynamic over the course of the event, the public needs to be updated on the status of thermal, radiological, chemical, and other hazard predictions and assessments in accordance with the Nuclear Incident Communications Plan. This capability entails the enhancement of the government's capability to provide the public and responders with the following: accurate situational awareness; shelter-in-place or evacuation guidance; information on the appropriate protective actions, community reception centers, medical facilities, and family reunification; and preparedness information to the unaffected population. Information will eventually need to include topics such as food safety, transportation issues, and the anticipated impact of the incident on every other state in the country. As noted in the *Nuclear Incident*

Communication Planning – Final Report (dated March 15, 2009, prepared for the DHS Office of Health Affairs), a multi-component approach is necessary to facilitate public communication following an IND incident in the United States. The needs of key stakeholder groups (the public, state officials, national leadership, and first responders) form the basis for the IND public communication strategy.

The Domestic Communications Strategy (DCS) developed and maintained by the DHS Office of Public Affairs (OPA), will be activated for an IND incident. The DCS is a dynamic, evolving strategy that includes federal department and agency options and actions that can be quickly employed as a result of a credible threat or detonation. The White House Office of Communications reviews and approves its content and provides strategic direction during its employment. This public information strategy not only takes key communications assumptions into account, but also supports counterterrorism objectives. The DCS is intended for the United States domestic audience, but its execution is coordinated and shared with federal partners to ensure consistency with international efforts. The strategy is adaptable and can be adjusted as necessary to support emergency planning efforts, particularly during the pre-incident phase.

While communicating complex information in response to an event in ways that reach the broadest possible audiences – including special populations – enhances the government's response capabilities and inspires public trust, pre-incident public information is vital to overcome wide-ranging misperceptions about survival from an IND incident and what to do following a detonation. Initial public information needs to address the immediate measures available to individuals to minimize their exposure to radiation hazards. Depending on their physical location, continual information regarding sheltering in place versus self-evacuation will be required, in an understandable format, particularly in the fluid, stressful, and dynamic conditions following an IND incident.

Objective 1.3 Establish Unique Post-Nuclear Elements of Incident Command

The onsite incident manager will be required to direct and control the incident by establishing a system to organize and integrate a range of resources within a common organizational structure for effective and coordinated management of the incident. This will be predicated upon the proven tenets of Unified Command found in the National Incident Management System (NIMS), but the scope of the incident and a range of additional resources needed to support the IND response will call for an extraordinary span of control and attention to detail. Identification of these resources and implementation of relevant control measures must be accomplished and rehearsed in advance of an IND incident.

Objective 1.4 Establish Emergency Communications in Post-Nuclear Environment

The immediate effects of an IND burst – the blast, thermal effects, and electromagnetic pulse (EMP) – may disrupt much of the communications capabilities that the public and first responders rely upon.[1] Power lines, cell towers, microwave antennas, and other communications infrastructure may be damaged or destroyed in the vicinity of the burst. Effective response to an IND requires the capability to provide reliable, coordinated communications to include secure and non-secure data, video, and voice among and across levels of the response community. This will support the actions

[1] An EMP, which is a high-voltage surge that poses no direct health threat, can impact electronic components that it reaches and seriously hamper communications and disrupt computer equipment, controls systems, and other electronic devices, both in the vicinity of the IND burst and potentially at much longer distances through induced electrical currents in conducting materials (e.g., pipes and wires).

of initial responders on scene and support the public information messaging described previously. For example, the Homeland Security Council's *Planning Guidance for Response to a Nuclear Detonation* states that the best initial action for private citizens immediately following a nuclear explosion is to take shelter in the nearest building or structure and listen for instructions from authorities. This will only be effective if a communication capability exists to get the word out to the public in their shelters.

Establishing initial tactical communications for responders will be a high priority; followed by voice and data radio communications across the region; and other key communications components required to manage the response, provide key public safety information to the general public, and report to higher levels of government. All these elements must be coordinated and integrated under an overall Nuclear Incident Communications Plan.

Objective 1.5 Support Safe Worker Entry and Operations in Post-Nuclear Environment

The extreme radiation environment, extensive physical damage, and downwind hazards due to fallout all contribute to the difficulty of responding to an IND incident. A key capability will be to provide the protocols, equipment, information, and expertise to operate within acceptable safety constraints in a hazardous environment. This includes immediate information regarding the physical extent and severity of the radiological hazard, as well as information regarding secondary hazards such as fires, unsound structures, and hazardous chemicals. Hazard avoidance is the best practice, but the need to extract victims and restore key functions will necessitate operations in a contaminated environment. Emergency Worker Guides and Hazardous Waste Operations and Emergency Response (HAZWOPER) procedures are a starting point, but application of these guidelines for effective response and recovery requires the ability to collect and disseminate relevant information to responders and workers and the ability to identify and track the extent of exposure for workers on-scene. Educating the responders and decision makers on the increased risk of radiation-induced cancer compared to the background risk, and on the time course for its development, can help establish protective action plans. Ideally, personal protective equipment and medical prophylaxis measures should be developed and made available to all workers and responders, further enhancing their ability to perform their mission without becoming casualties themselves.

Capability 2: Characterize the Incident

In the aftermath of an IND detonation, transfer of key incident data to decision makers is crucial to facilitate rapid activation and effective utilization of emergency response operations. Fully coordinated agreements and protocols that utilize any and all available national assets (e.g., Interagency Modeling and Atmospheric Center (IMAAC), Federal Radiological Monitoring and Assessment Center (FRMAC), regional DOE Radiological Assistance Program (RAP) teams, Environmental Protection Agency Radiological Emergency Response Team, Nuclear Incident Response Teams (NIRT) and others) will be essential to rapidly acquire key incident data and generate fallout predictions. Relevant data and predictions will be transmitted to federal, state and local officials and the public as rapidly as possible. Emergency response personnel, including public affairs specialists, need to understand and have access to plume maps. A lack of either information or understanding can lead to ineffective, inappropriate, or even detrimental actions during an incident.

Baseline planning, exercising, and training of local, state, and federal assets will properly integrate assets and enable the execution of a time-phased approach to incident assessment that remains crucial for public protection considerations and the assessment of CIKR. The characterization of Light Damage, Moderate Damage, No-Go, and Dangerous Fallout zones[2] by key incident parameters such as degrees of broken glass, structural damage, rubble, stalled and crashed automobiles, fires, utility and water infrastructure damage, and elevated radiation levels will be vital for implementing informed protective action decisions. As part of this strategy, four objectives necessary for complete incident characterization have been identified – from initial assessment of the size and precise location of the IND through post-event assessments).

Objective 2.1 Establish Key Incident Parameters and Make Predictions

This objective emphasizes the need for rapid acquisition of critical incident data and information to facilitate shelter or evacuation decisions and construct initial damage and hazard assessments. Pre-incident, yield-based models will be overlaid onto incident sites when little specific information is known. Upon confirmation that an IND detonation has occurred (and determination of the location of the burst), yield estimates will be used to begin modeling the expected effects. Ambient meteorology, tracking of the fireball, fallout deposition, and dose estimates, as well as available data from onsite monitoring teams, will feed into existing models to assist decision makers in making time-critical, life-saving decisions.

Early incident characterization will largely fall to local responders. Therefore, planning, training and exercising the rapid transmission of field data from local responders to federal assets will play a key role in this objective. In-place communications must ensure that key, time-sensitive nuclear yield and fallout data reaches appropriate Command entities. The information must be in a format that is not only compatible with existing communication and data exchange networks, but is readily understandable to the recipient. A seamless communication capability between relevant departments and agencies with the onsite incident command structure will further enhance the life-saving capabilities onsite.

Objective 2.2 Determine Hazards to People

Information on hazards in the affected area is crucial to aid in determination of potential threats to citizens and responders from fire, hazardous materials, radioactive contamination, and structural failures. While predictions for radiological hazards in the affected area resulting from the burst can be available within minutes, pre-incident identification of locations and quantities of pre-existing hazardous materials are needed to aid in assessment of compounding risks for fire and chemical dangers in the affected area. To assure adequate public protection and evacuation or sheltering recommendations, physical confirmation of the radiation hazards in the affected area will be needed within hours following an incident. Information regarding the number, location, and severity of fires will need to be collected quickly for dissemination to the public.

[2] These zones are defined in the *Planning Guidance for Response to a Nuclear Detonation* as follows:
- Light Damage: characterized by broken windows and easily managed injuries
- Moderate Damage: characterized by significant building damage, rubble, downed utility poles, overturned automobiles, fires, and serious injuries
- No Go: characterized by completely destroyed infrastructure and radiation levels resulting in unlikely survival of victims
- Dangerous Fallout: the area covered by fallout that impacts responder life-saving operations and/or has acute radiation injury potential to the population

Objective 2.3 Assess Effects and Damage; Ascertain Functionality of CIKR

Determination of damage to CIKR will be required to facilitate safe responder operations, safe and expeditious shelter and evacuation, and proper site stabilization efforts. Status of the following CIKR elements will be needed following an incident to save and sustain life:

- Local/regional transportation systems (roads, bridges, rails, subways/tunnels, airports, harbors)
- Healthcare and public health facilities
- Communications and information technology infrastructure
- Local/regional energy systems (oil, gas and electric power)
- Local/regional water systems (drinking water and wastewater)
- Building structural damage

This objective comprises integration of the CIKR emergency status into the incident commander's situational awareness, to include a mechanism for integrating private sector owners' or entities' data; exercises with federal, state, local, tribal, and territorial or private sector managers that directly evaluate functionality of CIKR in the aftermath of an IND incident and provide insights on the likely impact on response operations at this scale; real-time collection and storage of situational data for local, regional, state, and national assets; and the execution of plans and agreements for rapid status evaluation and data transmission between federal, state, local, tribal, and territorial agencies. Sensor and aerial capabilities will be integral for rapid assessment of CIKR status, and the real-time transmission of that data remains critical for the decision makers to pass along essential information to relevant federal departments and agencies as well as state and local officials and the public.

Objective 2.4 Characterize Fallout Particles and Distribution in the Environment

Characterization of the distribution and magnitude of fallout contamination will be essential for assessment of potential impacts to human health and the environment and to facilitate decontamination activities. Key analytical procedures are in place to assist in this effort. Pre-event analysis should be augmented with field sampling and modeling capabilities to improve national capabilities and enhance life-saving capabilities.

Capability 3: Mass Evacuation and In-Place Protection

This capability involves the ability to plan for, and immediately execute, the safe and effective sheltering-in-place of an at-risk population and an organized and managed evacuation of the at-risk population to areas of safe refuge.

Due to the resultant threat from radioactive contamination and fallout, one of the most effective ways to reduce the casualties from a nuclear explosion is through planning and rapid implementation of an effective shelter and/or evacuation strategy.

There are two principal actions that may be taken to protect the public from fallout: taking shelter and/or evacuation. These protective actions may be self-executed by informed members of the public or they may be communicated and orchestrated by response officials during the incident.

Federal support to state and local planning efforts in this scenario includes the provision of sound science to support local pre-incident planning efforts, the issuance of pre-incident federal guidance

to assist in the planning effort, and grants to help prepare evacuation plans which include the development of evacuation routes, the purchase and stockpiling of necessary supplies and shelters, and the exercising of these plans.

As part of this strategy, four objectives necessary for effective mass evacuation and in-place protection have been identified.

Objective 3.1 Search and Rescue

The number of victims and survivors of a nuclear detonation will likely exceed the large numbers seen in Hurricane Katrina or the Haitian Earthquake, and many people will be in contaminated or blast-damaged areas that will represent a significant technical challenge to responders. Some survivors will also be in fallout areas that can represent a significant obstacle to search and rescue efforts in the first few days following a burst.

Pre-designated priorities and the accomplishment of well-coordinated Urban Search & Rescue (US&R) and civil Search and Rescue (SAR) efforts and the delivery of proper medical attention are essential to maximizing the number of lives saved. Search and rescue, fire, and others performing life-saving services with specialized training and equipment to enable them to rapidly identify unsafe structures and to work in the contaminated environment enhances their overall life-saving capabilities in the Light Damage and Moderate Damage zones.

FEMA serves as the ESF #9 (Search and Rescue) coordinating agency, serves as the primary agency for urban search and rescue under ESF #9, and operates the Urban Search and Rescue Response System. The USCG serves as the primary agency for waterborne search and rescue under ESF #9. As such, it will be critical for DHS to coordinate with interagency partners, particularly DoD and DOI/NPS during search and rescue operations.

Objective 3.2 Organize and Manage Evacuation

With no likely advance warning of an IND attack and incomplete, imperfect, and potentially contradictory information coming from the scene; decision makers will have little or no time to wait for additional or better information to affect the safety of our citizens. Since the best initial action immediately following a nuclear explosion is to take shelter in the nearest building or structure and listen for instructions from authorities, decision makers must endeavor to ensure that pre-event training and guidance to this effect is understood by the public.

An immediate priority of emergency managers will be to adapt pre-existing large scale evacuation plans to on-the-ground realities in order to facilitate the evacuation of populations designated as early evacuation priorities. As situational awareness increases and evacuation routes are refined, additional groups and areas will be identified for evacuation support. Informing and managing large numbers of evacuees will be a monumental task.

Objective 3.3 Monitor and/or Decontaminate Population

Population monitoring is the ability to determine if people have been internally or externally contaminated. Decontamination includes techniques to remove contaminated clothing and personal effects, showering, and administering drugs (chelating or decorporating agents) for internal contamination. Both of these are crucial components of mass evacuation. Given the extent of the fallout area from an IND, this capability may likely be required for millions in the affected area. Rapid monitoring and decontamination are essential for success since most of the population's

exposure to harmful radiation occurs in the first hours following the event. Registration and tracking systems for survivors will be required. Special considerations and treatment for those responders engaged in activities in the Dangerous Fallout, Light Damage, Moderate Damage, and even No-Go zones are required in order to ensure continued performance of life-saving capabilities and other mission essential tasks in those areas.

Objective 3.4 Provide Essential Human Needs

In the aftermath of an IND incident, essential provisions of clothing, food, water, and shelter will be required for large numbers of survivors. State and local governments generally retain the principal responsibility for meeting mass care and other needs in responding to a disaster; however, governments largely carry out this responsibility by relying on the services provided by voluntary organizations. Pre-positioned supplies and fuel for emergency responders conducting life-saving operations and a reinforced capability to quickly draw upon additional resources as demands grow will have a significant impact on this objective.

Volunteer organizations (such as the American Red Cross) have long supported local, state, and federal government responses to disasters. Pre-event planning should identify such organizations and incorporate their services as appropriate.

Capability 4: Medical Triage

Following an IND incident, casualties from blast effects, thermal radiation, and ionizing radiation will completely overwhelm local medical response. Health physics experts will be needed to help predict health effects and educate medical responders on recognition and treatment of radiation-induced conditions. The medical community will need to estimate triage needs based upon previously agreed-upon criteria and actual onsite information, establish triage locations, provide emergency medical stabilization, prioritize patient treatment, and institute an extensive and dynamic triage plan.

Effective anticipation of the medical needs following an IND incident and operational planning for efficient management of those needs is essential. Pre-incident identification of available assets and the corresponding resource deficiencies in the affected area will be fundamental to saving lives. The initial medical needs will be include extensive biodosimetry and bioassay resources, as well as a common operating picture for the current federal, state, local, tribal, and territorial capabilities. After the current capabilities and needs have been fully identified, the national response community should activate in-place plans for large-scale medical triage of blast, thermal, and radiological effects. The laboratory community does the same for the national biodosimetry/bioassay program.

Three objectives for medical response and triage have been identified.

Objective 4.1 Predict Health Effects; Estimate Triage Needs, Locations, and Required Assets

Following an IND detonation, health effects will be widespread and varied. Assessment of the initial population health effects and mobilization of surge medical treatment for mass-casualty triage is complex, and unless carefully planned, are rarely-rehearsed endeavors for incidents of this magnitude. Pre-incident identification and advertisement of probable triage locations will ease the post-event chaos, as will effective operational planning. As the event unfolds, it will be imperative

to estimate the types and quantities of gross medical effects and provide this information to responders to rapidly mobilize appropriate medical support personnel.

While adequate triage concepts of operation exist, all parties must adhere to them in order to ensure a common operating scheme for the medical response and fairness to victims. In-place plans must include guidance regarding large-scale medical response activities to an IND:

- Mass triage prioritization decisions
- Priorities for accomplishing palliative care
- Amount, type, and placement of pre-positioned medical treatment
- Credentialing of medical and support responders
- Releasing medical countermeasures
- Estimating medical transportation needs
- Public emergency declarations[3]
- Process for seeking waivers of certain legal requirements
  - Emergency use authorizations[4]

Objective 4.2 Establish Triage Sites and Provide Emergency Medical Stabilization

Following an IND incident, implementation of triage plans will be crucial for effective treatment of burns, physical trauma, blood loss, infection, shock, and acute radiation effects. Triage sites should be determined and conveyed to medical personnel. As event conditions unfold, the initial triage plan will require regular updates. Expected effects will vary spatially, requiring specialized treatment plans for different patient groups relative to the incident site(s). At some point, patients will require movement to specialized treatment locations for effective management of like conditions. Personnel with specialized training for recognizing and handling expected effects and decision making for mass casualty care following a nuclear incident must train and participate in pre-event exercises with first responders to increase life-saving capabilities.

Objective 4.3 Evaluate Radiation Exposure of Patients

Estimation of patient radiation exposure will require rapid assessment of incident conditions. Information regarding expected effects should be provided to mobilize biodosimetry/bioassay assets. Following the incident, implementation of an initial sample collection and biodosimetry/bioassay strategy will be required to evaluate radiation exposure in individual patients. As the incident unfolds, the magnitude of required biodosimetry/bioassay efforts will require augmentation of assets.

---

[3] Federal law sets forth the conditions, precedent, and authorities for making such a declaration (see 42 U.S.C. 247d). The Secretary of HHS has broad discretion to determine whether an event meets one of the two criteria set forth in 42 USC 247d and to determine the particular public health officials in HHS or outside HHS to consult about a specific declaration. Unlike a Stafford Act declaration, the Secretary of HHS does not need to wait for a state request in order to make a public health emergency declaration. The HHS Office of Intergovernmental Affairs, Office of ASPR, HHS Centers for Medicare and Medicaid Services (CMS), and other relevant HHS components work closely during emergencies to evaluate whether a public health emergency declaration is necessary.

[4] Federal law sets forth the conditions, precedent, and authorities for authorizing the introduction into interstate commerce of a drug, device, or biological product intended for use in an actual or potential emergency (an emergency use authorization) (21 U.S.C. § 360bbb-3(b)).

The biodosimetry/bioassay capability will need to be sustained to collect and analyze samples for an extended period of time post-incident.

Pre-incident planning for the implementation, activation, and documentation of a nationwide biodosimetry/bioassay capability will include prioritization criteria and a list of available resources for evaluation of mass radiation exposure. Coordination among federal, international, and private laboratory assets must occur to facilitate proper integration of available assets and ensure the consistency of laboratory procedures and biodosimetry methods. Following an IND incident, internal and external dosimetry of responders and individual patients will be necessary to capture the radiation health effects and to implement the proper immediate and long-term patient management decisions. An in-place pre-event plan will facilitate the management of biodosimetry sample tracking, handling, and the reporting of results.

Capability 5: Provide Casualty/Evacuee Care

The first goal in responding to and recovering from an IND attack is to limit the total casualties resulting from such an event. Key to this goal is provision of effective care for casualties and evacuees. This capability supports the identification and tracking of individuals and the provision of necessary medical, basic, environmental, and mental health care. It provides for public health and fatality management to prevent disease outbreak and for behavioral health support.

Four specific objectives have been identified that constitute effective casualty/evacuee care.

Objective 5.1 Register, Process, and Track Individuals

One key element is the need for electronic "patient tracking systems" as a means to improve emergency response and preparedness capabilities by capturing and distributing patient information to various stakeholders (within the legalities of the Health Insurance Portability and Accountability Act of 1996), such as emergency managers and local hospitals, throughout the system of care from the incident. These monitoring strategies for casualties are anticipated to be long term, since some adverse effects of radiation exposure involve long-term physiological effects.

Population monitoring of a suitable scope and scale to accommodate such a disaster will be required within just a few hours from IND detonation, with an emphasis on operating within a contaminated environment and caring for a population with radiation exposure, burns, and or blunt trauma injuries. Authorities will require access to registries and locator databases used to contact and track the affected population who require short-term and long-term medical monitoring, evacuation and shelter assignments.

Objective 5.2 Provide Medical and Specialized Medical Care (Hospitalization)

Due to the number of anticipated casualties, and the extensive trauma, burn, and radiation exposure injuries involved, increased survival will necessitate deployment of medical, surgical, burn and other treatment assets to the location of the mass casualties for several weeks. At the same time, evacuation to distant care facilities around the entire nation will be necessary to distribute the large number of injured to support facilities that cannot readily be relocated to the site of the incident. A component of the commander's immediate situational awareness requirement will be to obtain "bed counts" for available medical treatment facilities, locally and within evacuation distance. Potentially specialized assets for evacuation of burn and trauma patients will be required. Redistribution of

patients will be called for in some cases, i.e., receiving hospitals may be requested to receive patients, despite fear of cross contamination.

Expected health effects and impacts on the general population following an IND detonation must well–characterized in order to support decisions regarding allocation of medical resources, facilities, and support staff. This implies a need for effective risk assessment modeling tailored to an IND incident in an urban/city, ready for rapid application following the disaster. In addition, massive amounts of biodosimetry samples will be collected and will require laboratory analysis.

In the initial response phase, medical care, management, and intervention capabilities for possibly hundreds of thousands of casualties will be needed.

In anticipation of the above medical care measures, healthcare professionals need training in management of victims of radiation as well as handling of surge populations of patients. It is recognized that a scarce resources environment will require different standards of care in a mass casualty event. Beds, medicines, and equipment and supplies must be cached in useful, deployable ways with a mechanism to efficiently dispatch for use following a detonation.

Objective 5.3 Provide Public Health and Behavioral Health Services

Experts believe that the psychological impact of an IND incident could be the most difficult aspect of the response. Real or perceived exposure to radiation after an IND incident could cause mass fear and panic because radiation is invisible, odorless, and largely unknown or misunderstood. The invisibility of radiation may be the most terrifying aspect of the IND. Many people do not understand the physical consequences of radiation exposure and may become concerned with the limited availability of and uncertainty about the effectiveness of decontamination procedures, possible prophylactic measures and treatments. The behavioral responses of individuals and groups immediately after an IND incident may complicate or impede emergency response operations. In addition, an IND attack could generate a large number of psychological stress casualties as well as individuals with long-term psychological effects such as phobias, depression, or post-traumatic stress disorder.

Effective early intervention of behavioral health services following an IND incident requires careful facilitation and the conduct of screening and needs assessments for individuals, groups, and populations. Tools are needed to support social and psychological needs, to include a systematic method for assessing mental, behavioral and physical health needs of impacted communities. Early interventions should be delivered as needed in a manner acceptable to the survivors of the incident and in keeping with best available practices associated with psychological intervention following a mass violence incident such as an IND detonation. Many survivors will experience some symptoms in the immediate aftermath of the IND incident, but these symptoms are not necessarily cause for long-term follow-up, since most will eventually remit.

Objective 5.4 Provide Fatality Management

An IND detonation will create a large number of fatalities. Fatality management will be complicated by the presence of radioactive contamination. Proper management will require procedures for dealing with contaminated remains and personal effects, including facilities for temporarily storage, means to identify and track the remains (effective recordkeeping), and the means to transport them without spreading contamination.

Capability 6: Stabilize and Control the Impacted Area

Dependent on weather, fallout contamination could extend hundreds of miles downwind and include thousands of square miles, with significant casualties developing over several days to weeks. This includes areas extending well beyond the immediate danger zones near ground zero. In all these areas, measures will be needed to protect access and egress for public safety personnel, for protection of CIKR, and for designated areas (camps, decontamination centers, medical treatment facilities, storage areas, etc.).

Under this capability, federal agencies will be looked upon to provide assistance to state and local Governments overburdened by the sheer magnitude of the IND incident and the breadth (both geographically and due to the wide spectrum of activities) impacted by the IND. Confidence in pre-existing guidance, policy, plans and agreements will support efforts to stabilize and control the impacted area and facilitate saving and sustaining of life and ensure government and private functions continue or are re-established for the purposes of the overall mission.

Objective 6.1 Extinguish Fires Initiated by the Blast and in Contaminated Areas Downrange

One of the primary threats to survivors of the initial blast will be fires caused by the thermal energy of the IND, building fires caused by collapse of structures and ruptures of gas lines and similar effects. Rubbled buildings will provide a great quantity of potential fuel for such fires. The IND response will require focused local efforts to extinguish fires initiated by the blast and in contaminated areas downrange in accordance with existing Compacts and Agreements.

Objective 6.2 Stabilize utilities and Structures That Affect Initial Evacuation Routes

The most immediate need will be to stabilize utilities and structures in the impacted area which affect initial evacuation routes for initial response operations. The response will require establishment of routes into or out of the impacted area and the restoration of localized utilities for emergency responders' needs.

A key requirement is the need for pre-coordinated, pre-approved plans and guidance to facilitate efforts at stabilizing the infrastructure in the immediate impact area and provide a basis to assist in the recovery of basic utilities and services in the impacted area in the days and weeks following the event.

Objective 6.3 Provide Public Safety and Security in the Vicinity of the Blast Area and in the Overall Federally Declared Disaster Area

As was witnessed in previous major disasters (such as Hurricane Katrina), there is a need for security and public safety measures in the vicinity of the blast area as well as in the overall federally declared disaster area. In order to protect responders in the course of their duties and private citizens as they are evacuated, extensive measures will be required, including the augmentation of local onsite efforts with federal assets as needed.

Capability 7: Perform Site Cleanup and Recovery and Restore Essential Functions

Restoration of critical infrastructure is a key to local and regional recovery and will be vital to national security. Disruption of power, communications, medical care, food, housing, and other services presents obvious obstacles to ongoing response and recovery activities. Mitigating the

spread of radioactive contamination, reducing the risk of imminent hazards, and restoring essential services provided by CIKR will help in supporting both immediate life-saving activities and ongoing recovery.

After the immediate hazards have been addressed, radioactive fallout will still cover the impacted city, nearby environs, and additional thousands of square miles. Thus, the devastation of a nuclear attack on a city will persist for years to come, denying state and local governments critical economic resources, impeding transportation and commerce, bankrupting private firms, and potentially leaving millions homeless. Responders will carry out decontamination of infrastructure such as power stations, water treatment facilities, hospitals, rail and highways; commercial and residential areas; and decontamination or mitigation of agricultural resources. An intense public effort will be required to prioritize and expeditiously remediate infrastructure, buildings and lands. Expert-guided public discussion will help determine the acceptable level of decontamination.

Objective 7.1 Manage Environmental Hazards in Impacted Area and in Contaminated Areas Downwind

A critical component of site recovery and restoration of essential functions includes characterization of the incident (see Capability 2). Characterization, along with certain pre-set parameters, will determine the impact to the area and address several key requirements, including: identifying hazard levels for workers to restore infrastructure, identifying the type of decontamination techniques needed to bring hazards to an acceptable level, and minimizing the spread of contamination. Methods for identifying sites for temporary staging and final long-term contaminated waste disposal are very important and have proven problematic in previous large-scale events. Waste volumes generated by an IND incident are likely to be significantly larger than the typical annual volumes of radioactive waste generated nationally and will challenge existing disposal capabilities. Waste characterization, treatment, packaging, and transportation will also present significant challenges. Policies and procedures for handling bio and hazardous wastes will include dealing with contaminated fatalities and morgues. Procedures for identifying staging areas for both clean and contaminated equipment and personnel must all be in place, trained, and exercised. Plans will include all modes of managing environmental hazards, such as minimizing the spread of contaminated materials, washing down buildings, and controlling runoff.

Objective 7.2 Perform Gross Decontamination of Critical Infrastructure and Key Resources

This objective calls for the reduction of the level of radioactive contamination and other imminent hazards to acceptable levels of risk which allows CIKR, real property and personal property to be used to support the response and recovery operations. It is recognized that capabilities to accomplish wide-area urban decontamination are limited, which could lead to disruptive, slow, and costly recovery. An affected area, or some portion of it, could be razed or simply abandoned for an extended period of time. The knowledge for decontamination after an IND is limited because of lack of information about the nature of fallout and its interactions in the environment. However, there will be a need for "targeted decontamination" of critical infrastructure (see Capability 6).

Objective 7.3 Perform Restoration of CIKR

During an IND incident, it is expected that there will be increased demand on the infrastructure and services both near the incident site and outside of the incident due to evacuated and displaced populations. There will be an immediate need to identify essential CIKR that is available to support

life-saving activities. Because of mass evacuations, jurisdictions in the vicinity of the incident site will likely experience high demands on infrastructure and services for an extended period of time, creating further difficulty with prioritizing the response to restore CIKR.

Cross-Cutting Objectives

In the descriptions of the required capabilities above, some cross-cutting elements are evident that impact more than one area. These common threads comprise a set of required actions that enable a more effective response to an IND incident. These require additional focus and effort, since they apply broadly across the response and recovery spectrum. These cross-cutting objectives include the following:

Objective CC.1 Public Information Awareness

A well-defined public information awareness campaign is required prior to an IND incident. This campaign includes all public awareness tools and information products that would be required by the public both prior to and directly following an IND incident. These tools and products would be used to raise awareness of IND preparedness and provide in-depth information to the public on how to prepare for and respond to an IND detonation. This campaign and products also need to provide detailed protective action recommendations to the public. Pre-event information materials should provide consistent, detailed, scientifically-based information to the public on how to prepare and respond, as well as instructions for where to locate additional information. Tools and products should also provide guidance to special needs populations including, but not limited to, the elderly, the physically challenged, non-English-speaking individuals, schools, businesses and pet owners. Pre-event education can be used to build partnerships between the public and federal, state and local governments.

Objective CC.2 Stakeholder Mapping and Coordination

The roles and responsibilities of all DHS intra-agency and interagency partners in the IND response and recovery effort must be identified, synchronized, and documented within a time-phased operational plan. Effective coordination measures between federal entities and state and local stakeholders must be identified, implemented, rehearsed and exercised. A standard lexicon will be in place as well.

Objective CC.3 Modeling and Decision Support

Advanced modeling and decision making, risk communications, consequence management, and decontamination assessment must be integrated into planning support, and modeling results must be folded into operational plans.

All protective action policy guidance will be articulated by the White House, and all protective action guidelines (PAGs) will be promulgated by both the EPA and the FDA, to include those PAGs needed in support of decision making associated with public and first responder safety, urban shelter in place, evacuation, and medical intervention.

Objective CC.4 Information Exchange and Communications

All seven of the required capabilities are undergirded by the need for timely, accurate information and data exchange. Time-critical, life-saving decisions are made based on the best available data, so decision makers require immediate access to relevant information. Because of the extent of damage

caused by an IND incident, normal communications infrastructure is likely to be disrupted. It is essential that appropriate public messaging be made prior to an event, that tactical (responder) communications be established as soon as possible after a burst, and that public safety messaging continues throughout the response and recovery phases. The March 15, 2009, *Nuclear Incident Communication Planning-Final Report*, which was prepared for the DHS Office of Health Affairs by the Homeland Security Institute, recommends that messages be tailored by pertinent federal, state, local, tribal, and territorial stakeholders for specific target audiences, to include affected communities, special needs populations, schools and businesses. The messaging must include public safety guidelines, sheltering information, risk communication, and evacuation techniques and strategies. Information regarding the relative risk and time course of radiation-induced cancer compared to lifetime background will help planners, responders, and victims understand the recommendations for sheltering, evacuation, medical needs and long-term follow-up.

Communications networks are required on-scene (both for responders and to the public), to the state and regional authorities, and to the national authorities. This will include both voice and data exchange capabilities.

Objective CC.5 Logistics

The enormity of the expected needs and the unique radiation and fallout aspects of an IND incident will quickly outstrip the planning and committed resources intended to save and sustain lives in other disaster scenarios. A well-coordinated effort that builds upon existing plans and policies will be required to get necessary supplies and services into and out of the impacted area in support of each of the required capabilities.

Objective CC.6 Scientific Support and R&D

Near-term capability gaps must be identified and appropriate resources allocated to address those needs requiring material solutions or related research efforts. A risk-based process is needed to continually re-evaluate requirements, and to revise R&D objectives to meet newly-defined needs in a timely fashion.

Coordination and Implementation

All the capabilities discussed under this strategy require extensive involvement across federal departments and agencies, and across the full spectrum of federal, state, local, tribal, and territorial governments. While the NIMS concept of Unified Command is well-established for major incident response, the sheer scope of an IND incident will require additional pre-event coordination, and will impose additional difficulties on the Unified Command structure during the course of response to and recovery from an IND incident.

For an IND incident, local and state responders will have the initial responsibilities on-scene, but are likely to be overwhelmed by an IND. A rapid, well coordinated federal response is required for life-saving activities and long-term support. The state emergency management infrastructure generally is still expected to exist and have sufficient capacity to control response actions in its state.

Homeland Security Presidential Directive (HSPD) -5 states that the Secretary of Homeland Security "shall ensure that, as appropriate, information related to domestic incidents is gathered and provided to the public." The DHS National Joint Information Center (NJIC) serves as the federal incident communications coordination center during incidents requiring a coordinated federal response. The

NJIC coordinates with and supports the White House Office of Communications, the Secretary of Homeland Security, the National Operations Center (NOC), Crisis Action Teams (CAT), the Incident Management Planning Team, the National Response Coordination Center (NRCC), the National Infrastructure Coordinating Center (NICC), Federal Coordinating Officers (FCOs), Joint Field Offices (JFOs), and Emergency Support Function (ESF)-15 staff. The DHS NJIC also coordinates directly with the Office of the Secretary of Defense and the DHS Office of Public Affairs (OPA) for domestic homeland security incidents.

FEMA is tasked under a number of existing federal guidelines and authorities to provide necessary planning and coordination for IND response and recovery. This planning and coordination will be conducted consistent with the NRF and its *Nuclear/Radiological Incident Annex*, and the National Infrastructure Protection Plan (NIPP).

FEMA coordinates response support from across the federal government and certain non-governmental organizations by calling up, as needed, one or more ESFs. The ESFs provide the structure for coordinating federal interagency support for a federal response to an incident. They are mechanisms for grouping functions most frequently used to provide federal support to states and federal-to-federal support, both for declared disasters and emergencies under the Stafford Act and for non-Stafford Act incidents.

The Incident Command System provides for the flexibility to assign ESF and other stakeholder resources according to their capabilities, taskings, and requirements to augment and support the other sections of the JFO/Regional Response Coordination Center (RRCC) or NRCC in order to respond to incidents in a more collaborative and cross-cutting manner.

While ESFs are typically assigned to a specific section at the NRCC or in the JFO/RRCC for management purposes, resources may be assigned anywhere within the Unified Coordination structure. Regardless of the section in which an ESF may reside, that entity works in conjunction with other JFO sections to ensure that appropriate planning and execution of missions occur.

Strategy Update

This Strategy will be reassessed during FY 2011, and revised accordingly. At that time, the Strategy will incorporate both policy recommendations, as defined in coordination with DHS Policy and other DHS stakeholders, and enhanced interagency inputs that have been identified and developed in the interim.

Conclusion

A nuclear detonation in a US city represents one of the most catastrophic incidents that could befall our nation, causing enormous loss of life and property and severely damaging economic viability. It is incumbent upon all levels of government, as well as public and private parties within the US, to prepare for this incident through focused nuclear attack response planning. Proper planning and preparation could result in life-saving on the order of tens of thousands of lives.

This Strategy represents an integrated approach to Response to and Recovery from an IND incident in a major urban area. It defines the direction of a DHS-led national program specific to IND response, and supports and informs initial decisions on prioritizing and allocating resources to enhance gaps in our existing capability to implement the response measures identified herein.

Annexes

- Annex A: Gaps and Analysis
- Annex B: Policy Direction and Issues
- Annex C: Research and Development

Annex A: Gaps and Analysis

Gaps in Capability 1: Manage the Response

Rapid sheltering of the public exposed to the path of fallout could save hundreds of thousands of lives. To accomplish this, the affected public needs to be educated on immediately protecting themselves to avoid exposure to lethal levels of radiation. Although atmospheric dispersion models can provide predictions of downwind consequences given a known set of input parameters such as cloud height, chemistry, and particle size distribution; these parameters are not currently known for a ground level, low-yield nuclear detonation in a modern urban environment. Another major gap is that the doctrine, plans, and policies needed to harness these predictions is lacking. Currently, there is no strategy for notifying the public in real time of recommendations on shelter or evacuation priorities. Response management requires communication and logistical support, however, the extent of disruption from IND effects (such as blast and the electromagnetic pulse) are currently unknown.

Provide Emergency Public Information

- *Doctrine/Plans.* Some strategies are in place, but are incomplete. There is a need for:
    - National strategies for public information and communications
    - A strategy for establishing and ensuring effective information flow to the public
    - A strategy to counter inaccurate or spurious information from unauthorized sources
- *Training.* No validated public information program exists. There is a need for:
    - A validated public information program
    - Training and exercises for delivery of protective information
    - A First Responder outreach program
- *Regulations/Authorities/Grants/Standards.* Public alert (e.g., Emergency Alert System) standards are a shortfall. Some product and information standards exist, but are inadequate. There is a need for:
    - Information and training grants
    - Public alert standards
    - Information product standards
    - Public Information Officer Certification
- *Research and Development.* Pre-event analysis of potential effects must be performed to determine optimum shelter and evacuation strategies for a variety of yields and urban conditions.
    - Ground shock and blast effects on evacuation planning, especially for protected alternative evacuation routes (e.g., subway systems and underground pathways)

- Fire initiation and spread, fire fighting capability
- Fallout characteristics; physical properties and radiation levels
- Fallout pattern analysis
- Evaluation of modern structures for fallout exposure protection

Establish Emergency Communications in a Post-Nuclear Environment

- *Doctrine/Plans.* Some strategies are in place, but incomplete. There is a need for:
  - Integrated Emergency Communications Plans
- *Materiel.* Existing systems can provide interoperability, but have limited ability to handle classified information. There is a need for:
  - Interoperable communications equipment capable of handling both classified and unclassified information hardened against a nuclear attack
- *Organization.* The DHS National Joint Information Center (NJIC) serves as the federal incident communications coordination center during incidents requiring a coordinated federal response. It is staffed by experienced incident communications response personnel and rapidly mobilizes to coordinate the federal external communications effort. There is a need for:
  - Formal policies establishing radiological subject matter experts to support the NJIC
  - A policy on the public dissemination of plume products
- *Leadership.* Government Emergency Telecommunications Service (GETS) provides priority service over land-based telephone lines, but it does not apply to radio or broadband "frequency bands." There is a need to:
  - Generate a communications plan that will establish frequency assignments and adjudication process
- *Regulations/Authorities/Grants/Standards.* Public alert (e.g., Emergency Alert System) standards are a shortfall. Some information product standards exist but are inadequate. Physical connectivity issues between how Integrated Public Alert and Warning System (IPAWS) and similar programs can interconnect with different technologies. There is a need for:
  - Public alert standards
  - Information Product Standards
  - Radio frequency allocation
  - Internet alert notification standards
- *Research and Development.* Analysis of how blast and electromagnetic pulse will effect local and regional communications needs to be performed. Understanding the range of these effects on public and responder communication methods will be key information needed for response planning. Needs include:

- EMP and blast effects on communication capabilities (both responder and public)

Gaps in Capability 2: Characterize the Incident

Rapid characterization of the incident is required to provide critical situational awareness to federal, state, local, tribal, and territorial decision makers. Success requires both pre-incident analysis and tools and capabilities to ensure rapid collection and use of information.

Establish Key Incident Parameters and Make Predictions

- *Doctrine/Plans.* There is a lack of communication plans to enable key nuclear data getting to appropriate Command entities. There is a lack of procedure for transmitting field corroboration data to the appropriate Command entities. There is a need for:
  - A policy on the rapid communication of time-sensitive nuclear yield and fallout information among departments and agencies
  - A well-communicated plan among federal, state, local, and private entities for measurement of required data, and transmission of integrated field data to state and federal assets that need it
  - Coordination of the environmental monitoring data for radiological (FRMAC lead at federal level) and non-radiological constituents (EPA lead at federal level) to provide a common operating picture
- *Personnel.* Insufficient number of qualified people available for key parameters, field corroboration and field confirmation (DOE, EPA teams, CSTs, S/L assets)
- *Materiel.* While satellite and IMAAC assets are good, equipment for effective field corroboration is inadequate.
- *Training.* Federal agencies have some personnel who are relatively well-trained and exercised. However, IND response is difficult to prepare for, especially at the state and local levels. There is a need for:
  - Integrated regional interagency exercises
  - Training, simulation, and exercises for acquisition, analysis, and sharing of nuclear incident information in a crisis
- *Research and Development.* The capability to rapidly acquire key incident data and generate blast and fallout predictions in an urban setting requires both rapid collection and integration of post-incident data, combined with pre-event analysis of potential observable effects and fallout characteristics. There is a need for:
  - Evaluation of modern structures for blast, thermal, and prompt (initial) radiation effects and protection
  - Impacts on current communication capabilities and infrastructure
  - Fallout characteristics; physical properties and radiation levels
  - Fallout pattern analysis

- Evaluation of modern structures for fallout exposure protection
- Technology to rapidly assess damage and hazard zones
- Robust data communication capability in damaged infrastructure areas
- Improved accuracy of models based upon incorporating detailed site information

Determine Hazards to People

- *Doctrine/Plans.* Plans and procedures do not exist to rapidly assess hazards across the impacted zone. There is a need for:
  - Effective communication of plans to obtain and transmit hazard information for prediction generation among the IMAAC, FRMAC, and federal, state, local, tribal, and territorial responders
- *Training.* Additional training and exercises are needed to deal with scope of the incident
- *Organization.* Need better integration with DoD assets and state and local assets
- *Research and Development.* Pre-event analysis of potential effects must be performed to determine potential hazards the public might face for a variety of yields and urban conditions. This includes not only the nuclear detonation hazards, but also secondary hazards that may be generated by fire or hazardous material releases. There is need for additional research on:
  - Blast and thermal effects for generating delayed building collapse, physical hazards for rescuers and evacuees, and hazardous material releases in the urban environment
  - Fire initiation and spread, fire fighting capability, generation of hazardous smoke
  - Fallout characteristics; physical properties and radiation levels
  - Fallout pattern analysis
  - Optimization of external decontamination, including wet versus dry, based on types of materials
  - Tools for remote detection and analysis of hazards in inaccessible areas

Assess Effects and Damage; Ascertain Functionality of CIKR

- *Doctrine/Plans.* Plans for integration of CIKR emergency status are not complete or adequate. There is a need for:
  - Plans and agreements among federal, state, local, tribal, and territorial agencies and industry partners to accomplish rapid CIKR status evaluation and to transmit data and information
  - Policies for implementing protocols for passage of proprietary information and classified information as appropriate
- *Organization.* Organizational mechanism for integration of response with private-sector owners or entities. There is a need for:

- Coordination of assets and Incident Command to collect and analyze CIKR data and information
  - Clearly identified fusion center which utilizes national and locally collected data to provide logistical and safety roadmaps for responders
- *Materiel.* Comprehensive real-time collection and data basing for situational awareness has not been achieved. There is a need for:
  - Sensor and aerial measurement and observation technologies to rapidly assess the status of CIKR
  - Real-time transmission of data and information
- *Training.* Few exercises directly evaluate functionality of CIKR and impact on response operations at this scale.
- *Research and Development.* Critical Infrastructure and Key Resources are important for effective response and for national safety and security. The nature of an IND detonation may create long range cascading infrastructure failures in addition to the direct effects on local CIKR. Detailed pre-event analysis is required for a variety of yields and locations to determine likely long range infrastructure effects.
  - EMP and blast effects and impact on local and regional CIKR
  - Evaluate potential long rang (cascading or interconnected) effects to CIKR from an IND Detonation

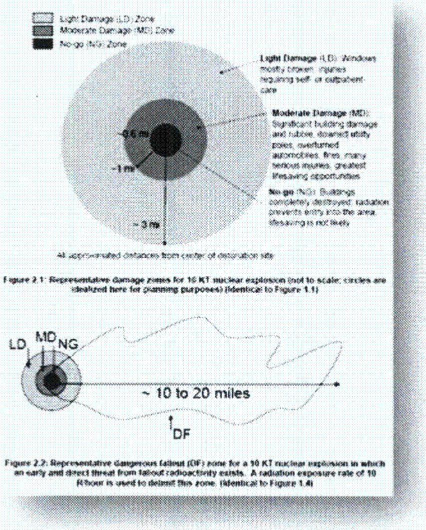


Figure 2.1: Representative damage zones for 10 KT nuclear explosion (not to scale; circles are idealized here for planning purposes) (Identical to Figure 1.1)

Figure 2.2: Representative dangerous fallout (DF) zone for a 10 KT nuclear explosion in which an early and direct threat from fallout radioactivity exists. A radiation exposure rate of 10 R/hour is used to delimit this zone. (Identical to Figure 1.4)

Note: Additional interagency gaps and research needs for this subject area have been identified at the end of this appendix.

Gaps in Capability 3: Mass Evacuation and/or In-Place Protection

The blast from a nuclear explosion will potentially result in large areas of significant building damage and may resemble severe earthquake or hurricane effects. Additionally, the radioactive fallout will affect downwind areas (including some of the blast areas) and can result in deadly radiation exposures to people outdoors in the first minutes to hours after the detonation. Taking appropriate shelter from the fallout will greatly reduce exposure and could save tens to hundreds of thousands of lives.

The most critical lifesaving action for both the public and first responders is to seek adequate shelter for at least the first hour. The public must be educated to resist the desire to flee the area. A much higher degree of coordination is required to mount successful evacuation and rescue activities, support public decontamination, transportation, and basic mass care.

Make Time-Phased Determination on Shelter-in-Place vs. Evacuation

- *Doctrine/Plans.* Existing plans are not adequate to meet the requirements of an IND incident. There is a need for:
    - Strategy and policy establishing criteria for shelter vs. evacuation decisions appropriate for a rapidly changing environment
    - Community-specific analysis of shelter and evacuation strategies and planning
- *Organization.* Although numerous plans exist for the different jurisdictions, they vary widely in scope and completeness. There is a need for:
    - Integrated organizational structure to make shelter-in-place vs. evacuation decisions
    - Organizational structure to identify and manage local and regional public shelters
- *Research and Development.* As in "Manage the Event," a pre-event analysis of likely scenarios can help determine optimum shelter and evacuation strategies for a variety of yields and urban conditions. The types of research required are:
    - Ground shock and blast effects on evacuation planning, especially for protected alternative evacuation routes (e.g., subway systems and underground pathways)
    - Fire initiation and spread, fire fighting capability
    - Fallout characteristics; physical properties and radiation levels
    - Fallout pattern analysis
    - Evaluation of modern structures for fallout exposure protection

Perform Search and Rescue

- *Doctrine/Plans.* Existing plans are not adequate to meet the requirements of an IND incident. There is a need for:
    - Large event, multiple resource integration planning
    - Evaluation of the nature and extent of hazards and blast damage that Search and Rescue teams will need to function in
- *Materiel.* On-going efforts to maintain pace with new technology and replacement of outdated PPE, monitoring, and decontamination equipment. There is a need for:
    - PPE and dose control tools adequate for surge and additional equipment for extended operations
- *Research and Development.* Urban Search and Rescue capability is a highly technical and limited resource. Pre-event analysis is required to inform and optimize this response capability to ensure they maintain their safety and focus on areas where they can provide the greatest benefit. There is a need for additional research on:
    - Blast and thermal effects that generate delayed building collapse, physical hazards for rescuers and evacuees, and hazardous material releases in the urban environment
    - Fire initiation and spread, fire fighting capability, generation of hazardous smoke

- Fallout characteristics; physical properties and radiation levels
- Fallout pattern analysis
- Expected injury types and location of injured
- Point of Contact high-throughput triage tools and an established Radiation Laboratory Network to assess internal contamination and radiation exposure

Organize and Manage Evacuation

- *Doctrine/Plans.* The mass evacuation annex and supplement are adequate. Personnel, monitoring, and methods are not adequate. There is a need for:
    - Guidance on managing large numbers of potentially fallout-contaminated individuals
    - Acceptable personnel monitoring levels to be defined
    - Acceptable monitoring capabilities and methods to be defined
    - Establish appropriate decontamination techniques and requirements
- *Materiel.* The requirements to monitor, track, and decontaminate large numbers of people have not been identified. There is a need for:
    - Mass transportation vehicles
    - IT systems for evacuee tracking
    - Decontamination supplies
    - Personnel contamination monitoring equipment
- *Research and Development.* Current analysis indicates that fallout will likely arrive too quickly to avoid, and early adequate shelter followed by ***informed, delayed evacuation*** is the preferred strategy. This will result in large number of victims (potentially millions) sheltered in potentially hazardous areas that will need guidance and evacuation support. Pre-event analysis of optimized evacuation strategies and methods for a variety of urban areas can help inform general post-event evacuation strategies. Understanding potential competing hazards such as fire or toxic material releases will also be a critical component. Additional research is needed for:
    - Ground shock and blast effects on alternative evacuation routes (e.g., subway systems and underground pathways)
    - Fire initiation and spread, fire fighting capability
    - Effects on current communication capabilities and other CIKR
    - Fallout characteristics; physical properties and radiation levels
    - Fallout pattern analysis
    - Evaluation of modern structures for fallout exposure protection
    - Decontamination technologies and methodologies

- CIKR rapid return to service methods
- Personnel decontamination issues and methods
- Technology to rapidly assess damage and hazard zones
- Location of injured and extraction considerations
- Psychological effects on, and anticipated response of both the public and first responders

Provide Essential Basic Care

- *Doctrine/Plans.* Plans are in place for providing basic human needs as it is a robust capability in the United States. However, few jurisdictions have planned for extraordinarily large mass care operations. There is a need for:
    - Doctrine and plans to be developed and refined for more robust repatriation, along with best practices and its standards or allowances (e.g., intact utilities)
- Organization. An organization for basic care exists and is adequate. The country has a very robust and experienced system of providing basic mass care and shelter. There is a need for:
    - The ability of the evacuation network to reverse flow to support repatriation
    - A good organization and understanding by assets to simplify and enhance this capability
- *Research and Development.* Current doctrine requires that all victims be decontaminated before entering support shelters, but this may not be practical or necessary for large numbers of evacuees who will need immediate support. Analysis of contamination levels, monitoring methods, health impacts from alternate strategies needs to be performed.
    - Personnel decontamination issues and methods
    - Psychological effects on, and anticipated response of, both the public and first responders

Gaps in Capability 4: Medical Triage

In the wake of an IND detonation, up to hundreds of thousands of victims will require rapid medical treatment for blast, flying glass, and radiation injuries. Maximizing the number of lives saved will require an immediate interagency response, and an effective triage strategy that focuses treatment on those who can be saved, and provides palliative care to those who cannot. Currently well-established, executable procedures and protocols for interagency medical response and triage after an IND detonation do not exist. Current capabilities can only handle a few radiation injuries at any one time. Lack of lab capacity exists for biodosimetry and radiobioassay for radionuclides.

Predict Health Effects, Estimate Triage Needs and Locations, and Required Assets

- *Doctrine/Plans.* While modeling capabilities exist with analytical tools to predict health effects, improvements can always be made. Triage concepts of operation exist and are adequate; however they must be conveyed to appropriate participants so all use a common operating scheme. There is a need for:
    - Base triage plan for a nuclear incident including policies for mass triage priority decisions
    - Policy for priorities for accomplishing palliative care
    - Policy for amount, type, and placement of pre-positioned medical treatments
    - Policy for credentialing of medical and support responders
    - Policies for releasing medical countermeasures
    - Predictions regarding transportation requirements
- *Research and Development.* Medical response planning requires an understanding of the type, number, and geographic distribution of potential injuries.
    - Expected injury type (e.g., burn, radiation exposure, and blast effects) and medical countermeasure
    - IND effects on local healthcare infrastructure (evaluation of modern structures for blast, thermal, and prompt (initial) radiation effects and protection)
    - Location of injured and extraction considerations
    - Personnel decontamination issues and methods
    - Psychological effects on, and anticipated response of the public

Establish Triage Sites and Provide Emergency Medical Stabilization

- *Doctrine/Plans.* While many of these capabilities exist piecemeal such as ESF#8 playbook, and doctrine and guidance for specific response components, these are not completely integrated and not evolved for a cross-governmental response. There is a need for:
    - A base triage plan that establishes: priorities for stabilization, survivability and specialized care methodology, palliative care, treat-in-place, transportation, and surge capabilities; recognizing this will be a scarce resources setting (Alternate Standards of Care – Agency for Healthcare Research and Quality (AHRQ), Surge Care - AHRQ "RTR" medical system)
- *Training.* Training does not exist and is required to support decision making in a nuclear detonation as it pertains to triage placement and allocation of scarce resources. There is a need for:
    - Specialized training for recognizing and handling radiation and combined-effects-injured patients, and decision making for mass casualty care

- Exercises for responders

- *Leadership.* The leadership has a strategic understanding of appropriate application of authorities and decisions; however there are gaps in strategic decisions for the medical response system. There is a need for:
  - The appropriate plans and procedures to ensure the declaration of a public health emergency
  - The provision waivers of legal requirements
  - Emergency use authorizations
  - Policy guidance for management of mass casualty and for communications plans

- *Research and Development.* The capability to provide medical prognosis, disposition, medical management requirements, and perform medical stabilization through the development and implementation of executable procedures and protocols for interagency medical response and triage.
  - Expected injury type (e.g., burn, radiation exposure, and blast effects) and medical countermeasure
  - Triage tools to determine potential radiation exposure
  - Improved medical countermeasures for radiation exposure and combined injury
  - IND effects on local healthcare infrastructure (evaluation of modern structures for blast, thermal, and initial radiation effects and protection)
  - CIKR rapid return to service methods
  - Location of injured and extraction considerations
  - Personnel decontamination issues and methods
  - Psychological effects on, and anticipated response of the public

Evaluate Radiation Exposure of Patients

- *Doctrine/Plans.* Dosimetry is necessary to capture the health effects of radiation and to guide decision making for patient management both immediate and long-term. There is no doctrine to support this need. There is a need for a:
  - Strategic plan to implement and activate biodosimetry/bioassay capability to handle surge nationwide and internationally
  - Strategy for biodosimetry/bioassay for predicted exposure population and identify requirements for short- and long-term evaluations
  - Policy for priorities, and resourcing for evaluation and radiation exposure
  - Operational and logistical plan to manage biodosimetry sample handling and reporting

- *Organization.* While a few boutique capabilities exist for small radiological incidents, a more robust system is needed to meet requirements of an IND incident, to include:
    - An organization to accomplish assessment and tracking of patients exposed to radiation, including CDC laboratory response network, DoD, DOE (with the Radiation Emergency Assistance Center/Training Site [REAC/TS]), and international partners
- *Leadership.* Leadership should provide strategic guidance and support for physical dosimetry/biodosimetry and engage a network to provide this capability. There is a need for:
    - Direction on establishing guidelines for establishing laboratory procedures
    - Guidance on organizational leadership for collection and analysis and reporting of samples
- *Regulations/Authorities/Grants/Standards.* Funding and legislative backing would enhance the efforts to create this system. Grants are a vital component of enabling laboratories to afford upkeep and maintenance of certifications and equipment. There is a need for:
    - Funding to support establishment and maintenance of biodosimetry capabilities
    - Agreements on standards for biodosimetry
    - Funding for initial and continued training
- *Research and Development.* Medical evaluation and treatment of radiation exposure is limited. Research on new techniques or improvements in the speed and capacity of current capabilities are important research areas.
    - Expected injury type (e.g., burn, radiation exposure, and blast effects) and medical countermeasure
    - Triage tools to determine potential radiation exposure
    - Improved medical countermeasures for radiation exposure and combined injury

Note: Additional interagency gaps and research needs for this subject area have been identified at the end of this appendix.

Gaps in Capability 5: Provide Casualty and Evacuee Care

The sheer number (potentially millions) of evacuees alone creates a significant capability gap. Additionally, the unique needs of the evacuation population concerning issues such as contamination and psychological trauma require significant response planning and capability development.

Register, Process, and Track Individuals

It is recognized that extensive resources will be required and that some state and local databases and registries may not be compatible with each other or with federal systems. Federal agencies, specifically the CDC and the Agency for Toxic Substances and Disease Registry (ATSDR), will provide assistance in establishing, coordinating, and maintaining this registry. Non-federal tracking systems will require standards so that data can be shared across the many jurisdictions and centers likely to be involved in a nuclear detonation response. In addition, FEMA has the National Emergency Family Registry Locator System (NEFRLS) and offers a mechanism for voluntary registration of displaced people over the Internet or by phone. The system allows displaced persons to register in a national database, family members and friends to search for displaced persons, and facilitate communications between displaced persons and their family and friends. FEMA has also engaged the National Emergency Child Locator Center, managed by the National Center for Missing and Exploited Children, to help federal, state, local and tribal governments and law enforcement agencies to track and locate children aged 21 and younger who have become separated from their parents or guardians.

- *Doctrine/Plans.* While there are isolated pockets of capabilities in these areas, there is no plan or doctrine to support a single electronic registration and tracking system (eRTS). There is a need for an:
    - Interagency concept of operations for implementation and use of patient tracking and registration and specifically eRTS
- *Organization.* There is no comprehensive, coordinated organizational alignment across federal, state, local, tribal, and territorial levels. There is a need for:
    - Interagency partners invested in evacuation and patient care to work with state and local governments and responders who will use this system to coordinate development and integration with private sector tracking system developers
- *Research and Development.* The capability to identify and track persons for the provision of the necessary medical, basic, environmental, and mental health care. This includes understanding of:
    - Expected casualty quantity and type (e.g., burn, radiation exposure, and blast effects)
    - IND effects on local healthcare infrastructure
    - Psychological effects on, and anticipated response of the public

Provide Medical and Specialized Medical Care (Hospitalization)

Much like Hurricane Katrina, responders will have to operate in an environment where several large hospitals will be totally destroyed while many others will be rendered inoperable and nearly all smaller health care facilities will be shut down or overwhelmed. Many state and local public health and medical assets will be overwhelmed by these conditions, placing an even greater responsibility on federally deployed personnel. While the death toll will be high, there is an opportunity to save tens or hundreds of thousands of injured victims with appropriate mitigation and treatment strategies.

- *Doctrine/Plans.* Public messaging is inadequate. There must be a robust behavioral health system available to activate immediately. There is a need to:
    - Develop all levels of CONOPS for stabilization, triage, transport, evacuation, and definitive medical care that is fully integrated across jurisdiction and models of response (see RTR system)
- *Organization.* The current organization does not support the anticipated magnitude of the requirements. There is a need for:
    - Networks, such as the Radiation Injury Treatment Network (RITN) and the National Disaster Medical System (NDMS), to establish relationships that will define expectations and increase surge capacity, efficiency of response, and patient movement and care in such an incident
    - National networks with specialized capabilities and surge capacity (300K-500K)
    - Laboratory networks with capabilities to support needs for biodosimetry (300K-500K patients)
- *Research and Development.* Pre-event analysis of likely hazard areas will help identify where and when it is safe to deploy local medical care capabilities and how many victims may be expected. There is a need to understand:
    - Expected casualty quantity and type (e.g., burn, radiation exposure, and blast effects)
    - Fallout characteristics; physical properties and radiation levels
    - Fallout pattern analysis
    - IND effects on local healthcare infrastructure
    - Psychological effects on, and anticipated response of the public

Provide Public Health and Behavioral Health Services

During the TOPOFF 4 exercise, it was noted that state and local governments are unfamiliar with federal disaster mental health operations and disaster surge capability. Participants unanimously agreed that an RDD attack would require different approaches than responses to any other type of disaster. Although there are many disaster mental health programs in place, they are underutilized because agencies and governments are unaware of their existence. Representatives from states and agencies also saw public messaging as key to addressing disaster mental health issues. Conveying guidance and information to the public and explaining the government's response to the attacks should reassure citizens that authorities are in control of the situation, reducing the psychological impact.

- *Doctrine/Plans.* There is guidance for handling bodies; however there is no guidance for overall fatality management. There is a need for tiers of providers and surge capabilities for mobilization or surge response for:
    - All hazards and types of behavioral and mental health services required by a diverse population

- Services required by decedents' families or missing persons

- *Organization.* There is a traditional organization during peacetime, but nothing in place for the scope of an IND incident. Currently, limited capability exists via Disaster Mortuary Operational Response Teams (DMORTS) and DoD assets. There is a need for:
  - Networks to provide the best capability for this requirement
  - Federally-led efforts to establish cohorts of providers and experts to manage the needs of a diverse population
  - Remediation of bodies will require organization between pickup, identification, decontamination, and final disposition
- *Leadership.* Leadership has not broached this issue. There is a huge information sharing gap. There is a need for:
  - Leadership to provide direction and communication to the public and responders on body handling, identification, and the meeting of religious requirements in the context of a nuclear detonation
  - Plans to aid leadership in reducing mental health requirements by providing informative and clear messages to the public
- *Research and Development.* The regional and national psychological impact of nuclear terrorist attack is currently expected to be extensive and severe. Research to better understand and mitigate this impact can have a significant influence on national resilience.
  - Psychological effects on, and anticipated response of the public

Gaps in Capability 6: Stabilize and Control the Impacted Area

Extinguish Fires Initiated by the Blast and in Contaminated Areas Downrange

- *Doctrine/Plans.* Several plans exist, but they are not necessarily linked and demonstrate little to no synergy. Current plans lack operational certitude. There is no definition of roles and responsibilities. There is a need for:
  - Plans integrating and prioritizing federal, state, local, tribal, and territorial resources for fire fighting and decontamination operations and the management of radioactive waste
  - Plans for assessing firestorm potential
  - Regional/state mutual-aid agreements and partnerships (Emergency Management Assistance Compact [EMAC])
- *Leadership.* There are some current plans and directives in place. However, there is a need for:
  - Policy addressing private sector issues related to prioritization decisions

- *Regulations/Authorities/Grants/Standards.* Federal grants do exist, but they are inadequate. There is a legal basis for state and local activities, but it has never been tested or exercised to any great extent. There is no uniformity with data standards. There is a need for:
  - Federal grants to help develop state and local requirements in support of these activities, to include but not limited to concept development, equipment, training, and exercises
  - Data standards for modeling and assessment products
- *Research and Development.* Firestorms caused a significant amount of the damage in Hiroshima and Nagasaki. Although a significant number of fires are expected from a low yield, ground level detonation in a modern urban environment, the speed at which these might coalesce into a mass fire or fire storm is unknown. Different firefighting techniques and planning are required depending on the fire type.
  - Fire initiation and spread
  - IND effects on local healthcare infrastructure (water pressure and distribution systems in particular)

Stabilize Utilities and Structures in the Immediate Blast Area that Impact Initial Evacuation Routes for Initial Response Operations

- *Doctrine/Plans.* Plans to integrate stabilization activities do not exist. There is a need for:
  - Plans to provide guidance on stabilization and demolition
  - Integration of federal, state, local, tribal, and territorial resources
- *Leadership.* There are current plans and directives in place. However, there is a need for:
  - Plans addressing private sector issues related to standards and prioritization decisions
- *Regulations/Authorities/Grants/Standards.* There are no basic universal standards for civil engineering. There is a need for:
  - Formalized and accepted civil engineering standards and prioritization methodology to facilitate stabilization efforts
  - Federal grants to help develop state and local requirements in support of these activities, to include but not limited to concept development, equipment, training, and exercises
  - Authorities to act on priorities if different from standard operations
- *Research and Development.* Effects analysis to support the development of pre-coordinated pre-approved plans and guidance for stabilizing the infrastructure in the immediate impact area and provide a basis to assist in the recovery of basic utilities and services in the impacted area is needed. There is a need for:

- Evaluation of modern structures for blast, thermal, and initial radiation effects and protection
- Ground shock and blast effects on alternative evacuation routes (e.g., subway systems and underground pathways)
- Fire initiation and spread, fire fighting capability
- Effects on current communication capabilities and infrastructure
- Fallout characteristics; physical properties and radiation levels
- Evaluation of modern structures for fallout exposure protection
- Decontamination technologies and methodologies
- CIKR rapid return to service methods
- Technology to rapidly assess damage and hazard zones
- Improve accuracy of models based upon incorporating detailed site information
- Psychological effects on, and anticipated response of the public

Provide Public Safety and Security in Vicinity of the Blast Area as well as in the Overall Federally Declared Disaster Area

- *Doctrine/Plans.* There are current but inadequate plans for site security. There is a need for:
  - Policy on method for ensuring public safety and security
  - Plans for integrating federal, state, local, tribal, and territorial resources
  - Plans for addressing public and private sector issues related to implementation of security measures
- *Regulations/Authorities/Grants/Standards.* Eminent domain is an issue. Some regulations exist but they are not adequate and might have to be revised. There is a need for:
  - Federal grants to develop state and local capabilities in support of public safety and security activities to include, but not limited to concept development, equipment, training, and exercises
- *Research and Development.* Pre-event analysis of potential effects must be performed to determine appropriate security boundaries, and security personnel actions should be developed for a variety of yields and urban conditions. This includes:
  - Fire initiation and spread, fire fighting capability
  - Fallout characteristics; physical properties and radiation levels
  - Fallout pattern analysis

Gaps in Capability 7: Perform Site Recovery and Restore Essential Functions

In order to provide a safe environment for emergency responders and minimize unnecessary radiation doses and risks to life, appropriately targeted decontamination and fallout management procedures and protocols are needed for people, structures and the incident scene. In addition, procedures and systems for tracking and monitoring people's contamination status are needed to target decontamination and to prevent recontamination. These procedures, protocols, technologies and systems would have to be deployed in the hours immediately following the incident; however, they do not currently exist.

Manage Environmental Hazards in Immediate Blast Area and in Contaminated Areas Downwind

- *Doctrine/Plans.* Different environmental mitigation resources exist, but not all are sufficient. There is minimal focus on IND. There is a need for:
    - NRF NRIA to be made consistent with support ESF structure for response
    - Pre-scripted mission assignments for nuclear response assets
    - OSHA Guidelines
    - Harmonized federal requirements for emergency worker safety in a hazardous materials environment
    - Policy for establishing priorities
    - Plans for implementing engineering controls for mitigating hazards
- *Organization.* There is a need for:
    - Integrated organizational structure within the NIMS framework and agreements across federal, state, local, tribal, and territorial governments and the private sector
- *Research and Development.* Pre-event analysis of potential effects must be performed to determine potential hazards responders might face for a variety of yields and urban conditions. This includes not only the nuclear detonation hazards, but also secondary hazards that may be generated by fire or hazardous material releases. There will be a need for predetermined rapid, targeted site decontamination capabilities that will need to be developed based on the following.
    - Blast and thermal effects for generating delayed building collapse, physical hazards for rescuers and evacuees, and hazardous material releases in the urban environment
    - Fire initiation and spread, fire fighting capability, generation of hazardous smoke
    - Fallout characteristics; physical properties and radiation levels
    - Fallout pattern analysis

- Tools for remote detection and analysis of hazards in inaccessible areas

Perform Gross Decontamination of Critical Infrastructure and Key Resources

- *Doctrine/Plans.* There is a need for:
  - NRF NRIA to be made consistent with support ESF structure for response.
  - Pre-scripted mission assignments for nuclear response assets
  - OSHA Guidelines
  - Harmonized federal requirements for emergency worker safety in a hazardous materials environment
  - Plans for decontamination activities
- *Organization.* There is a need for:
  - Critical Infrastructure Annex Private Sector Liaison in the NRF
  - Integrated organizational structure and agreements across federal, state, local, tribal, and territorial governments and the private sector (18 CIKR)
  - Private sector-specific leaders with knowledgeable skills to decontaminate CIKR and assist with on the spot decisions regarding worker health and safety and environmental quality in a post-nuclear environment
- *Research and Development.* The capability to mitigate the spread of radioactive contamination, reduce the risk of imminent hazards and restore essential services provided by critical infrastructure and key resources.
  - Fallout Characteristics; physical properties, dissemination, and radiation levels.
  - Decontamination technologies and methodologies
  - CIKR rapid return to service methods
  - Psychological effects on, and anticipated response of the public

Perform Restoration of Critical Infrastructure and Key Resources

- *Doctrine/Plans.* There is a need for:
  - NRF NRIA to be made consistent with support ESF structure for response
  - Pre-scripted mission assignments for nuclear response assets
  - OSHA Guidelines
  - Harmonized federal requirements for emergency worker safety in a hazardous materials environment
  - Plans for restoring CIKR functions
- *Organization.* There is a need for:

- Integrated organizational structure and agreements across federal, state, local, tribal, and territorial governments and the private sector (18 CIKR)

- *Research and Development.* Determining the most appropriate decontamination process require research in the following areas:
  - Fallout Characteristics; physical properties, dissemination, and radiation levels
  - Decontamination technologies / methodologies

IND Response and Recovery Gaps Identified Outside of the RPT Process

Characterize Fallout Particles and Distribution in the Environment

Capability Gaps identified in the Nuclear Defense R&D Roadmap

In post-detonation, the current capability for ground fallout collection has been tested in the field and is still being improved. The capability for airborne sampling of particulates is scientifically well developed and exercised, but lacks operational resources. The DOE Aerial Measuring System (AMS), EPA's Airborne Spectral Photometric Environmental Collection Technology (ASPECT) aircraft, and the DTRA Multiplatform System (MPS) conduct radiation field mapping for consequence management, search, and sample collection planning. To fully meet the demands of response and recovery key mission objectives, a number of capabilities are needed.

- Scientifically-based protective and response action recommendations
- Guidance and tools to establish capabilities for responder entry, victim extraction, and incident stabilization
- Prompt collections require ground-based monitoring systems to complement existing national technical means
- Rapid characterization of an incident site and contaminated critical infrastructure (e.g., outdoor and indoor environments of critical infrastructure)

The following are gaps in addition to those presented in the RPT CORE document, identified by the Federal Interagency during the development of this strategy document, to be included in order to enhance the life-saving function of this capability:

As recognized by the Senate Committee on Homeland Security and Governmental Affairs and provided by HHS for insertion into this strategy document, there is a clear need for a Radiation Laboratory Network (Rad-LN). A business plan has been developed and refined by a multi-agency working group but has yet to receive funding. The four primary objectives of RAD-LN are:

- National coordination of expertise, triage protocols, field assessment techniques, and laboratory analysis necessary to determine proper victim treatment after a radiological or nuclear event, including coordination and collaboration with international partners

- Coordination of surge hematology capacity with the CDC Laboratory Response Network (CDC-LRN). Develop supplemental resources for states and regions for hematological surge capacity, as required

- Establish a laboratory network to perform the analyses which will coordinate and expand our existing capabilities and establish new capacity, conduct cytogenetic analysis, conduct radio-bioassay analysis, standardize operating procedures and data sharing, optimize the use of Artificial Intelligence and computer technology, utilize a cost effective business model to maintain national capability, and integrate national capability with our international partners

- Integrate innovative and new, high throughput biodosimetry techniques such as allowing collaboration with research and development teams and our academic partners.

Additionally there are seven components essential to RAD-LN:

- Radiobioassay- that will consist of chemical analysis and spectroscopic analysis (in some instances). This might include high throughput health physics labs like NIH

- Cytogenetic biodosimetry- including sample processing and reading

- Hematology- complete blood counts, and lots of them, possibly 100,000 per day

- Optimizing and improving existing techniques- automation of sample processing and image acquisition and analysis, Artificial Intelligence and comparison of extant approaches with new methods

- Surge capacity- for radiobioassay and biodosimetry

- Oversight committee and standardization (ISO standards, CLIA labs, etc), including periodic exercising of the core and satellite labs

- International collaboration- this could provide huge surge capacity and savings

- Research- truly new technology and biodosimetry methodology

- This plan must take into account emerging technology, networking within North America and partnering with other countries, such as the Global Health Security Initiative, WHO, IAEA and others

There are specific issues the finite number of radioanalytical laboratories will face in such an incident, including:

- Struggle to analyze mixed fission products, particularly mid- and longer-lived mixed fission products

- Fission products not listed in routinely used gamma libraries of these laboratories

- Proficiency testing programs discontinued

- Lack of calibration standards

- Training and others

Annex B: Policy Direction and Issues

Policy issues related to the Department's strategy for response to an IND attack exist at two basic levels of analysis. The first is *strategic* level decisions. At the second level are *operational* policies required to facilitate and/or enact the decisions made by elected leaders and decision makers.

The DHS Strategy for Improving the Response and Recovery from an IND Attack defines the direction that DHS and FEMA shall pursue in preparing a federal response to an IND attack on the homeland. It applies existing policies and decisions and provides operational guidance and direction to DHS components charged with implementing the overall strategy. It acknowledges the vulnerabilities and gaps identified in existing plans and documents, as well as those offered in Annex A, and offers a DHS-led course of action to address them.

There are unfolding opportunities that will enable the Department to address anticipated incident-driven conditions and influence decisions that will improve the government's ability to rapidly respond to and recover from an IND attack. In the near future, these opportunities include:

- Homeland Security Presidential Directive-8 (HSPD-8) revision. Of particular policy relevance to this Strategy, HSPD-8 established a capabilities-based approach to preparedness for all homeland security mission areas (prevention, protection, response, and recovery), and presented as one of the national priorities the strengthening of CBRNE detection, response, and decontamination capabilities. The HSPD-8 revision process will present unique and timely opportunities to address a number of policy issues derived from the CORE document, this Strategy document, as well as from NLE 2010 after-action reports and associated lessons learned.
- Nuclear/Radiological Incident Annex (NRIA) to the National Response Framework (NRF) revision. This annex primarily focuses on describing the policies and associated responsibilities of federal departments and agencies governing the immediate response and short-term recovery activities for incidents that may occur on government-owned or licensed facilities and private property associated with nuclear utilities, or other licensed and prescribed facilities and sites.
- In support of NLE 2010, the Domestic Readiness Group has recently granted interim approval to draft version 10 of the *Federal Interagency Improvised Nuclear Device Concept Plan* (IND CONPLAN). While this CONPLAN is consistent with established policies and does not create additional policy requirements, the development process has brought up capability gaps and policy issues and that will support the maturation of this Strategy during the FY 2010 "strategy update". NLE 2010 after-action reports and associated lessons learned will also contribute to the strategy update.

In addition, a number of IND response and recovery policy questions were initially raised during the development of the CORE document by the DHS Requirements Planning team (RPT) and expanded upon during the development of this strategy. These issues offer DHS and FEMA the opportunity to formulate assumptions and decisions that will facilitate the development of plans, the allocation of resources, and the undertaking of training exercises to mitigate the impacts of an attack and augment recovery operations. In no particular order, the following topics have evoked discussions and calls

for policy decisions in the past. By focusing our efforts on establishing a pre-determined baseline from which all departments and agencies could work from, we would enhance a future coordinated interagency effort to plan for this contingency.

An overarching *Emergency Communications Plan* can clarify the messaging for both the public and local authorities regarding how to prepare for an event on the scale of an IND. This plan should cover the roles and missions of federal, state, local, tribal, and territorial entities who would be involved in IND response and recovery, guidelines for identifying sheltering options in an urban area, guidelines for when sheltering in place is appropriate and when an individual should evacuate to a safer location, and most importantly, how a region may establish and maintain effective emergency communications during an IND incident. What information can (and should) be shared with local officials, and conversely, what information can (and should) be shared with international partners and allies? Such a plan should guard against the release of spurious information, while emphasizing the need for the release of timely, accurate information that might save countless lives.

The Communications Plan presupposes the existence of a set of criteria that enables appropriate shelter vs. evacuation decisions in a rapidly changing environment along with priorities for evaluating radiation exposure guidelines.

There is a need for clear and effective *standards* for a variety of important areas, including decontamination of people, equipment, and critical infrastructure facilities. As described in this Strategy, there is a need to re-establish key support functions as soon as possible following an IND incident. That will require selective decontamination measures, but a policy determination is required regarding the degree of decontamination that is acceptable to allow these functions to be re-established. Some guidance for CIKR decontamination levels during the Intermediate Phase of a radiological response has been developed in the Operational Guidelines, although they were developed specifically for RDD response. Similarly, as the many anticipated victims are extracted, treated, and evacuated for more extensive medical care, how much decontamination is enough? Another area involving standards is the question of dose rates for responders, medical personnel, support personnel, and others who are necessary for effective response and recovery, but who might not now be covered under existing Protective Action Guidance.

The *private sector* will play an invaluable role in effective IND response and recovery. However, agreements need to be established ahead of time, and exercised often, if there is to be a seamless integration of government and private sector resources. Mutual Aid Agreements, MOUs, MOAs, and other such pre-negotiated agreements can substantially improve the ability of a jurisdiction to recover from an IND incident, while not relying on technology development or extensive hardware investments.

Much of the impact of a nuclear device involves blast (structural) damage coupled with radioactive contamination. Resources to clear and manage large amounts of radioactively contaminated debris will be limited, and impacted jurisdictions will need a location where such contaminated materials can be safety transported and stored. In the aftermath of the attacks of 9/11, a huge effort was required to recover personal effects and traces of victims from the mountains of material removed from the site of the World Trade Center. The aftermath of an IND would dwarf that effort, and must be planned carefully in advance. In addition, decision makers will need assistance in weighing the

emotional need to recover personal effects and victims' remains against the potential risk to responders from radiation exposure during the recovery effort.

The massive medical response that will be required for responding to and recovering from an IND incident will call for large amounts of medical supplies and resources. *Prepositioning* of supplies, identification of available medical facilities, and even identification of facilities that could be converted to medical treatment centers all call for policy decisions, not technology development.

Medical treatment will involve both trauma patients and victims of radiation exposure. The latter will require massive efforts at personal dosimetry and biodosimetry measures to guide the medical treatment. Assessing longer-term health issues across populations within both the prompt and plume affected areas will also be required. Establishment of an individual radiation dose tracking program over time may require national-level policy discussions.

In addition, we will need a plan that establishes priorities for stabilization, survivability and specialized care methodology, palliative care, treat-in-place; transportation, surge capabilities and fatalities management. Although the federal government possesses some operational capabilities to support mission areas such as medical care, monitoring, and decontamination, these capabilities do not exist on the scale required to effectively respond to an event of this magnitude.

Furthermore, in an event of this magnitude, multiple mission areas are likely to simultaneously require access to common assets, thereby exacerbating already conflicting demands on scarce resources over the spectrum of response priorities. Because of the coordination, logistics, and transportation requirements to deploy these federal assets during the critical first hours to days, it is unlikely that substantial federal assets could be in place on the ground in less than 48 to 72 hours, which is a critical period for saving lives. It is recognized that in such an event, state and local authorities will have primary responsibility for response and their capacity to effectively respond is likely to be quickly overwhelmed.

Annex C: Research and Development

Addressing the Need

Effective response to and recovery from an IND incident requires scientifically informed planning at all levels of government and tools to rapidly and effectively communicate guidance to the public, perform victim care, and mitigate consequences. In an IND incident, the ability to make good decisions quickly and to act decisively and appropriately in the first minutes and hours after an attack will make an enormous difference in saving lives and mitigating the overall impact of the event. Although a large number of casualties will be unavoidable, tens of thousands of lives might be saved through properly implemented emergency and medical response actions and which will more quickly place us on the path to recovery. The timeframe for effective response-related action is extremely short. Thus developing plans, preparing, training, and exercising the responders and decision makers are crucial to the national well being in the event of an IND attack.

Previous OMB budget priorities[5,6] placed an emphasis on R&D to better "understand and mitigate the social and economic effects of a domestic nuclear explosion, including better tools to treat the injured and means for rapidly assessing damage." The current OMB/OSTP budget priorities[7], *Science and Technology Priorities for the FY 2011 Budget*, continues to value "technologies needed to protect our troops, citizens, and national interests" which FEMA, on behalf of DHS, will accomplish by improving public and first responders awareness on IND response issues through applied research and studies at universities, national laboratories, and research centers using an open innovation model of collaboration.

Addressing the Shortfall

Previous nuclear weapon tests and research focused on strategic thermonuclear war scenarios with high yield weapons detonated at optimal heights to maximize prompt effects. The development of sound response guidance requires a deeper understanding of the effects of a ground level, low yield nuclear detonation in a modern US city. Supporting scientific analysis is needed to determine fallout characteristics, such as physical properties and radiation levels, which are needed to evaluate public shelter and evacuation strategies, population decontamination requirements, and response actions. There is insufficient information on the magnitude and interaction of the electromagnetic pulse with modern electronics which are vital for public and responder communication. Fire initiation and spread along with blast effects on modern buildings are also areas of significant speculation.

Studies and response guidance on the appropriate actions to take after a nuclear detonation offer conflicting advice. For example, the recommendations of the Department of Homeland Security's *Ready.gov*, which are consistent with the recommendations of the National Academy of Sciences

---

[5] OMB/OSTP, FY 2008 Administration Research and Development Budget Priorities, June 2006.

[6] OMB/OSTP, FY 2009 Administration Research and Development Budget Priorities, August 2007.

[7] OMB/OSTP, Science and Technology Priorities for the FY 2011 Budget, August 2009.

and the interagency planning guidance[8] [9], were recently criticized by the Federation of American Scientists[10] because of conflicting recommendations with a RAND study[11] [12].

The R&D Path Forward

In order to achieve broad interagency R&D collaboration FEMA has taken on the co-chairmanship of the Response and Recovery Working Group (RRWG) of the Nuclear Defense Research and Development (NDRD) Subcommittee, a group chartered by the National Science and Technology Council (NSTC) and its Committee on Homeland and National Security. This subcommittee reviews research activities across the federal government and produces the *Roadmap for Nuclear Defense Research and Development.* In 2008, this *Roadmap* identified national R&D priorities and guidelines for departments and agencies to develop comprehensive and mutually supportive research programs that were closely linked to operational requirements. It included suggested actions and completion dates.

Also in 2008, the DHS Office of Policy Requirements Planning Team (RPT) generated the Nuclear Response and Short-Term Recovery Capability, Objective, Resources, and Evaluative Measures (CORE) document with support from the Federal Interagency. This CORE document identified desired capabilities and associated priorities to effectively and efficiently respond to a nuclear incident. The RPT's CORE document provided the basis for the DHS Integrated Planning Guidance (IPG) for FY2011-15 and this strategy, and provided additional inputs to consider for potential R&D requirements.

FEMA's IND Response and Recovery Program is currently working to address these identified high priority research and technology needs for capability development through collaboration with interagency and DHS Research, Development, Test, and Evaluation (RDT&E) partners such as the Domestic Nuclear Detection Office, the Science and Technology Directorate (S&T), and the Office of Health Affairs. As such, the path forward depicts the capability enhancements derived from the DHS CORE and the *Roadmap* documents which produced ten priority enhancements where R&D support is needed. FEMA re-examined them and consolidated recurring themes and requirements into a list of six overarching requirement areas for R&D with proposed research methods and focus areas in order to address the most pressing R&D needs as rapidly as possible.

Priority capability enhancements require supporting research and development:

Annex A listed key gaps and analysis that would need to be addressed in order to develop the required capabilities. Specific Research and Development recommendations were provided in that section, which helped generate the following list of research and development focus areas.

---

[8] National Academy of Sciences, 2005, Nuclear Attack, factsheet created for News and Terrorism: Communicating in a Crisis.

[9] Homeland Security Council Interagency Policy Coordination Subcommittee for Preparedness and Response to Radiological and Nuclear Threats, *Planning Guidance for Response to a Nuclear Detonation.* Office of Science and Technology Policy, Executive Office of the President (www.ostp.gov), January 16, 2009.

[10] Federation of American Scientist, 2006, Analysis of Ready.gov. Available online: http://www.fas.org/reallyready/analysis.html.

[11] Davis, L., LaTourrette, T., Mosher, D.E., Dais, L.M., & Howell, D.R., 2003, Individual Preparedness and Response to Chemical, Radiological, Nuclear, and Biological Terrorist Attacks [Electronic version]. Arlington, Virginia: RAND Corporation.

[12] Orient, J., May 2005, Unready.gov. Civil Defense Perspectives, 21(4). Retrieved June 23, 2006, from http://www.oism.org/cdp/may2005.html.

The following paragraphs summarize the overarching research requirement areas derived from the RPT CORE documents[13], the Nuclear Defense R&D Roadmap[14], and other analysis.

Consolidated Supporting Research Requirements List

1. **Prompt Effects Research Areas**
   a. Evaluation of modern structures for blast, thermal, and prompt (initial) radiation effects and protection
   b. Ground shock and blast effects on CIKR, including hospitals, alternative evacuation routes (e.g., subway systems and underground pathways), water systems for fire fighting, and communication capabilities.
   c. Fire initiation and spread, fire fighting capability
2. **Electromagnetic Pulse (EMP) Research Areas**
   d. Effects on current communication capabilities and infrastructure
   e. Technology development for IND effect resilience (both blast and EMP)
3. **Fallout Research Areas**
   a. Fallout characteristics; physical properties and radiation levels
   b. Fallout pattern analysis
   c. Evaluation of modern structures for fallout exposure protection
4. **Situational Assessment Research Areas**
   a. Technology to rapidly assess damage and hazard zones
   b. Improve accuracy of models based upon incorporating detailed site information
5. **Research on Medical Response and Evacuee Care**
   a. Expected injury type (e.g., burn, radiation exposure, and blast effects) and medical countermeasure
   b. Location of injured and extraction considerations
   c. Triage tools to determine potential radiation exposure
   d. Personnel decontamination issues and methods
   e. Psychological effects on, and anticipated response of the public
6. **Recovery and Restoration Research Areas**
   a. Decontamination technologies and methodologies
   b. CIKR rapid return to service methods

---

[13] Department of Homeland Security Integrated Planning Guidance for FY11-15.

[14] Office of Science and Technology Policy, 2008, Nuclear Defense Research and Development Roadmap Fiscal Years 2010-2014; available at http://www.ostp.gov.

Proposed Research Methods and Focus Areas

1. **Prompt Effect Research Areas** were important to all seven critical capability areas: manage the response, characterize the incident, mass evacuation and/or in-place protection, medical triage, provide casualty and evacuee care, stabilize and control impacted area, and perform site recovery and restore essential functions.

   a) Evaluate modern structures for blast, thermal, and prompt (initial) radiation effects and protection.

      - Perform a detailed analysis on how a ground-level, low-yield detonation interacts with the modern urban environment to mitigate or enhance blast, thermal, or prompt radiation effects. This includes urban canyon effects on blast wave propagation and thermal and radiation streaming.
      - Estimate the impacts of a nuclear detonation in a modern urban environment including the generation of physical hazards for rescuers and the public, hazardous material releases in the urban environment, and impacts on human health.
      - Perform an analysis on impacts from a variety of yields and urban environment types to enable the development of universal guidelines.
      - Determine how modern structures respond to nuclear blast and thermal effects. Determine the IND impact changes from city-to-city variation (e.g. Los Angeles vs. Houston vs. New York City)

   b) Determine impacts on CIKR, including access routes and evacuation corridors (to include alternative evacuation routes – e.g. subway), blast effects on shelters, public health infrastructure, water; power, and communication and the impact characteristics of urban environments have on planning and decision making.

   c) Evaluate fire initiation and spread to determine if fires generated from the detonation might coalesce into a mass fire or fire storm, as these events have significantly different requirements for mitigation. Another important element is the understanding of how the detonation will affect fire fighting capabilities such as water supply and movement of response capability.

2. **Electromagnetic Pulse (EMP) Research Areas** were important to three of the critical capability areas: manage the response, characterize the incident, and mass evacuation and/or in-place protection.

   a) Examine the effects on current communication capabilities and infrastructure

      - Determine Electromagnetic Pulse (EMP) impacts on first-responder communication equipment.
      - Determine Electromagnetic Pulse (EMP) impacts on the emergency broadcast system and the ability to communicate to the public in the affected areas.

   b) Develop technology for IND effect resilience (both blast and EMP).

3. **Fallout Research Areas** were important to all seven critical capability areas: manage the response, characterize the incident, mass evacuation and/or in-place protection, medical triage, provide casualty and evacuee care, stabilize and control impacted area, and perform site recovery and restore essential functions.

   a) Examine fallout characteristics, physical properties and radiation levels.

      - Assess ground level, low yield, urban environment changes on fireball behavior, rise times and heights, and fallout cloud appearance and movement.
      - Characterize urban nuclear explosion fallout (fallout mass, particle information and size distribution, and radionuclide information).

   b) Analyze fallout pattern to identify principle potential patterns (including direction, length, and shape) to inform response planning.

   c) Evaluate modern structures for fallout exposure protection.

      - Evaluate efficacy of urban sheltering and evacuation decision-making parameters, to include the following: shielding factors associated with urban shelter structures, safety of shelter options, optimizing sheltering versus evacuation or deferred evacuation, and characterizing population sustainment issues in shelters.

4. **Situational Assessment Research Areas** were important to four critical capability areas: manage the response; characterize the incident; mass evacuation and/or in-place protection; and stabilize and control impacted area.

   a) Develop technology to rapidly assess damage and hazard zones

      - In order to mount an effective response, leaders need to be able to quickly assess the situation. Tools need to be developed to rapidly acquire data for damage assessment (e.g. damage to buildings, impact to communication systems, and impact to transportation and evacuation routes) and radiological conditions. The ultimate objective is to have real-time data collection, analysis and availability of data to response leaders.
      - Develop communication networks for transferring and sharing large data file information between local responders, deployed field teams and national response centers. Rapidly deployable field communications equipment has bandwidth restrictions that can impact emergency response data sharing, especially in a post-detonation environment when communications are already stressed. Reliable modes of communications need to be developed and distributed.
      - Develop technologies to rapidly characterize an incident site and contaminated critical infrastructure/key resources (CIKR) to support emergency field operations, and function and operation of CIKR.
      - Develop local and national capability to rapidly assess consequences to public safety and the environment. Most radiation detection equipment currently in use is based upon routine radiation measurement needs for industry-related radiation safety. Scientific effort is needed to evaluate the applicability and most efficient use of this type of radiation

detection equipment for IND response needs. Scientific effort is also needed to evaluate and develop new technologies for radiation detection and measurement during an IND response.

b) Improve accuracy of models based upon incorporating detailed site information

   - Develop higher fidelity models of various standard building classes to assess the protection factors afforded against radioactive fallout. Improve the ability to model rubbeling and other blast damage effects in an urban environment with specific urban area geographies. Incorporate more realistic population demographics and time evolution of population densities.

5. **Research on Medical Response and Evacuee Care** were vital to three critical capability areas: mass evacuation and/or in-place protection, medical triage, and provide casualty and evacuee care:

a) Estimate expected injury types and medical countermeasure.

   - A key medical planning element is an estimate of the total number and type of injuries that may be encountered. This will need to be developed for a variety of yields and urban types to bound the potential range of effects and requires modeling that includes calculating the effects to people inside various structures.

b) Locate injured and consider extractions.

   - Planning deployment of rescue and triage resources requires estimates of where viable victims can be found and extraction considerations

c) Develop or acquire triage tools to determine potential radiation exposure.

   - Develop and improve the capability for triage of very large numbers of casualties, allocation of prompt therapeutics (e.g., severe physical injuries and radiation exposure), accurate field biodosimetry, and mass casualty care and management. The current capability can only handle a few radiation injuries at any one time.
   - Develop and make available improved therapeutics and diagnostics for radiation injury, including combined injuries. Develop and test a capability for triaging and sorting large numbers of casualties, allocating prompt therapeutics (e.g., for severe physical injuries and radiation exposure), getting accurate field biodosimetry, and caring for and managing mass casualties.

d) Address personnel decontamination issues and methods.

   - Technologies for definitive dose assessment are labor intensive and have low throughput. Population monitoring techniques and rapid bioassay and biodosimetric capability for accurate dose assessment for large numbers of people are needed to replace reliance on prodromal symptomology or lengthy dose reconstruction.
   - Develop long-term medical care and management capabilities, including population monitoring. Given the huge number of individuals an IND will affect, the ability to provide long-term care will be essential in saving lives and maintaining public health. Long-term care will require population monitoring (for decades) of those exposed to

radiation for potential latent diseases and psychological issues. They will also need shorter-term care for burns and injuries. Research is needed to characterize the expected health impacts on a post-IND population. Long-term patient care and monitoring strategies must also be developed.

e) Address the psychological effects on, and anticipated response of the public.

- Develop an empirically-based risk communication program for key decision makers. Countering detrimental social behavioral responses and assuring that the message transmitted by government officials is received and understood will require social research and testing of message content, delivery, comprehension, and appropriate response.
- Develop tools for assessment of social and psychological needs. There are no nationwide mechanisms in place for the immediate assessment of social and psychological harms and needs following a nuclear event. Data are likely to be anecdotal, collected by emergency workers whose focus and duties are other than the collection of such data, and gleaned from the media. A systematic method for assessing mental, behavioral, and physical health needs of impacted communities would enhance federal, state, tribal, and local planning and response activities. It would enable realignments of service provision as real-time data about needs emerge. It also would provide a rigorous platform for studying disaster- and terror-exposed populations that could be used to enhance preparedness and mitigation activities.

6. **Recovery and Restoration Research Areas** are required to support three critical capability areas: provide casualty and evacuee care, stabilize and control impacted area, and perform site recovery and restore essential functions.

a) Develop decontamination technologies and methodologies.

- Develop tools and technologies to rapidly restore critical infrastructure, along with a focus on efficient and effective long-term remediation and recovery.
- Develop capability to decontaminate critical infrastructure (e.g., transportation, power, water, sanitation, communications, public health, and essential government services).
  - Perform wide-area urban decontamination for permanent recovery and normal land use (e.g., high-value structures, businesses, residences, parks, and waterways). A critical early need after an IND incident is to restore infrastructure elements that support response activities along with public services. Gross decontamination and waste management techniques will aid rapid infrastructure recovery. Full recovery requires the meticulous decontamination of buildings and urban areas so they can be reoccupied. Technologies and guidance are needed to remove radioactive materials from urban infrastructure, businesses, and residences. Soils and surface water systems must be remediated. High-throughput laboratory analytical processes are required. Failure to effectively decontaminate and recover contaminated buildings and lands will result in razing or abandonment of the affected area. This priority should include research into

resilient building construction technology and pretreatments for high-value structures to aid decontamination efforts.

- Develop processes, guidelines, procedures, and tools for decontamination and cleanup (e.g., urban areas, businesses, residences (outdoor/indoor), rural assets) for long-term recovery of normal function.
- Develop processes, procedures, and tools to accomplish effective and efficient contaminated debris removal, management and disposal.

b) CIKR rapid return to service methods

- Develop processes, procedures, and tools to contain contaminants and control contaminant migration (including all migration vectors for contaminants such as water, re-suspension, people, and vehicles) in the immediate aftermath of an incident.

Research and Development

Currently research and development efforts related to a nuclear detonation focus on detonation prevention or forensics (Department of Homeland Security), medical countermeasures (Health and Human Services), Nuclear Incident Response Team improvements (Department of Energy), or long-term environmental decontamination (Environmental Protection Agency). The FY 2011 President's Budget added response and recovery as a priority funding area within DHS.

The fiscal year 2011 budget request proposes moving the Transformational & Applied Research Directorate from DNDO to S&T, effectively reconsolidating the research and development portfolio. Additionally, the FY 2011 budget requests $10 million for radiological and nuclear response and recovery research and development. FEMA and S&T are in the process of determining the highest priority response and recovery capability needs and developing the research programs to deliver those capabilities within available funds.

From: LIA02 Hoc
Sent: Thursday, March 24, 2011 9:02 AM
To: LIA03 Hoc
Subject: FW: First Japan Team
Attachments: 1st Quarter 2011 Dosimeter Badge Return Status

From: LIA02 Hoc
Sent: Thursday, March 24, 2011 9:02 AM
To: Liaison Japan
Subject: FW: First Japan Team

All returning Team Members,

Please follow the directions below and return your dosimetry to the Admin Services Desk. If you have any questions, please let us know.

Thank you,
Steve

From: O'Donnell, John
Sent: Thursday, March 24, 2011 8:57 AM
To: LIA02 Hoc
Cc: LIA03 Hoc; Pedersen, Roger
Subject: RE: First Japan Team

Lauren and/or Steve,
Attached is the standard dosimetry return message from Admin Services for NRC Headquarters dosimetry participants.

Please have the Japan team members issued dosimetry from the Op Center return them to the Admin Services Desk (OWFN 2F Lobby) by March 31, or as soon after as possible. The blue dosimeters (1Q11) are the ones due by March 31, 2011. The green dosimeters (2Q11) are not due until June 30, 2011.

If a team member already had their dosimetry, it should be returned using the individual's normal exchange process.

If any team member will be delayed in returning their dosimeter, have that individual notify their RSO or dosimetry coordinator and copy me. The message below indicates that 1Q11 dosimeters shouldn't be an issue, but I need to cover the possibilities.

Any further questions, please give me a call.
Thanks for the cooperation.

John O'Donnell
415-7908

From: LIA02 Hoc
Sent: Thursday, March 24, 2011 8:16 AM

KKKK-79

To: O'Donnell, John
Cc: LIA03 Hoc
Subject: RE: First Japan Team

John,

Where should they be returned to. I will inform them.

Steve

From: O'Donnell, John
Sent: Thursday, March 24, 2011 7:59 AM
To: LIA02 Hoc
Cc: LIA03 Hoc
Subject: RE: First Japan Team

Thank you Lauren,

Were the team members instructed to return their dosimeters to the Op Center (TWFN) or to the Admin Services Desk (OWFN)?

John

From: LIA02 Hoc
Sent: Thursday, March 24, 2011 2:27 AM
To: O'Donnell, John
Cc: LIA03 Hoc
Subject: First Japan Team

John – Brooke Smith is the last person departing from Japan on 3/31/2011 from the original team.

International Liaison Team

From: LIA02 Hoc
Sent: Thursday, March 24, 2011 8:16 AM
To: O'Donnell, John
Cc: LIA03 Hoc
Subject: RE: First Japan Team

John,

Where should they be returned to. I will inform them.

Steve

From: O'Donnell, John
Sent: Thursday, March 24, 2011 7:59 AM
To: LIA02 Hoc
Cc: LIA03 Hoc
Subject: RE: First Japan Team

Thank you Lauren,

Were the team members instructed to return their dosimeters to the Op Center (TWFN) or to the Admin Services Desk (OWFN)?

John

From: LIA02 Hoc
Sent: Thursday, March 24, 2011 2:27 AM
To: O'Donnell, John
Cc: LIA03 Hoc
Subject: First Japan Team

John – Brooke Smith is the last person departing from Japan on 3/31/2011 from the original team.

International Liaison Team

KKKK-80