From:	OST01 HOC
Sent:	Thursday, March 31, 2011 3:48 AM
To:	PMT02 Hoc; PMT11 Hoc; Hoc, PMT12; RST01 Hoc, ET07 Hoc
Cc:	FOIA Response.hoc Resource
Subject:	FW: Radiation level at Fukushima NO.1 NPP as of March 31,09:00'
Attachments:	image001.png; TEPCO-Rad Data at Plant-March 31, 0900.xlsx

From: HOO Hoc [mailto:HOO.Hoc@nrc.gov]
Sent: Thursday, March 31, 2011 3:47 AM
To: LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: Radiation level at Fukushima NO.1 NPP as of March 31,09:00'

From: JapanEmbassy, TaskForce[SMTP:JAPANEMBASSYTASKFORCE@STATE.GOV]
Sent: Thursday, March 31, 2011 3:45:48 AM
(b)(6)

Subject: FW: Radiation level at Fukushima NO 1 NPP as of March 31,09:00'
Auto forwarded by a Rule

fyi

on behalf of the Japan Emergency Command Center, +81-3-3224- 5533

Lynda Hinds
Staff Assistant to Ambassador John V. Roos
U.S. Embassy
1-10-5 Akasaka, Minato-ku
Tokyo 107-8420
Tel. (03) 3224- 5370

000/488

From: Mikako Sano (b)(6)
Sent: Saturday, March 26, 2011 1:35 PM
To: pemberWJ@nv.doe.gov; Morales, Russell A; Cherry, Ronald C; Duncan, Aleshia D; Walcott, Naomi; JapanEmbassy, TaskForce
Cc: russ@earthtabi.com; 'Akiko Chiba'; (b)(6) Sano, Mikako; Uchida, Koichi
Subject: Radiation level at Fukushima NO.1 NPP as of March 26, 0800

Attached is TEPCO's radiation level at Fukushima No.1 NPP of March 26, 08:00.

You can see TEPCO's original data on Fukushima No.1NPP and No.2 NPP in the web. Below
http://www.tepco.co.jp/en/nu/monitoring/index-e.html

Mikako Sano (remote)

From: Mikako Sano (b)(6)
Sent: Saturday, March 26, 2011 12:57 AM
To: 'pemberWJ@nv.doe.gov'; 'moralesRA@state.gov'; 'cherryrc@state.gov'; 'duncanad@state.gov'; 'Walcott, Naomi'; 'JapanEmbassyTaskForce@state.gov'; 'Uchidakx@state.gov'
Cc: 'russ@earthtabi.com'; 'Akiko Chiba'; (b)(6); 'Sano, Mikako'
Subject: RE: Radiation level at Fukushima NO.1 NPP as of March 22, 06:00

Attached is TEPCO's radiation level at Fukushima No.1 NPP of March 25, 06:00.
You can see TEPCO's original data on Fukushima NO.1NPP and No.2 NPP in the web. Below.
http://www.tepco.co.jp/en/nu/monitoring/index-e.html

Mikako Sano (remote)

From: Mikako Sano (b)(6)
Sent: Tuesday, March 22, 2011 12:39 PM
To: 'Mikako Sano'; 'pemberWJ@nv.doe.gov'; 'moralesRA@state.gov'; 'cherryrc@state.gov'; 'duncanad@state.gov'; 'Walcott, Naomi'; 'JapanEmbassyTaskForce@state.gov'; 'Uchidakx@state.gov'
Cc: 'russ@earthtabi.com'; 'Akiko Chiba'; (b)(6); 'Sano, Mikako'
Subject: Radiation level at Fukushima NO.1 NPP as of March 22, 06:00

Attached is TEPCO7s radiation level at Fukushima No1. NPP as of March 22, 06:00.

Mikako Sano (remote)

From: Mikako Sano (b)(6)
Sent: Tuesday, March 22, 2011 12:12 PM
To: 'pemberWJ@nv.doe.gov'; 'moralesRA@state.gov'; 'cherryrc@state.gov'; 'duncanad@state.gov'; 'Walcott, Naomi'; 'JapanEmbassyTaskForce@state.gov'
Cc: 'russ@earthtabi.com'; 'Akiko Chiba'; 'Sano, Mikako'; (b)(6)
Subject: R adiation level at Fukushima NO.1 NPP as of March 21, 23:50

Attached is TEPCO's radiation level at Fukushima No.1 NPP as of March 21, 23:50.

Mikako Sano (remote)

From: Mikako Sano (b)(6)
Sent: Monday, March 21, 2011 12:43 PM
To: 'pemberWJ@nv.doe.gov'; 'moralesRA@state.gov'; 'cherryrc@state.gov'; 'duncanad@state.gov'

Cc: 'russ@earthtabi.com'; 'Akiko Chiba'; 'Sano, Mikako'
Subject: Radiation level at Fukushima NO.1 NPP as of March 20, 23:50

Attached is radiation level at Fukushima No.1 NPP as of March 20, 23:50.

From: Mikako Sano (b)(6)
Sent: Sunday, March 20, 2011 6:38 PM
To: 'Mikako Sano'; 'pemberWJ@nv.doe.gov'; 'moralesRA@state.gov'; 'cherryrc@state.gov'; 'duncanad@state.gov'
Cc: 'russ@earthtabi.com'; 'Akiko Chiba'; 'Sano, Mikako'
Subject: Radiation level at Fukushima NO.1 NPP as of March 19, 23:30

Attached is radiation level at Fukushima No.1 NPP as of March 19 23:30

From: Mikako Sano (b)(6)
Sent: Sunday, March 20, 2011 10:20 AM
To: 'pemberWJ@nv.doe.gov'; 'moralesRA@state.gov'; 'cherryrc@state.gov'; 'duncanad@state.gov'
Cc: 'russ@earthtabi.com'; 'Akiko Chiba'; 'Sano, Mikako'
Subject: Radiation level at Fukushima NO.1 NPP as of March 18 23:50

Attached is radiation level at Fukushima No.1 as of March 18, 23:50.

Mikako Sano

From: Mikako Sano (b)(6)
Sent: Saturday, March 19, 2011 1:50 PM
To: 'remberWJ@nv.doe.gov'; 'moralesRA@state.gov'; 'cAherryrc@state.gov'; 'duncanad@state.gov'
Cc: 'russ@earthtabi.com'; 'Akiko Chiba'; 'Sano, Mikako'
Subject: RE: Radiation level at Fukushima NO.1 NPP as of March 18 12:00

From: Mikako Sano (b)(6)
Sent: Saturday, March 19, 2011 1:03 PM
To: 'remberWJ@nv.doe.gov'; 'moralesRA@state.gov'; 'cherryrc@state.gov'; 'duncanad@state.gov'
Cc: 'russ@earthtabi.com'; 'Akiko Chiba'; 'Sano, Mikako'
Subject: Radiation level at Fukushima NO.1 NPP as of March 18 12:00

Attached is radiation level at Fukushima No.1 NPP as of March 18, 12:00.
A limited addressees are included in the list because I'm sending e-mails from home. Please share the info with officials concerned.

Thanks,

Mikako Sano

Twitter.com/AmbassadorRoos

From: Sano, Mikako
Sent: Thursday, March 31, 2011 4:26 PM
To: 'pemberWJ@nv.doe.gov'; Morales, Russell A; Cherry, Ronald C; Duncan, Aleshia D; JapanEmbassy, TaskForce
Cc: 'russ@earthtabi.com'; Uchida, Koichi; Walcott, Naomi; 'Chiba, Akiko'; (b)(6)
Subject: Radiation level at Fukushima NO.1 NPP as of March 31,09:00'

Attached is TEPCO's radiation level at Fukushima No.1 NPP of March 31, 09:00.

You can see TEPCO's original data on Fukushima No.1NPP and No.2 NPP in the web. Below.
http://www.tepco.co.jp/en/nu/monitoring/index-e.html

Russ, I would like to inform you that I will suspend updates of the data because of lack of man power. Chiba-san of NSF has been kindly sharing the work with me, but she will be out of the country next week. If you need to keep updating the data, please let me know. I will consult with my supervisor to find out the solution.

Mikako Sano

From: Sano, Mikako
Sent: Wednesday, March 30, 2011 3:24 PM
To: 'pemberWJ@nv.doe.gov'; Morales, Russell A; Cherry, Ronald C; Duncan, Aleshia D; JapanEmbassy, TaskForce
Cc: 'russ@earthtabi.com'; 'Akiko Chiba'; (b)(6) Uchida, Koichi; Walcott, Naomi
Subject: Radiation level at Fukushima NO.1 NPP as of March 30,09:00

Attached is TEPCO's radiation level at Fukushima No.1 NPP of March 30, 09:00.

You can see TEPCO's original data on Fukushima No.1NPP and No.2 NPP in the web. Below.
http://www.tepco.co.jp/en/nu/monitoring/index-e.html

Mikako Sano

From: Sano, Mikako
Sent: Tuesday, March 29, 2011 10:03 AM
To: pemberWJ@nv.doe.gov; Morales, Russell A; Cherry, Ronald C; Duncan, Aleshia D; Walcott, Naomi; JapanEmbassy, TaskForce
Cc: russ@earthtabi.com; 'Akiko Chiba'; (b)(6) Uchida, Koichi
Subject: Radiation level at Fukushima NO.1 NPP as of March 29,09:00

Attached is TEPCO's radiation level at Fukushima No.1 NPP of March 28, 09:00.

You can see TEPCO's original data on Fukushima No.1NPP and No.2 NPP in the web Below.
http://www.tepco.co.jp/en/nu/monitoring/index-e.html

Mikako Sano

From: Mikako Sano (b)(6)
Sent: Saturday, March 26, 2011 1:35 PM
To: pemberWJ@nv.doe.gov; Morales, Russell A; Cherry, Ronald C; Duncan, Aleshia D; Walcott, Naomi; JapanEmbassy, TaskForce
Cc: russ@earthtabi.com; 'Akiko Chiba' (b)(6) Sano, Mikako; Uchida, Koichi
Subject: Radiation level at Fukushima NO.1 NPP as of March 26, 0800

Attached is TEPCO's radiation level at Fukushima No.1 NPP of March 26, 08:00.

You can see TEPCO's original data on Fukushima No.1NPP and No.2 NPP in the web. Below
http://www.tepco.co.jp/en/nu/monitoring/index-e.html

Mikako Sano (remote)

From: Mikako Sano (b)(6)
Sent: Saturday, March 26, 2011 12:57 AM
To: 'pemberWJ@nv.doe.gov'; 'moralesRA@state.gov'; 'cherryrc@state.gov'; 'duncanad@state.gov'; 'Walcott, Naomi'; 'JapanEmbassyTaskForce@state.gov'; 'Uchidakx@state.gov'
Cc: 'russ@earthtabi.com'; 'Akiko Chiba'; (b)(6); 'Sano, Mikako'
Subject: RE: Radiation level at Fukushima NO.1 NPP as of March 22, 06:00

Attached is TEPCO's radiation level at Fukushima No.1 NPP of March 25, 06:00.
You can see TEPCO's original data on Fukushima NO.1NPP and No.2 NPP in the web. Below.
http://www.tepco.co.jp/en/nu/monitoring/index-e.html

Mikako Sano (remote)

From: Mikako Sano (b)(6)
Sent: Tuesday, March 22, 2011 12:39 PM
To: 'Mikako Sano'; 'pemberWJ@nv.doe.gov'; 'moralesRA@state.gov'; 'cherryrc@state.gov'; 'duncanad@state.gov'; 'Walcott, Naomi'; 'JapanEmbassyTaskForce@state.gov'; 'Uchidakx@state.gov'
Cc: 'russ@earthtabi.com'; 'Akiko Chiba'; (b)(6); 'Sano, Mikako'
Subject: Radiation level at Fukushima NO.1 NPP as of March 22, 06:00

Attached is TEPCO7s radiation level at Fukushima No1. NPP as of March 22, 06:00.

Mikako Sano (remote)

From: Mikako Sano (b)(6)
Sent: Tuesday, March 22, 2011 12:12 PM
To: 'pemberWJ@nv.doe.gov'; 'moralesRA@state.gov'; 'cherryrc@state.gov'; 'duncanad@state.gov'; 'Walcott, Naomi'; 'JapanEmbassyTaskForce@state.gov'
Cc: 'russ@earthtabi.com'; 'Akiko Chiba'; 'Sano, Mikako'; (b)(6)
Subject: R adiation level at Fukushima NO.1 NPP as of March 21, 23:50

Attached is TEPCO's radiation level at Fukushima No.1 NPP as of March 21, 23:50.

Mikako Sano (remote)

From: Mikako Sano (b)(6)
Sent: Monday, March 21, 2011 12:43 PM
To: 'pemberWJ@nv.doe.gov'; 'moralesRA@state.gov'; 'cherryrc@state.gov'; 'duncanad@state.gov'
Cc: 'russ@earthtabi.com'; 'Akiko Chiba'; 'Sano, Mikako'
Subject: Radiation level at Fukushima NO.1 NPP as of March 20, 23:50

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From: Mikako Sano (b)(6)
Sent: Sunday, March 20, 2011 6:38 PM
To: 'Mikako Sano'; 'pemberWJ@nv.doe.gov'; 'moralesRA@state.gov'; 'cherryrc@state.gov'; 'duncanad@state.gov'
Cc: 'russ@earthtabi.com'; 'Akiko Chiba'; 'Sano, Mikako'
Subject: Radiation level at Fukushima NO.1 NPP as of March 19, 23:30

Attached is radiation level at Fukushima No.1 NPP as of March 19 23:30

From: Mikako Sano (b)(6)
Sent: Sunday, March 20, 2011 10:20 AM
To: 'pemberWJ@nv.doe.gov'; 'moralesRA@state.gov'; 'cherryrc@state.gov'; 'duncanad@state.gov'
Cc: 'russ@earthtabi.com'; 'Akiko Chiba'; 'Sano, Mikako'
Subject: Radiation level at Fukushima NO.1 NPP as of March 18 23:50

Attached is radiation level at Fukushima No.1 as of March 18, 23:50

Mikako Sano

From: Mikako Sano (b)(6)
Sent: Saturday, March 19, 2011 1:50 PM
To: 'remberWJ@nv.doe.gov'; 'moralesRA@state.gov'; 'cAherryrc@state.gov'; 'duncanad@state.gov'
Cc: 'russ@earthtabi.com'; 'Akiko Chiba'; 'Sano, Mikako'
Subject: RE: Radiation level at Fukushima NO.1 NPP as of March 18 12:00

From: Mikako Sano (b)(6)
Sent: Saturday, March 19, 2011 1:03 PM
To: 'remberWJ@nv.doe.gov'; 'moralesRA@state.gov'; 'cherryrc@state.gov'; 'duncanad@state.gov'
Cc: 'russ@earthtabi.com'; 'Akiko Chiba'; 'Sano, Mikako'
Subject: Radiation level at Fukushima NO.1 NPP as of March 18 12:00

Attached is radiation level at Fukushima No.1 NPP as of March 18, 12:00.
A limited addressees are included in the list because I'm sending e-mails from home. Please share the info with officials concerned.

Thanks.

Mikako Sano

【別紙】福島第一原子力発電所モニタリングカーによる計測状況

Radaitaion data around Fukushima No.1 NPP by monitoring vehicle

Date	Time	Location	Location
3/11	P.M. 5:30	体育館付近	around Gym
3/11	P.M. 5:40	正門付近	around Front Gate
3/11	P.M. 5:50	管理棟	admin. Bldg.
3/11	P.M. 6:45	ＭＰ－６	
3/11	P.M. 7:00	ＭＰ－７	
3/11	P.M. 7:10	ＭＰ－５	
3/11	P.M. 7:15	ＭＰ－４	
3/11	P.M. 7:20	ＭＰ－３	
3/11	P.M. 7:52	ＭＰ－６	
3/11	P.M. 8:00	ＭＰ－６	
3/11	P.M. 8:10	ＭＰ－６	
3/11	P.M. 8:20	ＭＰ－６	
3/11	P.M. 9:30	正門付近	around Front Gate
3/11	P.M. 9:40	正門付近	around Front Gate
3/11	P.M. 9:50	正門付近	around Front Gate
3/11	P.M. 10:00	正門付近	around Front Gate
3/11	P.M. 10:10	正門付近	around Front Gate
3/11	P.M. 10:20	正門付近	around Front Gate
3/11	P.M. 10:30	正門付近	around Front Gate
3/11	P.M. 10:40	正門付近	around Front Gate
3/11	P.M. 10:50	正門付近	around Front Gate
3/11	P.M. 11:00	正門付近	around Front Gate
3/11	P.M. 11:10	正門付近	around Front Gate
3/11	P.M. 11:20	正門付近	around Front Gate
3/11	P.M. 11:40	正門付近	around Front Gate
3/11	P.M. 11:50	正門付近	around Front Gate
3/12	A.M.0:00	正門付近	around Front Gate
3/12	A.M. 0:10	正門	Front Gate
3/12	A.M. 0:20	正門	Front Gate
3/12	A.M. 0:30	正門	Front Gate
3/12	A.M. 0:40	正門	Front Gate
3/12	A.M. 1:40	正門	Front Gate
3/12	A.M. 1:50	正門	Front Gate
3/12	A.M. 2:00	正門	Front Gate
3/12	A.M. 2:10	正門	Front Gate
3/12	A.M. 2:20	正門	Front Gate
3/12	A.M. 2:30	正門	Front Gate
3/12	A.M. 2:40	正門	Front Gate
3/12	A.M. 2:50	正門	Front Gate

3/12	A.M. 3:00	正門	Front Gate
3/12	A.M. 3:10	正門	Front Gate
3/12	A.M. 3:20	正門	Front Gate
3/12	A.M. 3:30	正門	Front Gate
3/12	A.M. 3:40	正門	Front Gate
3/12	A.M. 3:50	正門	Front Gate
3/12	A.M. 4:00	正門	Front Gate
3/12	A.M. 4:40	正門	Front Gate
3/12	A.M. 4:50	正門	Front Gate
3/12	A.M. 5:00	正門	Front Gate
3/12	A.M. 5:10	正門	Front Gate
3/12	A.M.6:25	ＭＰ－８付近	around MP-8
3/12	A.M. 6:30	正門	Front Gate
3/12	A.M.6:30	ＭＰ－８付近	around MP-8
3/12	A.M. 6:40	正門	Front Gate
3/12	A.M.7:35	ＭＰ－８付近	around MP-8
3/12	A.M.7:40	ＭＰ－８付近	around MP-8
3/12	A.M.7:45	ＭＰ－８付近	around MP-8
3/12	A.M. 7:50	正門	Front Gate
3/12	A.M.7:50	ＭＰ－８付近	around MP-8
3/12	A.M.7:55	ＭＰ－８付近	around MP-8
3/12	A.M.8:00	ＭＰ－８付近	around MP-8
3/12	A.M. 8:00	正門	Front Gate
3/12	A.M.8:05	ＭＰ－８付近	around MP-8
3/12	A.M. 8:10	正門	Front Gate
3/12	A.M.8:15	ＭＰ－８付近	around MP-8
3/12	A.M. 8:20	正門	Front Gate
3/12	A.M.8:20	ＭＰ－８付近	around MP-8
3/12	A.M.8:25	ＭＰ－８付近	around MP-8
3/12	A.M.8:30	ＭＰ－８付近	around MP-8
3/12	A.M.8:35	ＭＰ－８付近	around MP-8
3/12	A.M. 8:40	正門	Front Gate
3/12	A.M.8:40	ＭＰ－８付近	around MP-8
3/12	A.M.8:45	ＭＰ－８付近	around MP-8
3/12	A.M. 8:50	正門	Front Gate
3/12	A.M.9:10	ＭＰ－８付近	around MP-8
3/12	A.M.9:15	ＭＰ－８付近	around MP-8
3/12	A.M.9:20	ＭＰ－８付近	around MP-8
3/12	A.M.9:25	ＭＰ－８付近	around MP-8
3/12	A.M. 9:30	正門	Front Gate
3/12	A.M.9:30	ＭＰ－８付近	around MP-8
3/12	A.M.9:35	ＭＰ－８付近	around MP-8
3/12	A.M.9:40	ＭＰ－８付近	around MP-8
3/12	A.M.9:45	ＭＰ－８付近	around MP-8
3/12	A.M. 9:50	正門	Front Gate
3/12	A.M.9:50	ＭＰ－８付近	around MP-8
3/12	A.M.9:55	ＭＰ－８付近	around MP-8

3/12	A.M.10:00	正門	Front Gate
3/12	A.M.10:00	ＭＰ－８付近	around MP-8
3/12	A.M.10:05	ＭＰ－８付近	around MP-8
3/12	A.M.10:10	正門	Front Gate
3/12	A.M.10:10	ＭＰ－８付近	around MP-8
3/12	A.M.10:15	ＭＰ－８付近	around MP-8
3/12	A.M.10:20	正門	Front Gate
3/12	A.M.10:20	ＭＰ－８付近	around MP-8
3/12	A.M.10:25	ＭＰ－８付近	around MP-8
3/12	A.M.10:30	正門	Front Gate
3/12	A.M.10:30	ＭＰ－８付近	around MP-8
3/12	A.M.10:35	ＭＰ－８付近	around MP-8
3/12	A.M.10:40	正門	Front Gate
3/12	A.M.10:45	ＭＰ－８付近	around MP-8
3/12	P.M. 10:50	正門	Front Gate
3/12	P.M. 10:50	ＭＰ－８付近	around MP-8
3/12	A.M.11:00	正門	Front Gate
3/12	A.M.11:00	ＭＰ－８付近	around MP-8
3/12	A.M.11:10	正門	Front Gate
3/12	A.M.11:10	ＭＰ－８付近	around MP-8
3/12	A.M.11:20	正門	Front Gate
3/12	A.M.11:20	ＭＰ－８付近	around MP-8
3/12	A.M.11:30	正門	Front Gate
3/12	A.M.11:30	ＭＰ－８付近	around MP-8
3/12	A.M.11:40	正門	Front Gate
3/12	A.M.11:40	ＭＰ－８付近	around MP-8
3/12	A.M.11:50	正門	Front Gate
3/12	A.M.11:50	ＭＰ－８付近	around MP-8
3/12	P.M. 0:00	正門	Front Gate
3/12	P.M. 0:00	ＭＰ－８付近	around MP-8
3/12	P.M. 0:05	ＭＰ－８付近	around MP-8
3/12	P.M. 0:10	正門	Front Gate
3/12	A.M.0:10	ＭＰ－８付近	around MP-8
3/12	P.M. 0:15	ＭＰ－８付近	around MP-8
3/12	P.M. 0:20	正門	Front Gate
3/12	P.M. 0:20	ＭＰ－８付近	around MP-8
3/12	P.M. 0:25	ＭＰ－８付近	around MP-8
3/12	P.M. 0:30	正門	Front Gate
3/12	P.M. 0:30	ＭＰ－８付近	around MP-8
3/12	P.M. 0:40	正門	Front Gate
3/12	P.M. 0:40	ＭＰ－８付近	around MP-8
3/12	P.M. 0:50	正門	Front Gate
3/12	P.M. 0:50	ＭＰ－８付近	around MP-8
3/12	P.M. 1:00	正門	Front Gate
3/12	P.M. 1:00	ＭＰ－８付近	around MP-8
3/12	P.M. 1:10	正門	Front Gate
3/12	P.M. 1:10	ＭＰ－８付近	around MP-8

3/12	P.M. 1:20	正門	Front Gate
3/12	P.M. 1:30	ＭＰ－８付近	around MP-8
3/12	P.M. 1:40	正門	Front Gate
3/12	P.M. 1:40	ＭＰ－８付近	around MP-8
3/12	P.M. 1:50	ＭＰ－８付近	around MP-8
3/12	P.M. 1:50	正門	Front Gate
3/12	P.M. 1:55	ＭＰ－８付近	around MP-8
3/12	P.M. 2:00	正門	Front Gate
3/12	P.M. 2:00	ＭＰ－８付近	around MP-8
3/12	P.M. 2:10	正門	Front Gate
3/12	P.M. 2:10	ＭＰ－８付近	around MP-8
3/12	P.M. 2:20	正門	Front Gate
3/12	P.M. 2:20	ＭＰ－８付近	around MP-8
3/12	P.M. 2:30	正門	Front Gate
3/12	P.M. 2:30	ＭＰ－８付近	around MP-8
3/12	P.M. 2:40	正門	Front Gate
3/12	P.M. 2:40	ＭＰ－８付近	around MP-8
3/12	P.M. 2:50	正門	Front Gate
3/12	P.M. 2:50	ＭＰ－８付近	around MP-8
3/12	P.M. 3:00	正門	Front Gate
3/12	P.M. 3:00	ＭＰ－８付近	around MP-8
3/12	P.M. 3:10	正門	Front Gate
3/12	P.M. 3:10	ＭＰ－８付近	around MP-8
3/12	P.M. 3:20	正門	Front Gate
3/12	P.M. 3:20	ＭＰ－８付近	around MP-8
3/12	P.M. 3:30	正門	Front Gate
3/12	P.M. 3:30	ＭＰ－８付近	around MP-8
3/12	P.M. 3:40	正門	Front Gate
3/12	P.M. 3:40	ＭＰ－８付近	around MP-8
3/12	P.M. 3:50	正門	Front Gate
3/12	P.M. 3:50	ＭＰ－８付近	around MP-8
3/12	P.M. 4:00	正門	Front Gate
3/12	P.M. 4:00	ＭＰ－８付近	around MP-8
3/12	P.M. 4:10	正門	Front Gate
3/12	P.M. 4:10	ＭＰ－８付近	around MP-8
3/12	P.M. 4:20	正門	Front Gate
3/12	P.M. 4:20	ＭＰ－８付近	around MP-8
3/12	P.M. 4:30	正門	Front Gate
3/12	P.M. 4:30	ＭＰ－８付近	around MP-8
3/12	P.M. 4:40	正門	Front Gate
3/12	P.M. 4:40	ＭＰ－８付近	around MP-8
3/12	P.M. 4:50	正門	Front Gate
3/12	P.M. 4:50	ＭＰ－８付近	around MP-8
3/12	P.M. 7:25	ＭＰ－８付近	around MP-8
3/12	P.M. 7:50	正門	Front Gate
3/12	P.M. 8:00	正門	Front Gate
3/12	P.M. 8:00	ＭＰ－８付近	around MP-8

3/12	P.M. 8:10	正門	Front Gate
3/12	P.M. 8:10	ＭＰ－８付近	around MP-8
3/12	P.M. 8:20	正門	Front Gate
3/12	P.M. 8:20	ＭＰ－８付近	around MP-8
3/12	P.M. 8:30	正門	Front Gate
3/12	P.M. 8:40	ＭＰ－８付近	around MP-8
3/12	P.M. 8:50	ＭＰ－８付近	around MP-8
3/12	P.M. 9:00	ＭＰ－８付近	around MP-8
3/12	P.M. 9:10	ＭＰ－８付近	around MP-8
3/12	P.M. 9:20	ＭＰ－８付近	around MP-8
3/12	P.M. 9:30	ＭＰ－８付近	around MP-8
3/12	P.M. 9:40	ＭＰ－８付近	around MP-8
3/12	P.M. 9:50	正門	Front Gate
3/12	P.M. 9:50	ＭＰ－８付近	around MP-8
3/12	P.M. 10:00	正門	Front Gate
3/12	P.M. 10:00	ＭＰ－８付近	around MP-8
3/12	P.M. 10:10	正門	Front Gate
3/12	P.M. 10:20	正門	Front Gate
3/12	P.M. 10:30	正門	Front Gate
3/12	P.M. 10:30	ＭＰ－８付近	around MP-8
3/12	P.M. 10:35	ＭＰ－８付近	around MP-8
3/12	P.M. 10:40	正門	Front Gate
3/12	P.M. 10:40	ＭＰ－８付近	around MP-8
3/12	P.M. 10:50	正門	Front Gate
3/12	P.M. 10:50	ＭＰ－８付近	around MP-8
3/12	P.M. 11:00	正門	Front Gate
3/12	P.M. 11:00	ＭＰ－８付近	around MP-8
3/12	P.M. 11:10	正門	Front Gate
3/12	P.M. 11:20	正門	Front Gate
3/12	P.M. 11:30	正門	Front Gate
3/12	P.M. 11:30	ＭＰ－８付近	around MP-8
3/12	P.M. 11:40	正門	Front Gate
3/12	P.M. 11:50	正門	Front Gate
3/13	A.M. 0:00	正門	Front Gate
3/13	A.M.0:00	ＭＰ－８付近	around MP-8
3/13	A.M. 0:10	正門	Front Gate
3/13	A.M.0:10	ＭＰ－８付近	around MP-8
3/13	A.M. 0:20	正門	Front Gate
3/13	A.M.0:20	ＭＰ－８付近	around MP-8
3/13	A.M. 0:30	正門	Front Gate
3/13	A.M.0:30	ＭＰ－８付近	around MP-8
3/13	A.M. 0:40	正門	Front Gate
3/13	A.M.0:40	ＭＰ－８付近	around MP-8
3/13	A.M. 0:50	正門	Front Gate
3/13	A.M.0:50	ＭＰ－８付近	around MP-8
3/13	A.M. 1:00	正門	Front Gate
3/13	A.M.1:00	ＭＰ－８付近	around MP-8

3/13	A.M. 1:10	正門	Front Gate
3/13	A.M.1:10	ＭＰ－８付近	around MP-8
3/13	A.M. 1:20	正門	Front Gate
3/13	A.M.1:20	ＭＰ－８付近	around MP-8
3/13	A.M. 1:30	正門	Front Gate
3/13	A.M.1:30	ＭＰ－８付近	around MP-8
3/13	A.M. 1:40	正門	Front Gate
3/13	A.M.1:40	ＭＰ－８付近	around MP-8
3/13	A.M. 1:50	正門	Front Gate
3/13	A.M.1:50	ＭＰ－８付近	around MP-8
3/13	A.M. 2:00	正門	Front Gate
3/13	A.M.2:00	ＭＰ－８付近	around MP-8
3/13	A.M. 2:10	正門	Front Gate
3/13	A.M.2:10	ＭＰ－８付近	around MP-8
3/13	A.M. 2:20	正門	Front Gate
3/13	A.M.2:20	ＭＰ－８付近	around MP-8
3/13	A.M. 2:30	正門	Front Gate
3/13	A.M.2:30	ＭＰ－８付近	around MP-8
3/13	A.M. 2:40	正門	Front Gate
3/13	A.M.2:40	ＭＰ－８付近	around MP-8
3/13	A.M. 2:50	正門	Front Gate
3/13	A.M.2:50	ＭＰ－８付近	around MP-8
3/13	A.M. 3:00	正門	Front Gate
3/13	A.M. 3:10	正門	Front Gate
3/13	A.M. 3:20	正門	Front Gate
3/13	A.M. 3:30	正門	Front Gate
3/13	A.M. 3:40	正門	Front Gate
3/13	A.M.3:40	ＭＰ－８付近	around MP-8
3/13	A.M. 3:50	正門	Front Gate
3/13	A.M.3:50	ＭＰ－８付近	around MP-8
3/13	A.M. 4:00	正門	Front Gate
3/13	A.M.4:00	ＭＰ－８付近	around MP-8
3/13	A.M. 4:10	正門	Front Gate
3/13	A.M.4:10	ＭＰ－８付近	around MP-8
3/13	A.M. 4:20	正門	Front Gate
3/13	A.M.4:20	ＭＰ－８付近	around MP-8
3/13	A.M. 4:30	正門	Front Gate
3/13	A.M.4:30	ＭＰ－８付近	around MP-8
3/13	A.M. 4:40	正門	Front Gate
3/13	A.M.4:40	ＭＰ－８付近	around MP-8
3/13	A.M.4:50	正門	
3/13	A.M.4:50	ＭＰ－８付近	around MP-8
3/13	A.M. 5:00	正門	Front Gate
3/13	A.M.5:00	ＭＰ－８付近	around MP-8
3/13	A.M. 5:10	正門	Front Gate
3/13	A.M.5:10	ＭＰ－８付近	around MP-8
3/13	A.M. 5:20	正門	Front Gate

3/13	A.M.5:20	ＭＰ－８付近	around MP-8
3/13	A.M. 5:30	正門	Front Gate
3/13	A.M.5:30	ＭＰ－８付近	around MP-8
3/13	A.M. 5:40	正門	Front Gate
3/13	A.M.5:40	ＭＰ－８付近	around MP-8
3/13	A.M. 5:50	正門	Front Gate
3/13	A.M.5:50	ＭＰ－８付近	around MP-8
3/13	A.M. 6:00	正門	Front Gate
3/13	A.M.6:00	ＭＰ－８付近	around MP-8
3/13	A.M. 6:10	正門	Front Gate
3/13	A.M.6:10	ＭＰ－８付近	around MP-8
3/13	A.M. 6:20	正門	Front Gate
3/13	A.M.6:20	ＭＰ－８付近	around MP-8
3/13	A.M. 6:30	正門	Front Gate
3/13	A.M.6:30	ＭＰ－８付近	around MP-8
3/13	A.M. 6:40	正門	Front Gate
3/13	A.M.6:40	ＭＰ－８付近	around MP-8
3/13	A.M. 6:50	正門	Front Gate
3/13	A.M.6:50	ＭＰ－８付近	around MP-8
3/13	A.M. 7:00	正門	Front Gate
3/13	A.M.7:00	ＭＰ－８付近	around MP-8
3/13	A.M. 7:10	正門	Front Gate
3/13	A.M.7:10	ＭＰ－８付近	around MP-8
3/13	A.M. 7:20	正門	Front Gate
3/13	A.M.7:20	ＭＰ－８付近	around MP-8
3/13	A.M. 7:30	正門	Front Gate
3/13	A.M.7:30	ＭＰ－８付近	around MP-8
3/13	A.M. 7:40	正門	Front Gate
3/13	A.M. 7:50	正門	Front Gate
3/13	A.M. 8:00	正門	Front Gate
3/13	A.M. 8:10	正門	Front Gate
3/13	A.M.8:10	ＭＰ－１付近	around MP-1
3/13	A.M. 8:20	正門	Front Gate
3/13	A.M.8:20	ＭＰ－１付近	around MP-1
3/13	A.M. 8:30	正門	Front Gate
3/13	A.M.8:30	ＭＰ－１付近	around MP-1
3/13	A.M. 8:40	正門	Front Gate
3/13	A.M.8:40	ＭＰ－１付近	around MP-1
3/13	A.M. 8:50	正門	Front Gate
3/13	A.M.8:50	ＭＰ－１付近	around MP-1
3/13	A.M. 9:00	正門	Front Gate
3/13	A.M.9:00	ＭＰ－１付近	around MP-1
3/13	A.M.9:00	ＭＰ－４付近	aournd MP-4
3/13	A.M. 9:10	正門	Front Gate
3/13	A.M.9:10	ＭＰ－１付近	around MP-1
3/13	A.M.9:10	ＭＰ－４付近	aournd MP-4
3/13	A.M. 9:20	正門	Front Gate

3/13	A.M.9:20	ＭＰ－１付近	around MP-1
3/13	A.M.9:20	ＭＰ－４付近	aournd MP-4
3/13	A.M. 9:30	正門	Front Gate
3/13	A.M.9:30	ＭＰ－１付近	around MP-1
3/13	A.M.9:30	ＭＰ－４付近	aournd MP-4
3/13	A.M.9:40	ＭＰ－１付近	around MP-1
3/13	A.M.9:40	ＭＰ－４付近	aournd MP-4
3/13	A.M.9:50	ＭＰ－１付近	around MP-1
3/13	A.M.9:50	ＭＰ－４付近	aournd MP-4
3/13	A.M.10:00	正門	Front Gate
3/13	A.M.10:00	ＭＰ－１付近	around MP-1
3/13	A.M.10:00	ＭＰ－４付近	aournd MP-4
3/13	A.M.10:10	正門	Front Gate
3/13	A.M.10:10	ＭＰ－１付近	around MP-1
3/13	A.M.10:10	ＭＰ－４付近	aournd MP-4
3/13	A.M.10:20	正門	Front Gate
3/13	A.M.10:20	ＭＰ－１付近	around MP-1
3/13	A.M.10:20	ＭＰ－４付近	aournd MP-4
3/13	A.M.10:30	正門	Front Gate
3/13	A.M.10:30	ＭＰ－１付近	around MP-1
3/13	A.M.10:30	ＭＰ－４付近	aournd MP-4
3/13	A.M.10:40	正門	Front Gate
3/13	A.M.10:40	ＭＰ－１付近	around MP-1
3/13	A.M.10:40	ＭＰ－４付近	aournd MP-4
3/13	A.M.10:50	正門	Front Gate
3/13	A.M.10:50	ＭＰ－１付近	around MP-1
3/13	A.M.10:50	ＭＰ－４付近	aournd MP-4
3/13	A.M.11:00	正門	Front Gate
3/13	A.M.11:00	ＭＰ－１付近	around MP-1
3/13	A.M.11:00	ＭＰ－４付近	aournd MP-4
3/13	A.M.11:10	正門	Front Gate
3/13	A.M.11:10	ＭＰ－１付近	around MP-1
3/13	A.M.11:10	ＭＰ－４付近	aournd MP-4
3/13	A.M.11:20	正門	Front Gate
3/13	A.M.11:20	ＭＰ－１付近	around MP-1
3/13	A.M.11:20	ＭＰ－４付近	aournd MP-4
3/13	A.M.11:30	正門	Front Gate
3/13	A.M.11:30	ＭＰ－１付近	around MP-1
3/13	A.M.11:30	ＭＰ－４付近	aournd MP-4
3/13	A.M.11:40	正門	Front Gate
3/13	A.M.11:40	ＭＰ－１付近	around MP-1
3/13	A.M.11:40	ＭＰ－４付近	aournd MP-4
3/13	A.M.11:50	正門	Front Gate
3/13	A.M.11:50	ＭＰ－１付近	around MP-1
3/13	A.M.11:50	ＭＰ－４付近	aournd MP-4
3/13	P.M. 0:00	正門	Front Gate
3/13	P.M. 0:00	ＭＰ－１付近	around MP-1

3/13	P.M. 0:00	ＭＰ－４付近	aournd MP-4
3/13	P.M. 0:10	正門	Front Gate
3/13	P.M. 0:10	ＭＰ－１付近	around MP-1
3/13	P.M. 0:10	ＭＰ－４付近	aournd MP-4
3/13	P.M. 0:20	正門	Front Gate
3/13	P.M. 0:20	ＭＰ－１付近	around MP-1
3/13	P.M. 0:20	ＭＰ－４付近	aournd MP-4
3/13	P.M. 0:30	正門	Front Gate
3/13	P.M. 0:30	ＭＰ－１付近	around MP-1
3/13	P.M. 0:30	ＭＰ－４付近	aournd MP-4
3/13	P.M. 0:40	正門	Front Gate
3/13	P.M. 0:40	ＭＰ－１付近	around MP-1
3/13	P.M. 0:40	ＭＰ－４付近	aournd MP-4
3/13	P.M. 0:50	正門	Front Gate
3/13	P.M. 0:50	ＭＰ－１付近	around MP-1
3/13	P.M. 0:50	ＭＰ－４付近	aournd MP-4
3/13	P.M. 1:00	正門	Front Gate
3/13	P.M. 1:00	ＭＰ－１付近	around MP-1
3/13	P.M. 1:00	ＭＰ－４付近	aournd MP-4
3/13	P.M. 1:10	正門	Front Gate
3/13	P.M. 1:10	ＭＰ－１付近	around MP-1
3/13	P.M. 1:10	ＭＰ－４付近	aournd MP-4
3/13	P.M. 1:20	正門	Front Gate
3/13	P.M. 1:20	ＭＰ－１付近	around MP-1
3/13	P.M. 1:20	ＭＰ－４付近	aournd MP-4
3/13	P.M. 1:30	正門	Front Gate
3/13	P.M. 1:30	ＭＰ－１付近	around MP-1
3/13	P.M. 1:30	ＭＰ－４付近	aournd MP-4
3/13	P.M. 1:40	正門	Front Gate
3/13	P.M. 1:40	ＭＰ－１付近	around MP-1
3/13	P.M. 1:40	ＭＰ－４付近	aournd MP-4
3/13	P.M. 1:50	正門	Front Gate
3/13	P.M. 1:50	ＭＰ－１付近	around MP-1
3/13	P.M. 1:50	ＭＰ－４付近	aournd MP-4
3/13	P.M. 2:00	正門	Front Gate
3/13	P.M. 2:00	ＭＰ－１付近	around MP-1
3/13	P.M. 2:00	ＭＰ－４付近	aournd MP-4
3/13	P.M. 2:10	正門	Front Gate
3/13	P.M. 2:10	ＭＰ－１付近	around MP-1
3/13	P.M. 2:10	ＭＰ－４付近	aournd MP-4
3/13	P.M. 2:20	正門	Front Gate
3/13	P.M. 2:20	ＭＰ－１付近	around MP-1
3/13	P.M. 2:20	ＭＰ－４付近	aournd MP-4
3/13	P.M. 2:30	正門	Front Gate
3/13	P.M. 2:30	ＭＰ－１付近	around MP-1
3/13	P.M. 2:30	ＭＰ－４付近	aournd MP-4
3/13	P.M. 2:40	正門	Front Gate

3/13	P.M. 2:40	ＭＰ－１付近	around MP-1
3/13	P.M. 2:40	ＭＰ－４付近	aournd MP-4
3/13	P.M. 2:50	正門	Front Gate
3/13	P.M. 2:50	ＭＰ－１付近	around MP-1
3/13	P.M. 2:50	ＭＰ－４付近	aournd MP-4
3/13	P.M. 3:00	正門	Front Gate
3/13	P.M. 3:00	ＭＰ－１付近	around MP-1
3/13	P.M. 3:00	ＭＰ－４付近	aournd MP-4
3/13	P.M. 3:10	正門	Front Gate
3/13	P.M. 3:10	ＭＰ－１付近	around MP-1
3/13	P.M. 3:10	ＭＰ－４付近	aournd MP-4
3/13	P.M. 3:20	正門	Front Gate
3/13	P.M. 3:20	ＭＰ－１付近	around MP-1
3/13	P.M. 3:20	ＭＰ－４付近	aournd MP-4
3/13	P.M. 3:30	正門	Front Gate
3/13	P.M. 3:30	ＭＰ－１付近	around MP-1
3/13	P.M. 3:30	ＭＰ－４付近	aournd MP-4
3/13	P.M. 3:40	正門	Front Gate
3/13	P.M. 3:40	ＭＰ－１付近	around MP-1
3/13	P.M. 3:40	ＭＰ－４付近	aournd MP-4
3/13	P.M. 3:50	正門	Front Gate
3/13	P.M. 3:50	ＭＰ－１付近	around MP-1
3/13	P.M. 3:50	ＭＰ－４付近	aournd MP-4
3/13	P.M. 4:00	正門	Front Gate
3/13	P.M. 4:00	ＭＰ－１付近	around MP-1
3/13	P.M. 4:00	ＭＰ－４付近	aournd MP-4
3/13	P.M. 4:10	正門	Front Gate
3/13	P.M. 4:10	ＭＰ－１付近	around MP-1
3/13	P.M. 4:10	ＭＰ－４付近	aournd MP-4
3/13	P.M. 4:20	正門	Front Gate
3/13	P.M. 4:20	ＭＰ－１付近	around MP-1
3/13	P.M. 4:20	ＭＰ－４付近	aournd MP-4
3/13	P.M. 4:30	正門	Front Gate
3/13	P.M. 4:30	ＭＰ－１付近	around MP-1
3/13	P.M. 4:30	ＭＰ－４付近	aournd MP-4
3/13	P.M. 4:40	正門	Front Gate
3/13	P.M. 4:40	ＭＰ－１付近	around MP-1
3/13	P.M. 4:40	ＭＰ－４付近	aournd MP-4
3/13	P.M. 4:50	正門	Front Gate
3/13	P.M. 4:50	ＭＰ－１付近	around MP-1
3/13	P.M. 4:50	ＭＰ－４付近	aournd MP-4
3/13	P.M. 5:00	正門	Front Gate
3/13	P.M. 5:00	ＭＰ－１付近	around MP-1
3/13	P.M. 5:00	ＭＰ－４付近	aournd MP-4
3/13	P.M. 5:10	正門	Front Gate
3/13	P.M. 5:10	ＭＰ－１付近	around MP-1
3/13	P.M. 5:10	ＭＰ－４付近	aournd MP-4

3/13	P.M. 5:20	正門	Front Gate
3/13	P.M. 5:20	ＭＰ－１付近	around MP-1
3/13	P.M. 5:20	ＭＰ－４付近	aournd MP-4
3/13	P.M. 5:30	正門	Front Gate
3/13	P.M. 5:30	ＭＰ－１付近	around MP-1
3/13	P.M. 5:30	ＭＰ－４付近	aournd MP-4
3/13	P.M. 5:40	正門	Front Gate
3/13	P.M. 5:40	ＭＰ－１付近	around MP-1
3/13	P.M. 5:40	ＭＰ－４付近	aournd MP-4
3/13	P.M. 5:50	正門	Front Gate
3/13	P.M. 5:50	ＭＰ－１付近	around MP-1
3/13	P.M. 5:50	ＭＰ－４付近	aournd MP-4
3/13	P.M. 6:00	正門	Front Gate
3/13	P.M. 6:00	ＭＰ－１付近	around MP-1
3/13	P.M. 6:00	ＭＰ－４付近	aournd MP-4
3/13	P.M. 6:10	正門	Front Gate
3/13	P.M. 6:10	ＭＰ－１付近	around MP-1
3/13	P.M. 6:10	ＭＰ－４付近	aournd MP-4
3/13	P.M. 6:20	正門	Front Gate
3/13	P.M. 6:20	ＭＰ－１付近	around MP-1
3/13	P.M. 6:20	ＭＰ－４付近	aournd MP-4
3/13	P.M. 6:30	正門	Front Gate
3/13	P.M. 6:30	ＭＰ－１付近	around MP-1
3/13	P.M. 6:30	ＭＰ－４付近	aournd MP-4
3/13	P.M. 6:40	正門	Front Gate
3/13	P.M. 6:40	ＭＰ－１付近	around MP-1
3/13	P.M. 6:40	ＭＰ－４付近	aournd MP-4
3/13	P.M. 6:50	正門	Front Gate
3/13	P.M. 6:50	ＭＰ－１付近	around MP-1
3/13	P.M. 6:50	ＭＰ－４付近	aournd MP-4
3/13	P.M. 7:00	正門	Front Gate
3/13	P.M. 7:00	ＭＰ－１付近	around MP-1
3/13	P.M. 7:00	ＭＰ－４付近	aournd MP-4
3/13	P.M. 7:10	正門	Front Gate
3/13	P.M. 7:10	ＭＰ－１付近	around MP-1
3/13	P.M. 7:10	ＭＰ－４付近	aournd MP-4
3/13	P.M. 7:20	正門	Front Gate
3/13	P.M. 7:20	ＭＰ－１付近	around MP-1
3/13	P.M. 7:23	ＭＰ－４付近	aournd MP-4
3/13	P.M. 7:30	正門	Front Gate
3/13	P.M. 7:30	ＭＰ－１付近	around MP-1
3/13	P.M. 7:31	ＭＰ－４付近	aournd MP-4
3/13	P.M. 7:40	正門	Front Gate
3/13	P.M. 7:40	ＭＰ－１付近	around MP-1
3/13	P.M. 7:41	ＭＰ－４付近	aournd MP-4
3/13	P.M. 7:50	正門	Front Gate
3/13	P.M. 7:50	ＭＰ－１付近	around MP-1

3/13	P.M. 7:51	ＭＰ－４付近	aournd MP-4
3/13	P.M. 8:00	正門	Front Gate
3/13	P.M. 8:00	ＭＰ－１付近	around MP-1
3/13	P.M. 8:01	ＭＰ－４付近	aournd MP-4
3/13	P.M. 8:10	正門	Front Gate
3/13	P.M. 8:10	ＭＰ－２付近	around MP-1
3/13	P.M. 8:11	ＭＰ－４付近	aournd MP-4
3/13	P.M. 8:20	正門	Front Gate
3/13	P.M. 8:20	ＭＰ－２付近	around MP-1
3/13	P.M. 8:21	ＭＰ－４付近	aournd MP-4
3/13	P.M. 8:30	正門	Front Gate
3/13	P.M. 8:30	ＭＰ－２付近	around MP-2
3/13	P.M. 8:31	ＭＰ－４付近	aournd MP-4
3/13	P.M. 8:40	正門	Front Gate
3/13	P.M. 8:40	ＭＰ－２付近	around MP-2
3/13	P.M. 8:41	ＭＰ－４付近	aournd MP-4
3/13	P.M. 8:50	正門	Front Gate
3/13	P.M. 8:50	ＭＰ－２付近	around MP-2
3/13	P.M. 8:51	ＭＰ－４付近	aournd MP-4
3/13	P.M. 9:00	正門	Front Gate
3/13	P.M. 9:00	ＭＰ－２付近	around MP-2
3/13	P.M. 9:01	ＭＰ－４付近	aournd MP-4
3/13	P.M. 9:10	正門	Front Gate
3/13	P.M. 9:10	ＭＰ－２付近	around MP-2
3/13	P.M. 9:11	ＭＰ－４付近	aournd MP-4
3/13	P.M. 9:20	正門	Front Gate
3/13	P.M. 9:20	ＭＰ－２付近	around MP-2
3/13	P.M. 9:21	ＭＰ－４付近	aournd MP-4
3/13	P.M. 9:30	正門	Front Gate
3/13	P.M. 9:30	ＭＰ－２付近	around MP-2
3/13	P.M. 9:31	ＭＰ－４付近	aournd MP-4
3/13	P.M. 9:40	正門	Front Gate
3/13	P.M. 9:40	ＭＰ－２付近	around MP-2
3/13	P.M. 9:41	ＭＰ－４付近	aournd MP-4
3/13	P.M. 9:50	正門	Front Gate
3/13	P.M. 9:50	ＭＰ－２付近	around MP-2
3/13	P.M. 9:51	ＭＰ－４付近	aournd MP-4
3/13	P.M. 10:00	正門	Front Gate
3/13	P.M. 10:00	ＭＰ－２付近	around MP-2
3/13	P.M. 10:01	ＭＰ－４付近	aournd MP-4
3/13	P.M. 10:10	正門	Front Gate
3/13	P.M. 10:10	ＭＰ－２付近	around MP-2
3/13	P.M. 10:11	ＭＰ－４付近	aournd MP-4
3/13	P.M. 10:20	正門	Front Gate
3/13	P.M. 10:20	ＭＰ－２付近	around MP-2
3/13	P.M. 10:21	ＭＰ－４付近	aournd MP-4
3/13	P.M. 10:30	正門	Front Gate

3/13	P.M. 10:30	ＭＰ－２付近	around MP-2
3/13	P.M. 10:31	ＭＰ－４付近	aournd MP-4
3/13	P.M. 10:40	正門	Front Gate
3/13	P.M. 10:40	ＭＰ－２付近	around MP-2
3/13	P.M. 10:41	ＭＰ－４付近	aournd MP-4
3/13	P.M. 10:50	正門	Front Gate
3/13	P.M. 10:50	ＭＰ－２付近	around MP-2
3/13	P.M. 10:51	ＭＰ－４付近	aournd MP-4
3/13	P.M. 11:00	正門	Front Gate
3/13	P.M. 11:00	ＭＰ－２付近	around MP-2
3/13	P.M. 11:01	ＭＰ－４付近	aournd MP-4
3/13	P.M. 11:10	正門	Front Gate
3/13	P.M. 11:10	ＭＰ－２付近	around MP-2
3/13	P.M. 11:11	ＭＰ－４付近	aournd MP-4
3/13	P.M. 11:20	正門	Front Gate
3/13	P.M. 11:20	ＭＰ－２付近	around MP-2
3/13	P.M. 11:21	ＭＰ－４付近	aournd MP-4
3/13	P.M. 11:30	正門	Front Gate
3/13	P.M. 11:30	ＭＰ－２付近	around MP-2
3/13	P.M. 11:31	ＭＰ－４付近	aournd MP-4
3/13	P.M. 11:40	正門	Front Gate
3/13	P.M. 11:40	ＭＰ－２付近	around MP-2
3/13	P.M. 11:41	ＭＰ－４付近	aournd MP-4
3/13	P.M. 11:50	正門	Front Gate
3/13	P.M. 11:50	ＭＰ－２付近	around MP-2
3/13	P.M. 11:51	ＭＰ－４付近	aournd MP-4
3/14	A.M. 0:00	正門	Front Gate
3/14	A.M.0:00	ＭＰ－２付近	around MP-2
3/14	A.M.0:01	ＭＰ－４付近	aournd MP-4
3/14	A.M. 0:10	正門	Front Gate
3/14	A.M.0:10	ＭＰ－２付近	around MP-2
3/14	A.M.0:11	ＭＰ－４付近	aournd MP-4
3/14	A.M. 0:20	正門	Front Gate
3/14	A.M.0:20	ＭＰ－２付近	around MP-2
3/14	A.M.0:21	ＭＰ－４付近	aournd MP-4
3/14	A.M. 0:30	正門	Front Gate
3/14	A.M.0:30	ＭＰ－２付近	around MP-2
3/14	A.M.0:31	ＭＰ－４付近	aournd MP-4
3/14	A.M. 0:40	正門	Front Gate
3/14	A.M.0:40	ＭＰ－２付近	around MP-2
3/14	A.M.0:41	ＭＰ－４付近	aournd MP-4
3/14	A.M. 0:50	正門	Front Gate
3/14	A.M.0:50	ＭＰ－２付近	around MP-2
3/14	A.M.0:51	ＭＰ－４付近	aournd MP-4
3/14	A.M. 1:00	正門	Front Gate
3/14	A.M.1:00	ＭＰ－２付近	around MP-2
3/14	A.M.1:01	ＭＰ－４付近	aournd MP-4

3/14	A.M. 1:10	正門	Front Gate
3/14	A.M.1:10	ＭＰ－２付近	around MP-2
3/14	A.M.1:11	ＭＰ－４付近	aournd MP-4
3/14	A.M. 1:20	正門	Front Gate
3/14	A.M.1:20	ＭＰ－２付近	around MP-2
3/14	A.M.1:21	ＭＰ－４付近	aournd MP-4
3/14	A.M. 1:30	正門	Front Gate
3/14	A.M.1:30	ＭＰ－２付近	around MP-2
3/14	A.M.1:31	ＭＰ－４付近	aournd MP-4
3/14	A.M. 1:40	正門	Front Gate
3/14	A.M.1:40	ＭＰ－２付近	around MP-2
3/14	A.M.1:41	ＭＰ－４付近	aournd MP-4
3/14	A.M. 1:50	正門	Front Gate
3/14	A.M.1:50	ＭＰ－２付近	around MP-2
3/14	A.M.1:51	ＭＰ－４付近	aournd MP-4
3/14	A.M. 2:00	正門	Front Gate
3/14	A.M.2:00	ＭＰ－２付近	around MP-2
3/14	A.M.2:00	ＭＰ－４付近	aournd MP-4
3/14	A.M. 2:10	正門	Front Gate
3/14	A.M.2:10	ＭＰ－２付近	around MP-2
3/14	A.M.2:10	ＭＰ－４付近	aournd MP-4
3/14	A.M. 2:20	正門	Front Gate
3/14	A.M.2:20	ＭＰ－２付近	around MP-2
3/14	A.M.2:20	ＭＰ－４付近	aournd MP-4
3/14	A.M. 2:30	正門	Front Gate
3/14	A.M.2:30	ＭＰ－２付近	around MP-2
3/14	A.M.2:30	ＭＰ－４付近	aournd MP-4
3/14	A.M. 2:40	正門	Front Gate
3/14	A.M.2:40	ＭＰ－２付近	around MP-2
3/14	A.M.2:40	ＭＰ－４付近	aournd MP-4
3/14	A.M. 2:50	正門	Front Gate
3/14	A.M.2:50	ＭＰ－２付近	around MP-2
3/14	A.M.2:50	ＭＰ－４付近	aournd MP-4
3/14	A.M. 3:00	正門	Front Gate
3/14	A.M.3:00	ＭＰ－２付近	around MP-2
3/14	A.M.3:00	ＭＰ－４付近	aournd MP-4
3/14	A.M. 3:10	正門	Front Gate
3/14	A.M.3:10	ＭＰ－２付近	around MP-2
3/14	A.M.3:10	ＭＰ－４付近	aournd MP-4
3/14	A.M. 3:20	正門	Front Gate
3/14	A.M.3:20	ＭＰ－２付近	around MP-2
3/14	A.M.3:20	ＭＰ－４付近	aournd MP-4
3/14	A.M. 3:30	正門	Front Gate
3/14	A.M.3:30	ＭＰ－２付近	around MP-2
3/14	A.M.3:30	ＭＰ－４付近	aournd MP-4
3/14	A.M. 3:40	正門	Front Gate
3/14	A.M.3:40	ＭＰ－２付近	around MP-2

3/14	A.M.3:40	ＭＰ－４付近	aournd MP-4
3/14	A.M. 3:50	正門	Front Gate
3/14	A.M.3:50	ＭＰ－２付近	around MP-2
3/14	A.M.3:50	ＭＰ－４付近	aournd MP-4
3/14	A.M. 4:00	正門	Front Gate
3/14	A.M.4:00	ＭＰ－２付近	around MP-2
3/14	A.M.4:00	ＭＰ－４付近	aournd MP-4
3/14	A.M. 4:10	正門	Front Gate
3/14	A.M.4:10	ＭＰ－２付近	around MP-2
3/14	A.M.4:10	ＭＰ－４付近	aournd MP-4
3/14	A.M. 4:20	正門	Front Gate
3/14	A.M.4:20	ＭＰ－２付近	around MP-2
3/14	A.M.4:20	ＭＰ－４付近	aournd MP-4
3/14	A.M. 4:30	正門	Front Gate
3/14	A.M.4:30	ＭＰ－２付近	around MP-2
3/14	A.M.4:30	ＭＰ－４付近	aournd MP-4
3/14	A.M. 4:40	正門	Front Gate
3/14	A.M.4:40	ＭＰ－２付近	around MP-2
3/14	A.M.4:40	ＭＰ－４付近	aournd MP-4
3/14	A.M. 4:50	正門	Front Gate
3/14	A.M.4:50	ＭＰ－２付近	around MP-2
3/14	A.M.4:51	ＭＰ－４付近	aournd MP-4
3/14	A.M. 5:00	正門	Front Gate
3/14	A.M.5:00	ＭＰ－２付近	around MP-2
3/14	A.M.5:01	ＭＰ－４付近	aournd MP-4
3/14	A.M. 5:10	正門	Front Gate
3/14	A.M.5:10	ＭＰ－２付近	around MP-2
3/14	A.M.5:11	ＭＰ－４付近	aournd MP-4
3/14	A.M. 5:20	正門	Front Gate
3/14	A.M.5:20	ＭＰ－２付近	around MP-2
3/14	A.M.5:21	ＭＰ－４付近	aournd MP-4
3/14	A.M. 5:29	ＭＰ－４付近	Front Gate
3/14	A.M.5:30	正門	around MP-2
3/14	A.M.5:30	ＭＰ－２付近	aournd MP-4
3/14	A.M. 5:40	正門	Front Gate
3/14	A.M.5:40	ＭＰ－２付近	around MP-2
3/14	A.M.5:41	ＭＰ－４付近	aournd MP-4
3/14	A.M. 5:50	正門	Front Gate
3/14	A.M.5:50	ＭＰ－２付近	around MP-2
3/14	A.M.5:51	ＭＰ－４付近	aournd MP-4
3/14	A.M. 6:00	正門	Front Gate
3/14	A.M.6:00	ＭＰ－２付近	around MP-2
3/14	A.M.6:01	ＭＰ－４付近	arournd MP-4
3/14	A.M. 6:10	正門	Front Gate
3/14	A.M.6:11	ＭＰ－４付近	arournd MP-4
3/14	A.M. 6:20	正門	Front Gate
3/14	A.M.6:21	ＭＰ－４付近	arournd MP-4

3/14	A.M. 6:30	正門	Front Gate
3/14	A.M.7:53	ＭＰ－４付近	arournd MP-4
3/14	A.M.8:07	ＭＰ－４付近	arournd MP-4
3/14	A.M.8:19	ＭＰ－４付近	arournd MP-4
3/14	A.M.8:30	ＭＰ－３付近	arournd MP-3
3/14	A.M.8:31	ＭＰ－４付近	arournd MP-4
3/14	A.M.8:40	ＭＰ－３付近	arournd MP-3
3/14	A.M.8:41	ＭＰ－４付近	arournd MP-4
3/14	A.M.8:50	ＭＰ－３付近	arournd MP-3
3/14	A.M.9:00	ＭＰ－３付近	arournd MP-3
3/14	A.M.9:10	ＭＰ－３付近	arournd MP-3
3/14	A.M.9:12	ＭＰ－３付近	arournd MP-3
3/14	A.M.9:20	ＭＰ－３付近	arournd MP-3
3/14	A.M.9:25	ＭＰ－４付近	arournd MP-4
3/14	A.M.9:30	ＭＰ－３付近	arournd MP-3
3/14	A.M.9:40	ＭＰ－３付近	arournd MP-3
3/14	A.M.9:43	ＭＰ－４付近	arournd MP-4
3/14	A.M.9:50	ＭＰ－３付近	arournd MP-3
3/14	A.M.9:53	ＭＰ－４付近	arournd MP-4
3/14	A.M.10:00	ＭＰ－３付近	arournd MP-3
3/14	A.M.10:05	ＭＰ－４付近	arournd MP-4
3/14	A.M.10:10	ＭＰ－３付近	arournd MP-3
3/14	A.M.10:11	ＭＰ－４付近	arournd MP-4
3/14	A.M.10:20	ＭＰ－３付近	arournd MP-3
3/14	A.M.10:27	ＭＰ－４付近	arournd MP-4
3/14	A.M.10:30	ＭＰ－３付近	arournd MP-3
3/14	A.M.10:35	ＭＰ－４付近	arournd MP-4
3/14	A.M.10:40	ＭＰ－３付近	arournd MP-3
3/14	A.M.10:41	ＭＰ－４付近	arournd MP-4
3/14	A.M.10:50	ＭＰ－３付近	arournd MP-3
3/14	A.M.10:51	ＭＰ－４付近	arournd MP-4
3/14	A.M. 11:37	正門	Front Gate
3/14	A.M. 11:44	正門	Front Gate
3/14	P.M. 0:06	正門	Front Gate
3/14	P.M. 0:21	正門	Front Gate
3/14	P.M. 0:34	ＭＰ－６付近	around MP-6
3/14	P.M. 0:46	ＭＰ－５付近	around MP-5
3/14	P.M. 0:52	ＭＰ－４付近	around MP-4
3/14	P.M. 1:04	ＭＰ－３付近	around MP-3
3/14	P.M. 1:10	正門	Front Gate
3/14	P.M. 1:12	ＭＰ－４付近	around MP-4
3/14	P.M. 1:15	正門	Front Gate
3/14	P.M. 1:20	正門	Front Gate
3/14	P.M. 1:25	正門	Front Gate
3/14	P.M. 1:28	ＭＰ－５付近	around MP-5
3/14	P.M. 1:30	正門	Front Gate
3/14	P.M. 1:35	正門	Front Gate

3/14	P.M. 1:40	正門	Front Gate
3/14	P.M. 1:40	ＭＰ－６付近	around MP-6
3/14	P.M. 1:45	正門	Front Gate
3/14	P.M. 1:50	正門	Front Gate
3/14	P.M. 1:55	正門	Front Gate
3/14	P.M. 2:02	ＭＰ－５付近	around MP-5
3/14	P.M. 2:14	ＭＰ－４付近	around MP-4
3/14	P.M. 2:30	ＭＰ－３付近	around MP-3
3/14	P.M. 2:46	ＭＰ－４付近	around MP-4
3/14	P.M. 2:58	ＭＰ－５付近	around MP-4
3/14	P.M. 3:09	ＭＰ－６付近	around MP-4
3/14	P.M. 2:16	ＭＰ－５付近	around MP-5
3/14	P.M. 3:23	ＭＰ－４付近	around MP-4
3/14	P.M. 3:30	ＭＰ－３付近	around MP-3
3/14	P.M. 3:38	ＭＰ－４付近	around MP-4
3/14	P.M. 4:02	ＭＰ－５付近	around MP-5
3/14	P.M. 4:10	ＭＰ－６付近	around MP-6
3/14	P.M. 5:00	正門	Front Gate
3/14	P.M. 5:10	正門	Front Gate
3/14	P.M. 5:20	正門	Front Gate
3/14	P.M. 5:30	正門	Front Gate
3/14	P.M. 5:40	正門	Front Gate
3/14	P.M. 5:50	正門	Front Gate
3/14	P.M. 6:00	正門	Front Gate
3/14	P.M. 6:10	正門	Front Gate
3/14	P.M. 6:20	正門	Front Gate
3/14	P.M. 6:30	正門	Front Gate
3/14	P.M. 6:40	正門	Front Gate
3/14	P.M. 6:46	正門	Front Gate
3/14	P.M. 7:00	正門	Front Gate
3/14	P.M. 7:10	正門	Front Gate
3/14	P.M. 7:20	正門	Front Gate
3/14	P.M. 7:30	正門	Front Gate
3/14	P.M. 7:40	正門	Front Gate
3/14	P.M. 7:50	正門	Front Gate
3/14	P.M. 8:00	正門	Front Gate
3/14	P.M. 8:10	正門	Front Gate
3/14	P.M. 8:20	正門	Front Gate
3/14	P.M. 8:30	正門	Front Gate
3/14	P.M. 8:40	正門	Front Gate
3/14	P.M. 8:50	正門	Front Gate
3/14	P.M. 8:55	正門	Front Gate
3/14	P.M. 9:00	正門	Front Gate
3/14	P.M. 9:05	正門	Front Gate
3/14	P.M. 9:10	正門	Front Gate
3/14	P.M. 9:15	正門	Front Gate
3/14	P.M. 9:20	正門	Front Gate

3/14	P.M. 9:25	正門	Front Gate
3/14	P.M. 9:30	正門	Front Gate
3/14	P.M. 9:35	正門	Front Gate
3/14	P.M. 9:37	正門	Front Gate
3/14	P.M. 10:15	正門	Front Gate
3/14	P.M. 10:20	正門	Front Gate
3/14	P.M. 10:25	正門	Front Gate
3/14	P.M. 10:35	正門	Front Gate
3/14	P.M. 10:40	正門	Front Gate
3/14	P.M. 10:45	正門	Front Gate
3/14	P.M. 10:50	正門	Front Gate
3/14	P.M. 10:55	正門	Front Gate
3/14	P.M. 11:00	正門	Front Gate
3/14	P.M. 11:05	正門	Front Gate
3/14	P.M. 11:10	正門	Front Gate
3/14	P.M. 11:15	正門	Front Gate
3/14	P.M. 11:20	正門	Front Gate
3/14	P.M. 11:25	正門	Front Gate
3/14	P.M. 11:30	正門	Front Gate
3/14	P.M. 11:35	正門	Front Gate
3/14	P.M. 11:40	正門	Front Gate
3/14	P.M. 11:45	正門	Front Gate
3/14	P.M. 11:50	正門	Front Gate
3/14	P.M. 11:55	正門	Front Gate
3/15	A.M. 0:00	正門	Front Gate
3/15	A.M. 0:05	正門	Front Gate
3/15	A.M. 0:10	正門	Front Gate
3/15	A.M. 0:15	正門	Front Gate
3/15	A.M. 0:20	正門	Front Gate
3/15	A.M. 0:25	正門	Front Gate
3/15	A.M. 0:30	正門	Front Gate
3/15	A.M. 0:35	正門	Front Gate
3/15	A.M. 0:40	正門	Front Gate
3/15	A.M. 0:45	正門	Front Gate
3/15	A.M. 0:50	正門	Front Gate
3/15	A.M. 0:55	正門	Front Gate
3/15	A.M. 1:00	正門	Front Gate
3/15	A.M. 1:05	正門	Front Gate
3/15	A.M. 1:20	正門	Front Gate
3/15	A.M. 1:30	正門	Front Gate
3/15	A.M. 1:40	正門	Front Gate
3/15	A.M. 1:50	正門	Front Gate
3/15	A.M. 2:00	正門	Front Gate
3/15	A.M. 2:10	正門	Front Gate
3/15	A.M. 2:20	正門	Front Gate
3/15	A.M. 2:30	正門	Front Gate
3/15	A.M. 2:40	正門	Front Gate

3/15	A.M. 3:10	正門	Front Gate
3/15	A.M. 3:20	正門	Front Gate
3/15	A.M. 3:40	正門	Front Gate
3/15	A.M. 4:00	正門	Front Gate
3/15	A.M. 4:20	正門	Front Gate
3/15	A.M. 4:40	正門	Front Gate
3/15	A.M. 5:00	正門	Front Gate
3/15	A.M. 5 :20	正門	Front Gate
3/15	A.M. 5:40	正門	Front Gate
3/15	A.M. 6:00	正門	Front Gate
3/15	A.M. 8:20	正門	Front Gate
3/15	A.M. 8:31	正門	Front Gate
3/15	A.M. 8:40	正門	Front Gate
3/15	A.M. 8:50	正門	Front Gate
3/15	A.M. 9:00	正門	Front Gate
3/15	A.M. 9:15	ＭＰ－４付近	around MP-4
3/15	A.M. 9:20	ＭＰ－４付近	around MP-4
3/15	A.M. 9:35	正門	Front Gate
3/15	A.M.10:15	正門	Front Gate
3/15	A.M.11:40	西門	West Gate
3/15	A.M.11:45	西門	West Gate
3/15	P.M. 0:05	西門	West Gate
3/15	P.M. 0:15	西門	West Gate
3/15	P.M. 0:25	正門	Front Gate
3/15	P.M. 0:35	正門	Front Gate
3/15	P.M. 0:45	正門	Front Gate
3/15	P.M. 0:55	正門	Front Gate
3/15	P.M. 1:00	正門	Front Gate
3/15	P.M. 1:10	正門	Front Gate
3/15	P.M. 1:20	正門	Front Gate
3/15	P.M. 1:30	正門	Front Gate
3/15	P.M. 1:40	正門	Front Gate
3/15	P.M. 1:50	正門	Front Gate
3/15	P.M. 2:00	正門	Front Gate
3/15	P.M. 2:10	正門	Front Gate
3/15	P.M. 2:20	正門	Front Gate
3/15	P.M. 2:30	正門	Front Gate
3/15	P.M. 2:40	正門	Front Gate
3/15	P.M. 2:50	正門	Front Gate
3/15	P.M. 3:00	正門	Front Gate
3/15	P.M. 3:10	正門	Front Gate
3/15	P.M. 3:20	正門	Front Gate
3/15	P.M. 3:30	正門	Front Gate
3/15	P.M. 3:40	正門	Front Gate
3/15	P.M. 3:50	正門	Front Gate
3/15	P.M. 4:00	正門	Front Gate
3/15	P.M. 4:10	正門	Front Gate

3/15	P.M. 4:20	正門	Front Gate
3/15	P.M. 4:30	正門	Front Gate
3/15	P.M. 4:40	正門	Front Gate
3/15	P.M. 4:50	正門	Front Gate
3/15	P.M. 5:00	正門	Front Gate
3/15	P.M. 5:10	正門	Front Gate
3/15	P.M. 5:30	正門	Front Gate
3/15	P.M. 6:00	正門	Front Gate
3/15	P.M. 6:30	正門	Front Gate
3/15	P.M. 7:00	正門	Front Gate
3/15	P.M. 7:30	正門	Front Gate
3/15	P.M. 8:00	正門	Front Gate
3/15	P.M. 8:30	正門	Front Gate
3/15	P.M. 9:00	正門	Front Gate
3/15	P.M. 9:30	正門	Front Gate
3/15	P.M. 10:00	正門	Front Gate
3/15	P.M. 10:30	正門	Front Gate
3/15	P.M. 11:00	正門	Front Gate
3/15	P.M. 11:10	正門	Front Gate
3/15	P.M. 11:15	正門	Front Gate
3/15	P.M. 11:20	正門	Front Gate
3/15	P.M. 11:25	正門	Front Gate
3/15	P.M. 11:30	正門	Front Gate
3/15	P.M. 11:35	正門	Front Gate
3/15	P.M. 11:40	正門	Front Gate
3/15	P.M. 11:45	正門	Front Gate
3/15	P.M. 11:50	正門	Front Gate
3/15	P.M. 11:55	正門	Front Gate
3/16	A.M. 0:00	正門	Front Gate
3/16	A.M. 0:10	正門	Front Gate
3/16	A.M. 0:20	正門	Front Gate
3/16	A.M. 0:30	正門	Front Gate
3/16	A.M. 1:00	正門	Front Gate
3/16	A.M. 1:10	正門	Front Gate
3/16	A.M. 1:20	正門	Front Gate
3/16	A.M. 1:30	正門	Front Gate
3/16	A.M. 1:40	正門	Front Gate
3/16	A.M. 1:50	正門	Front Gate
3/16	A.M. 2:00	正門	Front Gate
3/16	A.M. 2:10	正門	Front Gate
3/16	A.M. 2:20	正門	Front Gate
3/16	A.M. 2:30	正門	Front Gate
3/16	A.M. 2:40	正門	Front Gate
3/16	A.M. 2:50	正門	Front Gate
3/16	A.M. 3:00	正門	Front Gate
3/16	A.M. 3:30	正門	Front Gate
3/16	A.M. 4:00	正門	Front Gate

3/16	A.M. 4:30	正門	Front Gate
3/16	A.M. 5:00	正門	Front Gate
3/16	A.M. 5:30	正門	Front Gate
3/16	A.M. 6:00	正門	Front Gate
3/16	A.M. 6:30	正門	Front Gate
3/16	A.M. 6:40	正門	Front Gate
3/16	A.M. 6:50	正門	Front Gate
3/16	A.M. 7:00	正門	Front Gate
3/16	A.M. 7:10	正門	Front Gate
3/16	A.M. 7:20	正門	Front Gate
3/16	A.M. 7:30	正門	Front Gate
3/16	A.M. 7 :40	正門	Front Gate
3/16	A.M. 7:50	正門	Front Gate
3/16	A.M. 8:00	正門	Front Gate
3/16	A.M. 8:10	正門	Front Gate
3/16	A.M. 8:20	正門	Front Gate
3/16	A.M. 8:30	正門	Front Gate
3/16	A.M. 8:40	正門	Front Gate
3/16	A.M. 8:50	正門	Front Gate
3/16	A.M. 9:00	正門	Front Gate
3/16	A.M. 9:10	正門	Front Gate
3/16	A.M. 9:20	正門	Front Gate
3/16	A.M. 9:30	正門	Front Gate
3/16	A.M. 9:40	正門	Front Gate
3/16	A.M. 9:50	正門	Front Gate
3/16	A.M.10:00	正門	Front Gate
3/16	A.M.10:10	正門	Front Gate
3/16	A.M.10:20	正門	Front Gate
3/16	A.M.10:30	正門	Front Gate
3/16	A.M.10:45	正門	Front Gate
3/16	A.M.10:54	正門	Front Gate
3/16	A.M.10:55	正門	Front Gate
3/16	A.M.11:00	正門	Front Gate
3/16	A.M.11:10	正門	Front Gate
3/16	A.M.11:20	正門	Front Gate
3/16	A.M.11:30	正門	Front Gate
3/16	A.M.11:40	正門	Front Gate
3/16	A.M.11:50	正門	Front Gate
3/16	A.M. 0:00	正門	Front Gate
3/16	P.M. 0:10	正門	Front Gate
3/16	P.M. 0:20	正門	Front Gate
3/16	P.M. 0:30	正門	Front Gate
3/16	P.M. 0:40	正門	Front Gate
3/16	P.M. 0:50	正門	Front Gate
3/16	P.M. 1:00	正門	Front Gate
3/16	P.M. 1:10	正門	Front Gate
3/16	P.M. 1:20	正門	Front Gate

3/16	P.M. 1:30	正門	Front Gate
3/16	P.M. 1:40	正門	Front Gate
3/16	P.M. 1:50	正門	Front Gate
3/16	P.M. 2:00	正門	Front Gate
3/16	P.M. 2:10	正門	Front Gate
3/16	P.M. 2:20	正門	Front Gate
3/16	P.M. 2:30	正門	Front Gate
3/16	P.M. 2:40	正門	Front Gate
3/16	P.M. 2:50	正門	Front Gate
3/16	P.M. 3:00	正門	Front Gate
3/16	P.M. 3:10	正門	Front Gate
3/16	P.M. 3:20	正門	Front Gate
3/16	P.M. 3:30	正門	Front Gate
3/16	P.M. 3:40	正門	Front Gate
3/16	P.M. 3:50	正門	Front Gate
3/17	A.M. 0:30	西門	West Gate
3/17	A.M. 0:50	西門	West Gate
3/17	A.M. 1:00	西門	West Gate
3/17	A.M. 1:30	西門	West Gate
3/17	A.M. 2:00	西門	West Gate
3/17	A.M. 2:30	西門	West Gate
3/17	A.M. 3:00	西門	West Gate
3/17	A.M. 3:30	西門	West Gate
3/17	A.M. 4:00	西門	West Gate
3/17	A.M. 4:30	西門	West Gate
3/17	A.M. 5:00	西門	West Gate
3/17	A.M. 5:30	西門	West Gate
3/17	A.M. 6:00	西門	West Gate
3/17	A.M. 6:30	西門	West Gate
3/17	A.M. 7:30	西門	West Gate
3/17	A.M. 7:30	西門	West Gate
3/17	A.M. 7:50	体育館脇	a side of Gym
3/17	A.M. 8:00	体育館脇	a side of Gym
3/17	A.M. 8:30	体育館脇	a side of Gym
3/17	A.M. 8:40	体育館脇	a side of Gym
3/17	A.M. 8:50	体育館脇	a side of Gym
3/17	A.M. 9:00	体育館脇	a side of Gym
3/17	A.M. 9:10	体育館脇	a side of Gym
3/17	A.M. 9:30	事務本館北	North of Main Admin. Bldg.
3/17	A.M. 9:40	事務本館北	North of Main Admin. Bldg.
3/17	A.M. 9:50	事務本館北	North of Main Adnmin. Bldg.
3/17	A.M. 10:00	事務本館北	North of Main Adnmin. Bldg.
3/17	A.M. 10:10	事務本館北	North of Main Adnmin. Bldg.
3/17	A.M. 10:20	事務本館北	North of Main Adnmin. Bldg.
3/17	A.M. 10:30	事務本館北	North of Main Adnmin. Bldg.
3/17	A.M. 10:40	事務本館北	North of Main Adnmin. Bldg.
3/17	A.M. 10:50	事務本館北	North of Main Adnmin. Bldg.
3/17	A.M. 11:00	正門	Front Gate

3/17	A.M. 11:10	正門	Front Gate
3/17	A.M. 11:15	西門	West Gate
3/17	A.M. 11:20	西門	west Gate
3/17	A.M. 11:30	西門	West Gate
3/17	P.M. 0:00	西門	West Gate
3/17	P.M. 0:30	西門	West Gate
3/17	P.M. 1:00	西門	West Gate
3/17	P.M. 1:10	西門	West Gate
3/17	P.M. 1:20	西門	West Gate
3/17	P.M. 1:30	事務本館北	North of Main Admin. Bldg.
3/17	P.M. 1:40	事務本館北	North of Main Adnmin. Bldg.
3/17	P.M. 2:00	事務本館北	North of Main Adnmin. Bldg.
3/17	P.M. 2:10	西門	West Gate
3/17	P.M. 2:30	西門	West Gate
3/17	P.M. 3:00	西門	West Gate
3/17	P.M. 3:30	西門	West Gate
3/17	P.M. 3:50	事務本館北	North of Main Admin. Bldg.
3/17	P.M. 4:00	事務本館北	North of Main Adnmin. Bldg.
3/17	P.M. 4:10	事務本館北	North of Main Adnmin. Bldg.
3/17	P.M. 4:15	事務本館北	North of Main Adnmin. Bldg.
3/17	P.M. 5:00	事務本館北	North of Main Adnmin. Bldg.
3/17	P.M. 5:10	事務本館北	North of Main Adnmin. Bldg.
3/17	P.M. 5:20	事務本館北	North of Main Adnmin. Bldg.
3/17	P.M. 5:30	事務本館北	North of Main Adnmin. Bldg.
3/17	P.M. 5:40	事務本館北	North of Main Adnmin. Bldg.
3/17	P.M. 5:50	事務本館北	North of Main Adnmin. Bldg.
3/17	P.M. 6:00	事務本館北	North of Main Adnmin. Bldg.
3/17	P.M. 6:10	事務本館北	North of Main Adnmin. Bldg.
3/17	P.M. 6:20	事務本館北	North of Main Adnmin. Bldg.
3/17	P.M. 6:30	事務本館北	North of Main Adnmin. Bldg.
3/17	P.M. 6:40	事務本館北	North of Main Adnmin. Bldg.
3/17	P.M. 5:50	事務本館北	North of Main Adnmin. Bldg.
3/17	P.M. 7:00	事務本館北	North of Main Adnmin. Bldg.
3/17	P.M. 7:10	事務本館北	North of Main Adnmin. Bldg.
3/17	P.M. 8:40	西門	West Gate
3/17	P.M. 9:00	西門	West Gate
3/17	P.M. 9:10	西門	West Gate
3/17	P.M. 9:20	西門	West Gate
3/17	P.M. 9:30	西門	West Gate
3/17	P.M. 9:40	西門	West Gate
3/17	P.M. 9:50	西門	West Gate
3/17	P.M. 10:00	西門	West Gate
3/17	P.M. 10:10	西門	West Gate
3/17	P.M. 10:20	西門	West Gate
3/17	P.M. 10:30	西門	West Gate
3/17	P.M. 10:40	西門	West Gate
3/17	P.M. 10:50	西門	West Gate
3/17	P.M. 11:00	西門	West Gate

3/17	P.M. 11:10	西門	West Gate
3/17	P.M. 11:20	西門	West Gate
3/17	P.M. 11:30	西門	West Gate
3/17	P.M. 11:40	西門	West Gate
3/17	P.M. 11:50	西門	West Gate
3/18	A.M. 0:00	西門	West Gate
3/18	A.M. 0:10	西門	West Gate
3/18	A.M. 0:20	西門	West Gate
3/18	A.M. 0:30	西門	West Gate
3/18	A.M. 0:40	西門	West Gate
3/18	A.M. 0:50	西門	West Gate
3/18	A.M. 1:00	西門	West Gate
3/18	A.M. 1:10	西門	West Gate
3/18	A.M. 1:20	西門	West Gate
3/18	A.M. 1:30	西門	West Gate
3/18	A.M. 1:40	西門	West Gate
3/18	A.M. 1:50	西門	West Gate
3/18	A.M. 2:00	西門	West Gate
3/18	A.M. 2:10	西門	West Gate
3/18	A.M. 2:20	西門	West Gate
3/18	A.M. 2:30	西門	West Gate
3/18	A.M. 2:40	西門	West Gate
3/18	A.M. 2:50	西門	West Gate
3/18	A.M. 3:00	西門	West Gate
3/18	A.M. 3:10	西門	West Gate
3/18	A.M. 3:20	西門	West Gate
3/18	A.M. 3:30	西門	West Gate
3/18	A.M. 3:40	西門	West Gate
3/18	A.M. 3:50	西門	West Gate
3/18	A.M. 4:00	西門	West Gate
3/18	A.M. 4:10	西門	West Gate
3/18	A.M. 4:20	西門	West Gate
3/18	A.M. 4:30	西門	West Gate
3/18	A.M. 4:40	西門	West Gate
3/18	A.M. 4:50	西門	West Gate
3/18	A.M. 5:00	西門	West Gate
3/18	A.M. 5:10	西門	West Gate
3/18	A.M. 5:20	西門	West Gate
3/18	A.M. 5:30	西門	West Gate
3/18	A.M. 5:40	西門	West Gate
3/18	A.M. 5:50	西門	West Gate
3/18	A.M. 6:00	西門	West Gate
3/18	A.M. 6:10	西門	West Gate
3/18	A.M. 6:20	西門	West Gate
3/18	A.M. 6:30	西門	West Gate
3/18	A.M. 6:40	西門	West Gate
3/18	A.M. 6:50	西門	West Gate
3/18	A.M. 7:00	西門	West Gate

3/18	A.M. 7:10	西門	West Gate
3/18	A.M. 7:20	西門	West Gate
3/18	A.M. 7:30	西門	West Gate
3/18	A.M. 7:40	西門	West Gate
3/18	A.M. 7:50	西門	West Gate
3/18	A.M. 8:00	西門	West Gate
3/18	A.M. 8:10	西門	West Gate
3/18	A.M. 8:20	西門	West Gate
3/18	A.M. 8:30	西門	West Gate
3/18	A.M. 8:40	西門	West Gate
3/18	A.M. 8:50	西門	West Gate
3/18	A.M. 9:00	西門	West Gate
3/18	A.M. 9:10	西門	West Gate
3/18	A.M. 9:20	西門	West Gate
3/18	A.M. 9:30	西門	West Gate
3/18	A.M. 9:40	西門	West Gate
3/18	A.M. 9:50	西門	West Gate
3/18	A.M. 10:00	西門	West Gate
3/18	A.M. 10:10	西門	West Gate
3/18	A.M. 10:20	西門	West Gate
3/18	A.M. 10:30	西門	West Gate
3/18	A.M. 10:40	西門	West Gate
3/18	A.M. 10:50	西門	West Gate
3/18	A.M. 11:00	西門	West Gate
3/18	A.M. 11:10	西門	West Gate
3/18	A.M. 11:20	西門	West Gate
3/18	A.M. 11:30	西門	West Gate
3/18	A.M. 11:40	西門	West Gate
3/18	A.M. 11:50	西門	West Gate
3/18	P.M. 0:00	西門	West Gate
3/18	P.M. 0:10	西門	West Gate
3/18	P.M. 0:20	西門	West Gate
3/18	P.M. 0:30	西門	West Gate
3/18	A.M. 0:40	西門	West Gate
3/18	P.M. 0:50	西門	West Gate
3/18	P.M. 1:00	西門	West Gate
3/18	P.M. 1:10	西門	West Gate
3/18	P.M. 1:20	西門	West Gate
3/18	P.M. 1:30	西門	West Gate
3/18	P.M. 1:50	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 2:00	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 2:10	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 2:15	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 2:20	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 2:25	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 2:30	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 2:35	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 2:40	事務本館北	North of Main Admin. Bldg.

3/18	P.M. 2:45	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 2:50	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 2:55	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 3:00	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 3:10	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 3:20	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 3:30	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 3:40	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 3:50	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 4:00	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 4:10	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 4:20	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 4:30	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 4:40	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 4:50	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 5:00	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 5:10	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 5:20	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 5:30	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 5:40	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 5:50	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 6:00	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 6:10	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 6:20	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 6:30	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 6:40	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 6:50	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 7:00	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 7:10	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 7:20	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 7:30	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 7:40	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 7:50	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 8:00	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 8:10	西門	West Gate
3/18	P.M. 8:20	西門	West Gate
3/18	P.M. 8:30	西門	West Gate
3/18	P.M. 8:40	西門	West Gate
3/18	P.M. 8:50	西門	West Gate
3/18	P.M. 9:00	西門	West Gate
3/18	P.M .9:10	西門	West Gate
3/18	P.M. 9:20	西門	West Gate
3/18	P.M. 9:30	西門	West Gate
3/18	P.M. 9:40	西門	West Gate
3/18	P.M. 9:50	西門	West Gate
3/18	P.M. 10:00	西門	West Gate
3/18	P.M. 10:10	西門	West Gate
3/18	P.M. 10:20	西門	West Gate

3/18	P.M. 10:30	西門	West Gate
3/18	P.M. 10:40	西門	West Gate
3/18	P.M. 10:50	西門	West Gate
3/18	P.M. 11:00	西門	West Gate
3/18	P.M. 11:10	西門	West Gate
3/18	P.M. 11:20	西門	West Gate
3/18	P.M. 11:30	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 11:40	事務本館北	North of Main Admin. Bldg.
3/18	P.M. 11:50	事務本館北	North of Main Admin. Bldg.
3/19	A.M. 0:00	事務本館北	North of Main Admin. Bldg.
3/19	A.M. 0:10	事務本館北	North of Main Admin. Bldg.
3/19	A.M. 0:20	事務本館北	North of Main Admin. Bldg.
3/19	A.M .0:30	事務本館北	North of Main Admin. Bldg.
3/19	A.M. 0:40	事務本館北	North of Main Admin. Bldg.
3/19	A.M. 0:50	事務本館北	North of Main Admin. Bldg.
3/19	A.M. 1:00	事務本館北	North of Main Admin. Bldg.
3/19	A.M. 1:10	事務本館北	North of Main Admin. Bldg.
3/19	A.M. 1:20	事務本館北	North of Main Admin. Bldg.
3/19	A.M. 1:30	事務本館北	North of Main Admin. Bldg.
3/19	A.M. 1:40	事務本館北	North of Main Admin. Bldg.
3/19	A.M. 1:50	事務本館北	North of Main Admin. Bldg.
3/19	A.M. 2:00	西門	West Gate
3/19	A.M. 2:10	西門	West Gate
3/19	A.M. 2:20	西門	West Gate
3/19	A.M. 2:30	西門	West Gate
3/19	A.M. 2:40	西門	West Gate
3/19	A.M. 2:50	西門	West Gate
3/19	A.M. 3:00	西門	West Gate
3/19	A.M. 3:10	西門	West Gate
3/19	A.M. 3:20	西門	West Gate
3/19	A.M. 3:30	西門	West Gate
3/19	A.M. 3:40	西門	West Gate
3/19	A.M. 3:50	西門	West Gate
3/19	A.M. 4:00	西門	West Gate
3/19	A.M. 4:10	西門	West Gate
3/19	A.M. 4:20	西門	West Gate
3/19	A.M. 4:30	西門	West Gate
3/19	A.M. 4:40	西門	West Gate
3/19	A.M. 4:50	西門	West Gate
3/19	A.M. 5:00	西門	West Gate
3/19	A.M. 5:10	西門	West Gate
3/19	A.M. 5:20	西門	West Gate
3/19	A.M. 5:30	西門	West Gate
3/19	A.M. 5:40	西門	West Gate
3/19	A.M. 5:50	西門	West Gate
3/19	A.M. 6:00	西門	West Gate
3/19	A.M. 6:10	西門	West Gate
3/19	A.M. 6:20	西門	West Gate

3/19	A.M. 6:30	西門	West Gate
3/19	A.M. 6:40	西門	West Gate
3/19	A.M. 6:50	西門	West Gate
3/19	A.M. 7:00	西門	West Gate
3/19	A.M. 7:10	西門	West Gate
3/19	A.M. 7:20	西門	West Gate
3/19	A.M. 7:30	西門	West Gate
3/19	A.M. 7:40	西門	West Gate
3/19	A.M. 7:50	西門	West Gate
3/19	A.M. 8:00	西門	West Gate
3/19	A.M. 8:10	西門	West Gate
3/19	A.M. 8:20	西門	West Gate
3/19	A.M. 8:30	西門	West Gate
3/19	A.M. 8:40	西門	West Gate
3/19	A.M. 8:50	西門	West Gate
3/19	A.M. 9:00	西門	West Gate
3/19	A.M. 9:10	西門	West Gate
3/19	A.M. 9:20	西門	West Gate
3/19	A.M. 9:30	西門	West Gate
3/19	A.M. 9:40	西門	West Gate
3/19	A.M. 9:50	西門	West Gate
3/19	A.M. 10:00	西門	West Gate
3/19	A.M. 10:10	西門	West Gate
3/19	A.M. 10:20	西門	West Gate
3/19	A.M. 10:30	西門	West Gate
3/19	A.M. 10:40	西門	West Gate
3/19	A.M. 10:50	西門	West Gate
3/19	A.M. 11:00	西門	West Gate
3/19	A.M. 11:10	西門	West Gate
3/19	A.M. 11:20	西門	West Gate
3/19	A.M. 11:30	西門	West Gate
3/19	A.M. 11:40	事務本館北	North of Main Admin. Bldg.
3/19	A.M. 11:50	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 0:00	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 0:10	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 0:20	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 0:30	事務本館北	North of Main Admin. Bldg.
3/19	A.M. 0:40	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 0:50	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 1:00	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 1:10	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 1:20	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 1:30	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 1:50	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 2:00	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 2:10	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 2:15	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 2:20	事務本館北	North of Main Admin. Bldg.

3/19	P.M. 2:30	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 2:40	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 2:50	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 3:00	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 3:10	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 3:20	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 3:30	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 3:40	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 3:50	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 4:00	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 4:10	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 4:20	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 4:30	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 4:40	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 4:50	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 5:00	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 5:10	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 5:20	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 5:30	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 5:40	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 5:50	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 6:00	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 6:10	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 6:20	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 6:30	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 6:40	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 6:50	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 7:00	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 7:10	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 7:20	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 7:30	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 7:40	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 7:50	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 8:00	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 8:10	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 8:20	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 8:30	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 8:40	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 8:50	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 9:00	事務本館北	North of Main Admin. Bldg.
3/19	P.M .9:10	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 9:20	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 9:30	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 9:40	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 9:50	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 10:00	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 10:10	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 10:20	事務本館北	North of Main Admin. Bldg.

3/19	P.M. 10:30	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 10:40	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 10:50	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 11:00	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 11:10	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 11:20	事務本館北	North of Main Admin. Bldg.
3/19	P.M. 11:30	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 0:00	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 0:10	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 0:20	事務本館北	North of Main Admin. Bldg.
3/20	A.M .0:30	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 0:40	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 0:50	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 1:00	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 1:10	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 1:20	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 1:30	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 1:40	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 1:50	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 2:00	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 2:10	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 2:20	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 2:30	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 2:40	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 2:50	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 3:00	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 3:10	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 3:20	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 3:30	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 3:40	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 3:50	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 4:00	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 4:10	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 4:20	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 4:30	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 4:40	西門	West Gate
3/20	A.M. 4:50	西門	West Gate
3/20	A.M. 5:00	西門	West Gate
3/20	A.M. 5:10	西門	West Gate
3/20	A.M. 5:20	西門	West Gate
3/20	A.M. 5:30	西門	West Gate
3/20	A.M. 5:40	西門	West Gate
3/20	A.M. 5:50	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 6:00	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 6:10	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 6:20	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 6:30	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 6:40	事務本館北	North of Main Admin. Bldg.

3/20	A.M. 6:50	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 7:00	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 7:10	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 7:20	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 7:30	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 7:40	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 7:50	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 8:00	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 8:10	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 8:20	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 8:30	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 8:40	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 8:50	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 9:00	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 9:10	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 9:20	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 9:30	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 9:40	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 9:50	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 10:00	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 10:10	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 10:20	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 10:30	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 10:40	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 10:50	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 11:00	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 11:10	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 11:20	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 11:30	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 11:40	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 11:50	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 0:00	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 0:10	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 0:20	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 0:30	事務本館北	North of Main Admin. Bldg.
3/20	A.M. 0:40	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 0:50	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 1:00	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 1:10	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 1:20	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 1:30	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 1:40	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 1:50	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 2:00	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 2:10	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 2:20	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 2:30	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 2:40	事務本館北	North of Main Admin. Bldg.

3/20	P.M. 2:50	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 3:00	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 3:10	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 3:20	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 3:30	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 3:40	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 3:50	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 4:00	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 4:10	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 4:20	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 4:30	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 4:40	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 4:50	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 5:00	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 5:10	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 5:20	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 5:30	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 5:40	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 5:50	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 6:00	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 6:10	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 6:20	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 6:30	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 6:40	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 6:50	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 7:00	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 7:10	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 7:20	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 7:30	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 7:40	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 7:50	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 8:00	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 8:10	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 8:20	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 8:30	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 8:40	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 8:50	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 9:00	事務本館北	North of Main Admin. Bldg.
3/20	P.M .9:10	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 9:20	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 9:30	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 9:40	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 9:50	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 10:00	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 10:10	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 10:20	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 10:30	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 10:40	事務本館北	North of Main Admin. Bldg.

3/20	P.M. 10:50	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 11:00	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 11:10	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 11:20	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 11:30	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 11:40	事務本館北	North of Main Admin. Bldg.
3/20	P.M. 11:50	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 0:00	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 0:10	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 0:20	事務本館北	North of Main Admin. Bldg.
3/21	A.M .0:30	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 0:40	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 0:50	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 1:00	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 1:10	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 1:20	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 1:30	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 1:40	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 1:50	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 2:00	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 2:10	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 2:20	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 2:30	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 2:40	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 2:50	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 3:00	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 3:10	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 3:20	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 3:30	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 3:40	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 3:50	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 4:00	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 4:10	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 4:20	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 4:30	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 4:40	事務本館北	North of Main Admin. Bldg.
3/21	A.M. 4:50	正門	Front Gate
3/21	A.M. 5:00	正門	Front Gate
3/21	A.M. 5:10	ＭＰ－７付近	around MP-7
3/21	A.M. 5:20	正門	Front Gate
3/21	A.M. 5:30	正門	Front Gate
3/21	A.M. 5:40	正門	Front Gate
3/21	A.M. 5:50	正門	Front Gate
3/21	A.M. 6:00	正門	Front Gate
3/21	A.M. 6:10	正門	Front Gate
3/21	A.M. 6:20	正門	Front Gate
3/21	A.M. 6:30	正門	Front Gate
3/21	A.M. 6:40	正門	Front Gate

3/21	A.M. 6:50	正門	Front Gate
3/21	A.M. 7:00	正門	Front Gate
3/21	A.M. 7:10	正門	Front Gate
3/21	A.M. 7:20	正門	Front Gate
3/21	A.M. 7:30	正門	Front Gate
3/21	A.M. 7:40	正門	Front Gate
3/21	A.M. 7:50	正門	Front Gate
3/21	A.M. 8:00	正門	Front Gate
3/21	A.M. 8:10	正門	Front Gate
3/21	A.M. 8:20	正門	Front Gate
3/21	A.M. 8:30	正門	Front Gate
3/21	A.M. 8:40	正門	Front Gate
3/21	A.M. 8:50	正門	Front Gate
3/21	A.M. 9:00	正門	Front Gate
3/21	A.M. 9:10	正門	Front Gate
3/21	A.M. 9:20	正門	Front Gate
3/21	A.M. 9:30	正門	Front Gate
3/21	A.M. 9:40	正門	Front Gate
3/21	A.M. 9:50	正門	Front Gate
3/21	A.M. 10:00	正門	Front Gate
3/21	A.M. 10:10	正門	Front Gate
3/21	A.M. 10:20	正門	Front Gate
3/21	A.M. 10:30	正門	Front Gate
3/21	A.M. 10:40	正門	Front Gate
3/21	A.M. 10:50	正門	Front Gate
3/21	A.M. 11:00	正門	Front Gate
3/21	A.M. 11:10	正門	Front Gate
3/21	A.M. 11:20	正門	Front Gate
3/21	A.M. 11:30	正門	Front Gate
3/21	A.M. 11:40	正門	Front Gate
3/21	A.M. 11:50	正門	Front Gate
3/21	P.M. 0:00	正門	Front Gate
3/21	P.M. 0:10	正門	Front Gate
3/21	P.M. 0:20	正門	Front Gate
3/21	P.M. 0:30	正門	Front Gate
3/21	A.M. 0:40	正門	Front Gate
3/21	P.M. 0:50	正門	Front Gate
3/21	P.M. 1:00	正門	Front Gate
3/21	P.M. 1:10	正門	Front Gate
3/21	P.M. 1:20	正門	Front Gate
3/21	P.M. 1:30	正門	Front Gate
3/21	P.M. 1:40	正門	Front Gate
3/21	P.M. 1:50	正門	Front Gate
3/21	P.M. 2:00	正門	Front Gate
3/21	P.M. 2:10	正門	Front Gate
3/21	P.M. 2:20	正門	Front Gate
3/21	P.M. 2:30	正門	Front Gate
3/21	P.M. 2:40	正門	Front Gate

3/21	P.M. 2:50	正門	Front Gate
3/21	P.M. 3:00	正門	Front Gate
3/21	P.M. 3:10	正門	Front Gate
3/21	P.M. 3:20	正門	Front Gate
3/21	P.M. 3:30	正門	Front Gate
3/21	P.M. 3:40	正門	Front Gate
3/21	P.M. 3:50	正門	Front Gate
3/21	P.M. 4:00	正門	Front Gate
3/21	P.M. 4:10	正門	Front Gate
3/21	P.M. 4:20	正門	Front Gate
3/21	P.M. 4:30	正門	Front Gate
3/21	P.M. 4:42	正門	Front Gate
3/21	P.M. 4:50	正門	Front Gate
3/21	P.M. 5:06	正門	Front Gate
3/21	P.M. 5:30	正門	Front Gate
3/21	P.M. 5:40	正門	Front Gate
3/21	P.M. 5:50	正門	Front Gate
3/21	P.M. 6:00	正門	Front Gate
3/21	P.M. 6:10	正門	Front Gate
3/21	P.M. 6:20	正門	Front Gate
3/21	P.M. 6:30	正門	Front Gate
3/21	P.M. 6:40	正門	Front Gate
3/21	P.M. 6:50	正門	Front Gate
3/21	P.M. 7:00	正門	Front Gate
3/21	P.M. 7:10	正門	Front Gate
3/21	P.M. 7:20	正門	Front Gate
3/21	P.M. 7:30	正門	Front Gate
3/21	P.M. 7:40	正門	Front Gate
3/21	P.M. 7:50	正門	Front Gate
3/21	P.M. 8:00	正門	Front Gate
3/21	P.M. 8:10	正門	Front Gate
3/21	P.M. 8:20	正門	Front Gate
3/21	P.M. 8:30	正門	Front Gate
3/21	P.M. 8:40	正門	Front Gate
3/21	P.M. 8:50	正門	Front Gate
3/21	P.M. 9:00	正門	Front Gate
3/21	P.M .9:10	正門	Front Gate
3/21	P.M. 9:20	正門	Front Gate
3/21	P.M. 9:30	正門	Front Gate
3/21	P.M. 9:40	正門	Front Gate
3/21	P.M. 9:50	正門	Front Gate
3/21	P.M. 10:00	正門	Front Gate
3/21	P.M. 10:10	正門	Front Gate
3/21	P.M. 10:20	正門	Front Gate
3/21	P.M. 10:30	正門	Front Gate
3/21	P.M. 10:40	正門	Front Gate
3/21	P.M. 10:50	正門	Front Gate
3/21	P.M. 11:00	正門	Front Gate

3/21	P.M. 11:10	正門	Front Gate
3/21	P.M. 11:20	正門	Front Gate
3/21	P.M. 11:30	正門	Front Gate
3/21	P.M. 11:40	正門	Front Gate
3/21	P.M. 11:50	正門	Front Gate
3/22	A.M. 0:00	正門	Front Gate
3/22	A.M. 0:10	正門	Front Gate
3/22	A.M. 0:20	正門	Front Gate
3/22	A.M .0:30	正門	Front Gate
3/22	A.M. 0:40	正門	Front Gate
3/22	A.M. 0:50	正門	Front Gate
3/22	A.M. 1:00	正門	Front Gate
3/22	A.M. 1:10	正門	Front Gate
3/22	A.M. 1:20	正門	Front Gate
3/22	A.M. 1:30	正門	Front Gate
3/22	A.M. 1:40	正門	Front Gate
3/22	A.M. 1:50	正門	Front Gate
3/22	A.M. 2:00	正門	Front Gate
3/22	A.M. 2:10	正門	Front Gate
3/22	A.M. 2:20	正門	Front Gate
3/22	A.M. 2:30	正門	Front Gate
3/22	A.M. 2:40	正門	Front Gate
3/22	A.M. 2:50	正門	Front Gate
3/22	A.M. 3:00	正門	Front Gate
3/22	A.M. 3:10	正門	Front Gate
3/22	A.M. 3:20	正門	Front Gate
3/22	A.M. 3:30	正門	Front Gate
3/22	A.M. 3:40	正門	Front Gate
3/22	A.M. 3:50	正門	Front Gate
3/22	A.M. 4:00	正門	Front Gate
3/22	A.M. 4:10	正門	Front Gate
3/22	A.M. 4:20	正門	Front Gate
3/22	A.M. 4:30	正門	Front Gate
3/22	A.M. 4:40	正門	Front Gate
3/22	A.M. 4:50	正門	Front Gate
3/22	A.M. 5:00	正門	Front Gate
3/22	A.M. 5:10	正門	Front Gate
3/22	A.M. 5:20	正門	Front Gate
3/22	A.M. 5:30	正門	Front Gate
3/22	A.M. 5:40	正門	Front Gate
3/22	A.M. 5:50	正門	Front Gate
3/22	A.M. 6:00	正門	Front Gate
3/22	A.M. 6:10	正門	Front Gate
3/22	A.M. 6:20	正門	Front Gate
3/22	A.M. 6:30	正門	Front Gate
3/22	A.M. 6:40	正門	Front Gate
3/22	A.M. 6:50	正門	Front Gate
3/22	A.M. 7:00	正門	Front Gate

3/22	A.M. 7:10	正門	Front Gate
3/22	A.M. 7:20	正門	Front Gate
3/22	A.M. 7:30	正門	Front Gate
3/22	A.M. 7:40	正門	Front Gate
3/22	A.M. 7:50	正門	Front Gate
3/22	A.M. 8:00	正門	Front Gate
3/22	A.M. 8:10	正門	Front Gate
3/22	A.M. 8:20	正門	Front Gate
3/22	A.M. 8:30	正門	Front Gate
3/22	A.M. 8:40	正門	Front Gate
3/22	A.M. 8:50	正門	Front Gate
3/22	A.M. 9:00	正門	Front Gate
3/22	A.M. 9:10	正門	Front Gate
3/22	A.M. 9:20	正門	Front Gate
3/22	A.M. 9:30	正門	Front Gate
3/22	A.M. 9:40	正門	Front Gate
3/22	A.M. 9:50	正門	Front Gate
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3/22	A.M. 11:40	正門	Front Gate
3/22	A.M.11:50	正門	Front Gate
3/22	P.M. 0:00	正門	Front Gate
3/22	P.M. 0:10	正門	Front Gate
3/22	P.M. 0:20	正門	Front Gate
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3/24	P.M. 0:10	正門	Front Gate
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3/24	P.M. 1:30	正門	Front Gate
3/24	P.M. 1:40	正門	Front Gate
3/24	P.M. 1:50	正門	Front Gate
3/24	P.M. 2:00	正門	Front Gate
3/24	P.M. 2:10	正門	Front Gate
3/24	P.M. 2:20	免震棟前	Seismic-isolated Building
3/24	P.M. 2:30	免震棟前	Seismic-isolated Building
3/24	P.M. 2:50	正門	Front Gate
3/24	P.M. 3:00	正門	Front Gate
3/24	P.M. 3:10	正門	Front Gate
3/24	P.M. 3:20	正門	Front Gate
3/24	P.M. 3:30	正門	Front Gate
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3/25	A.M. 7:00	正門	Front Gate
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3/25	A.M. 7:20	正門	Front Gate
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3/25	A.M. 11:40	正門	Front Gate
3/25	A.M. 11:50	正門	Front Gate
3/25	P.M. 0:00	正門	Front Gate
3/25	P.M. 0:10	正門	Front Gate
3/25	P.M. 0:20	正門	Front Gate
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3/26	A.M. 0:00	正門	Front Gate
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3/26	A.M. 10:50	正門	Front Gate
3/26	A.M. 11:00	正門	Front Gate
3/26	A.M. 11:10	西門移動中欠測	N/A
3/26	A.M. 11:20	西門	West Gate
3/26	A.M. 11:30	西門	West Gate
3/26	A.M. 11:40	西門	West Gate
3/26	A.M. 11:50	西門	West Gate
3/26	P.M. 0:00	西門	West Gate
3/26	P.M. 0:10	西門	West Gate
3/26	P.M. 0:20	西門	West Gate
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3/27	P.M. 11:00	西門	West Gate
3/27	P.M. 11:10	西門	West Gate
3/27	P.M. 11:20	西門	West Gate
3/27	P.M. 11:30	西門	West Gate
3/27	P.M. 11:40	西門	West Gate
3/27	P.M. 11:50	西門	West Gate
3/28	A.M. 0:00	西門	West Gate
3/28	A.M. 0:10	西門	West Gate
3/28	A.M. 0:20	西門	West Gate

3/28	A.M .0:30	西門	West Gate
3/28	A.M. 0:40	西門	West Gate
3/28	A.M. 0:50	西門	West Gate
3/28	A.M. 1:00	西門	West Gate
3/28	A.M. 1:10	西門	West Gate
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3/30	P.M. 0:30	西門	West Gate
3/30	A.M. 0:40	西門	West Gate
3/30	P.M. 0:50	西門	West Gate
3/30	P.M. 1:00	西門	West Gate
3/30	P.M. 1:10	西門	West Gate
3/30	P.M. 1:20	西門	West Gate
3/30	P.M. 1:30	西門	West Gate
3/30	P.M. 1:40	西門	West Gate
3/30	P.M. 1:50	西門	West Gate
3/30	P.M. 2:00	西門	West Gate
3/30	P.M. 2:10	西門	West Gate
3/30	P.M. 2:20	西門	West Gate
3/30	P.M. 2:30	西門	West Gate
3/30	P.M. 2:40	西門	West Gate
3/30	P.M. 2:50	西門	West Gate
3/30	P.M. 3:00	西門	West Gate
3/30	P.M. 3:10	西門	West Gate
3/30	P.M. 3:20	西門	West Gate
3/30	P.M. 3:30	西門	West Gate
3/30	P.M. 3:40	西門	West Gate
3/30	P.M. 3:50	西門	West Gate
3/30	P.M. 4:00	西門	West Gate
3/30	P.M. 4:10	西門	West Gate
3/30	P.M. 4:20	西門	West Gate

3/30	P.M. 4:30	西門	West Gate
3/30	P.M. 4:40	西門	West Gate
3/30	P.M. 4:50	西門	West Gate
3/30	P.M. 5:00	西門	West Gate
3/30	P.M. 5:10	西門	West Gate
3/30	P.M. 5:20	西門	West Gate
3/30	P.M. 5:30	西門	West Gate
3/30	P.M. 5:40	西門	West Gate
3/30	P.M. 5:50	西門	West Gate
3/30	P.M. 6:00	西門	West Gate
3/30	P.M. 6:10	西門	West Gate
3/30	P.M. 6:20	西門	West Gate
3/30	P.M. 6:30	西門	West Gate
3/30	P.M. 6:40	西門	West Gate
3/30	P.M. 6:50	西門	West Gate
3/30	P.M. 7:00	西門	West Gate
3/30	P.M. 7:10	西門	West Gate
3/30	P.M. 7:20	西門	West Gate
3/30	P.M. 7:30	西門	West Gate
3/30	P.M. 7:40	西門	West Gate
3/30	P.M. 7:50	西門	West Gate
3/30	P.M. 8:00	西門	West Gate
3/30	P.M. 8:10	西門	West Gate
3/30	P.M. 8:20	西門	West Gate
3/30	P.M. 8:30	西門	West Gate
3/30	P.M. 8:40	西門	West Gate
3/30	P.M. 8:50	西門	West Gate
3/30	P.M. 9:00	西門	West Gate
3/30	P.M. 9:10	西門	West Gate
3/30	P.M. 9:20	西門	West Gate
3/30	P.M. 9:30	西門	West Gate
3/30	P.M. 9:40	西門	West Gate
3/30	P.M. 9:50	西門	West Gate
3/30	P.M. 10:00	西門	West Gate
3/30	P.M. 10:10	西門	West Gate
3/30	P.M. 10:20	西門	West Gate
3/30	P.M. 10:30	西門	West Gate
3/30	P.M. 10:40	西門	West Gate
3/30	P.M. 10:50	西門	West Gate
3/30	P.M. 11:00	西門	West Gate
3/30	P.M. 11:10	西門	West Gate
3/30	P.M. 11:20	西門	West Gate
3/30	P.M. 11:30	西門	West Gate
3/30	P.M. 11:40	西門	West Gate
3/30	P.M. 11:50	西門	West Gate
3/31	A.M. 0:00	西門	West Gate
3/31	A.M. 0:10	西門	West Gate
3/31	A.M. 0:20	西門	West Gate

3/31	A.M .0:30	西門	West Gate
3/31	A.M. 0:40	西門	West Gate
3/31	A.M. 0:50	西門	West Gate
3/31	A.M. 1:00	西門	West Gate
3/31	A.M. 1:10	西門	West Gate
3/31	A.M. 1:20	西門	West Gate
3/31	A.M. 1:30	西門	West Gate
3/31	A.M. 1:40	西門	West Gate
3/31	A.M. 1:50	西門	West Gate
3/31	A.M. 2:00	西門	West Gate
3/31	A.M. 2:10	西門	West Gate
3/31	A.M. 2:20	西門	West Gate
3/31	A.M. 2:30	西門	West Gate
3/31	A.M. 2:40	西門	West Gate
3/31	A.M. 2:50	西門	West Gate
3/31	A.M. 3:00	西門	West Gate
3/31	A.M. 3:10	西門	West Gate
3/31	A.M. 3:20	西門	West Gate
3/31	A.M. 3:30	西門	West Gate
3/31	A.M. 3:40	西門	West Gate
3/31	A.M. 3:50	西門	West Gate
3/31	A.M. 4:00	西門	West Gate
3/31	A.M. 4:10	西門	West Gate
3/31	A.M. 4:20	西門	West Gate
3/31	A.M. 4:30	西門	West Gate
3/31	A.M. 4:40	西門	West Gate
3/31	A.M. 4:50	西門	West Gate
3/31	A.M. 5:00	西門	West Gate
3/31	A.M. 5:10	西門	West Gate
3/31	A.M. 5:20	西門	West Gate
3/31	A.M. 5:30	西門	West Gate
3/31	A.M. 5:40	西門	West Gate
3/31	A.M. 5:50	西門	West Gate
3/31	A.M. 6:00	西門	West Gate
3/31	A.M. 6:10	西門	West Gate
3/31	A.M. 6:20	西門	West Gate
3/31	A.M. 6:30	西門	West Gate
3/31	A.M. 6:40	西門	West Gate
3/31	A.M. 6:50	西門	West Gate
3/31	A.M. 7:00	西門	West Gate
3/31	A.M. 7:10	西門	West Gate
3/31	A.M. 7:20	西門	West Gate
3/31	A.M. 7:30	西門	West Gate
3/31	A.M. 7:40	西門	West Gate
3/31	A.M. 7:50	西門	West Gate
3/31	A.M. 8:00	西門	West Gate
3/31	A.M. 8:10	西門	West Gate
3/31	A.M. 8:20	西門	West Gate

3/31	A.M. 8:30	西門	West Gate
3/31	A.M. 8:40	西門	West Gate
3/31	A.M. 8:50	西門	West Gate
3/31	A.M. 9:00	西門	West Gate

γ-ray (μSv/h)	Neutron ray	Wind direction	Wind direction	Wind speed (m/s)
49 nG y/h	—	—		—
56 nG y/h	—	—		—
64 nG y/h	—	—		—
56 nG y/h	—	—		—
57 nG y/h	—	—		—
55 nG y/h	—	—		—
59 nG y/h	—	—		—
59 nG y/h	—	—		—
57 nG y/h	—	—		—
60 nG y/h	—	—		—
59 nG y/h	—	—		—
67 nG y/h	—	—		—
62 nG y/h	< 0.001μSv/h	北東	NE	0.4
61 nG y/h	< 0.001μSv/h	北西	NW	0.5
61 nG y/h	< 0.001μSv/h	東北東	ENE	0.4
59 nG y/h	< 0.001μSv/h	北	N	0.4
60 nG y/h	< 0.001μSv/h	東北東	ENE	0.6
62 nG y/h	< 0.001μSv/h	北東	NE	0.5
60 nG y/h	< 0.001μSv/h	北北西	NNW	0.5
60 nG y/h	< 0.001μSv/h	北	N	0.6
59 nG y/h	< 0.001μSv/h	西	W	0.7
60 nG y/h	< 0.001μSv/h	北	N	0.8
63 nG y/h	< 0.001μSv/h	西北西	WNW	0.4
60 nG y/h	< 0.001μSv/h	北	N	0.3
63 nG y/h	< 0.001μSv/h	北	N	0.4
59 nG y/h	< 0.001μSv/h	北北東	NNE	0.4
60 nG y/h	< 0.001μSv/h	南東	SE	0.5
62 nG y/h	< 0.001μSv/h	北東	NE	2.0
65 nG y/h	< 0.001μSv/h	北東		1.8
64 nG y/h	< 0.001μSv/h	東北東	ENE	0.9
63 nG y/h	< 0.001μSv/h	東北東	ENE	1.1
68 nG y/h	< 0.001μSv/h	北北西	NNW	0.6
66 nG y/h	< 0.001μSv/h	西南西	WSW	0.8
68 nG y/h	< 0.001μSv/h	南西	SW	0.7
64 nG y/h	< 0.001μSv/h	西南西	WSW	0.7
67 nG y/h	< 0.001μSv/h	北西	NW	1.0
65 nG y/h	< 0.001μSv/h	北北西	NNW	0.9
66 nG y/h	< 0.001μSv/h	北北西	NNW	1.4
65 nG y/h	< 0.001μSv/h	北北西	NNW	2.0

69 nG y/h	< 0.001μSv/h	北西	NW	1.7
66 nG y/h	< 0.001μSv/h	西	W	0.9
69 nG y/h	< 0.001μSv/h	西	W	1.0
68 nG y/h	< 0.001μSv/h	西	W	0.6
66 nG y/h	< 0.001μSv/h	西南西	WSW	0.5
64 nG y/h	< 0.001μSv/h	北北西	NNW	0.4
69 nG y/h	< 0.001μSv/h	北東	NE	0.5
866 nGy/h	—	—		—
1002 nGy/h	—	—		—
1307 nGy/h	—	—		—
1590 nGy/h	< 0.001μSv/h	西	W	0.5
1.21μSv/h	—	—		—
3.29μSv/h	< 0.001μSv/h	西南西	WSW	0.2
1.53μSv/h	—	—		—
4.92μSv/h	< 0.001μSv/h	西北西	WNW	0.7
2.47μSv/h	—	—		—
2.56μSv/h	—	—		—
2.53μSv/h	—	—		—
4.97μSv/h	< 0.001μSv/h	南	S	1.1
2.50μSv/h	—	—		—
2.50μSv/h	—	—		—
2.42μSv/h	—	—		—
4.89μSv/h	< 0.001μSv/h	南東	SE	0.9
2.43μSv/h	—	—		—
5.08μSv/h	< 0.001μSv/h	南西	SW	0.9
2.40μSv/h	—	—		—
4.77μSv/h	< 0.001μSv/h	南	S	1.2
2.37μSv/h	—	—		—
2.38μSv/h	—	—		—
2.36μSv/h	—	—		—
2.40μSv/h	—	—		—
4.56μSv/h	< 0.001μSv/h	南	S	2.0
2.34μSv/h	—	—		—
2.51μSv/h	—	—		—
4.87μSv/h	< 0.001μSv/h	南	S	1.6
2.68μSv/h	—	—		—
2.77μSv/h	—	—		—
2.55μSv/h	—	—		—
2.59μSv/h	—	—		—
5.16μSv/h	< 0.001μSv/h	南東	SE	2.5
2.61μSv/h	—	—		—
2.59μSv/h	—	—		—
2.62μSv/h	—	—		—
2.64μSv/h	—	—		—
5.03μSv/h	< 0.001μSv/h	南南東	SSW	2.8
2.61μSv/h	—	—		—
2.62μSv/h	—	—		—

5.28μSv/h	< 0.001μSv/h	南	S	1.9
4.50μSv/h	—	—		—
4.56μSv/h	—	—		—
6.65μSv/h	< 0.001μSv/h	南東	SE	2.2
4.61μSv/h	—	—		—
4.25μSv/h	—	—		—
180.2μSv/h	< 0.001μSv/h	南東	SE	2.0
3.85μSv/h	—	—		—
4.75μSv/h	—	—		—
385.5μSv/h	< 0.001μSv/h	北	N	1.8
9.14μSv/h	—	—		—
24.1μSv/h	—	—		—
162.9μSv/h	< 0.001μSv/h	北	N	2.0
16.9μSv/h	—	—		—
7.04μSv/h	< 0.001μSv/h	北	N	1.7
6.65μSv/h	—	—		—
6.69μSv/h	< 0.001μSv/h	南西	SW	1.6
5.16μSv/h	—	—		—
6.32μSv/h	< 0.001μSv/h	南西	SW	2.7
4.86μSv/h	—	—		—
9.43μSv/h	< 0.001μSv/h	北東	NE	2.2
5.22μSv/h	—	—		—
35.77μSv/h	< 0.001μSv/h	東	E	1.6
5.03μSv/h	—	—		—
12.53μSv/h	< 0.001μSv/h	南西	SW	2.0
3.80μSv/h	—	—		—
17.10μSv/h	< 0.001μSv/h	北西	NW	2.7
4.05μSv/h	—	—		—
23.21μSv/h	< 0.001μSv/h	北	N	2.3
5.32μSv/h	—	—		—
8.80μSv/h	—	—		—
48.23μSv/h	< 0.001μSv/h	西	W	1.9
13.5μSv/h	—	—		—
11.7μSv/h	—	—		—
11.56μSv/h	< 0.001μSv/h	北西	NE	2.2
4.13μSv/h	—	—		—
3.83μSv/h	—	—		—
5.78μSv/h	< 0.001μSv/h	南東	SE	1.8
3.58μSv/h	—	—		—
5.62μSv/h	< 0.001μSv/h	南	S	2.0
3.60μSv/h	—	—		—
5.48μSv/h	< 0.001μSv/h	南東	SE	1.7
3.52μSv/h	—	—		—
5.39μSv/h	< 0.001μSv/h	東	E	1.7
3.66μSv/h	—	—		—
5.31μSv/h	< 0.001μSv/h	南	S	2.6
3.74μSv/h	—	—		—

10.90μSv/h	< 0.001μSv/h	東	E	2.6
2.33μSv/h	—	—		—
4.782μSv/h	< 0.001μSv/h	南東	SE	3.5
2.31μSv/h	—	—		—
2.81μSv/h	—	—		—
4.82μSv/h	< 0.001μSv/h	東	E	2.9
3.13μSv/h	—	—		—
4.60μSv/h	< 0.001μSv/h	南南東	SSE	3.3
2.11μSv/h	—	—		—
7.30μSv/h	< 0.001μSv/h	南南東	SSE	3.3
3.02μSv/h	—	—		—
10.90μSv/h	< 0.001μSv/h	南南東	SSE	3.3
3.80μSv/h	—	—		—
9.98μSv/h	< 0.001μSv/h	南	S	2.7
3.49μSv/h	—	—		—
8.86μSv/h	< 0.001μSv/h	南	S	2.7
3.33μSv/h	—	—		—
7.72μSv/h	< 0.001μSv/h	南	S	3.4
3.50μSv/h	—	—		—
6.95μSv/h	< 0.001μSv/h	南南西	SSW	2.7
3.50μSv/h	—	—		—
6.99μSv/h	< 0.001μSv/h	南	S	2.5
3.33μSv/h	—	—		—
5.59μSv/h	< 0.001μSv/h	南南西	SSW	3.2
3.23μSv/h	—	—		—
5.49μSv/h	< 0.001μSv/h	南	S	2.5
3.21μSv/h	—	—		—
8.23μSv/h	< 0.001μSv/h	南	S	3.0
3.33μSv/h	—	—		—
5.311μSv/h	< 0.001μSv/h	南	S	2.6
2.19μSv/h	—	—		—
5.29μSv/h	< 0.001μSv/h	南南東	SSE	2.3
2.22μSv/h	—	—		—
3.64μSv/h	< 0.001μSv/h	南南東	SSE	2.4
2.20μSv/h	—	—		—
3.43μSv/h	< 0.001μSv/h	南南東	SSE	2.4
2.18μSv/h	—	—		—
3.32μSv/h	< 0.001μSv/h	南	S	2.2
2.12μSv/h	—	—		—
3.25μSv/h	< 0.001μSv/h	南南西	SSW	2.4
2.06μSv/h	—	—		—
3.25μSv/h	< 0.001μSv/h	南南西	SSW	1.9
3.78μSv/h	—	—		—
80.0μSv/h	—	—		—
23.9μSv/h	< 0.001μSv/h	西	W	0.5
2.74μSv/h	< 0.001μSv/h	北西	SW	0.4
10.0μSv/h	—	—		—

3.21μSv/h	< 0.001μSv/h	西	W	0.3
10.0μSv/h	—	—		—
3.19μSv/h	< 0.001μSv/h	西	S	0.5
10.0μSv/h	—	—		—
3.16μSv/h	< 0.001μSv/h	南西	SW	0.6
5.0μSv/h	—	—		—
6.0μSv/h	—	—		—
80.0μSv/h	—	—		—
80.0μSv/h	—	—		—
70.0μSv/h	—	—		—
80.0μSv/h	—	—		—
50.0μSv/h	—	—		—
2.958μSv/h	< 0.001μSv/h	南西	SW	0.5
70.0μSv/h	—	—		—
2.985μSv/h	< 0.001μSv/h	北西	NW	0.4
70.0μSv/h	—	—		—
21.620μSv/h	< 0.001μSv/h	南西	SW	0.4
2.91μSv/h	< 0.001μSv/h	西	W	0.4
2.92μSv/h	< 0.001μSv/h	西	W	0.4
4.87μSv/h	—	—		—
4.70μSv/h	—	—		—
2.85μSv/h	< 0.001μSv/h	西	W	0.3
4.12μSv/h	—	—		—
3.14μSv/h	< 0.001μSv/h	南	S	0.4
4.35μSv/h	—	—		—
3.33μSv/h	< 0.001μSv/h	北	NW	0.4
4.30μSv/h	—	—		—
3.29μSv/h	< 0.001μSv/h	北西	NW	0.4
3.27μSv/h	< 0.001μSv/h	西	W	0.4
3.09μSv/h	< 0.001μSv/h	西	W	0.5
4.50μSv/h	—	—		—
3.21μSv/h	< 0.001μSv/h	西	W	0.4
3.07μSv/h	< 0.001μSv/h	北西	NW	0.5
3.16μSv/h	< 0.001μSv/h	北東	NE	0.3
5.0μSv/h	—	—		—
3.291μSv/h	< 0.001μSv/h	北北西	NNW	0.4
4.7μSv/h	—	—		—
3.016μSv/h	< 0.001μSv/h	西	W	0.4
4.5μSv/h	—	—		—
3.146μSv/h	< 0.001μSv/h	南	S	0.4
4.5μSv/h	—	—		—
3.181μSv/h	< 0.001μSv/h	西北西	WNW	0.6
5.0μSv/h	—	—		—
3.177μSv/h	< 0.001μSv/h	北西	NW	0.6
4.5μSv/h	—	—		—
3.201μSv/h	< 0.001μSv/h	南東	SE	0.5
5.5μSv/h	—	—		—

3.207μSv/h	< 0.001μSv/h	北西	NW	0.4
4.5μSv/h	—	—		—
3.163μSv/h	< 0.001μSv/h	西	W	0.4
5.0μSv/h	—	—		—
3.127μSv/h	< 0.001μSv/h	北東	NE	0.6
5.5μSv/h	—	—		—
3.329μSv/h	< 0.001μSv/h	北東	NE	0.5
5.0μSv/h	—	—		—
3.125μSv/h	< 0.001μSv/h	西	W	0.5
5.0μSv/h	—	—		—
3.186μSv/h	< 0.001μSv/h	西	W	0.5
5.5μSv/h	—	—		—
3.116μSv/h	< 0.001μSv/h	西北西	WNW	0.4
5.0μSv/h	—	—		—
3.214μSv/h	< 0.001μSv/h	南東	SE	0.5
4.5μSv/h	—	—		—
3.164μSv/h	< 0.001μSv/h	南	S	0.6
4.5μSv/h	—	—		—
3.129μSv/h	< 0.001μSv/h	南西	SW	0.7
4.5μSv/h	—	—		—
3.104μSv/h	< 0.001μSv/h	南	S	0.7
4.5μSv/h	—	—		—
3.574μSv/h	< 0.001μSv/h	南	S	1.2
3.978μSv/h	< 0.001μSv/h	南東	SE	1.5
3.236μSv/h	< 0.001μSv/h	南南東	SSE	2.0
3.103μSv/h	< 0.001μSv/h	南	S	1.6
3.392μSv/h	< 0.001μSv/h	南西	SW	1.2
5.0μSv/h	—	—		—
3.186μSv/h	< 0.001μSv/h	南	S	0.8
5.1μSv/h	—	—		—
3.039μSv/h	< 0.001μSv/h	南西	SW	1.2
5.2μSv/h	—	—		—
3.564μSv/h	< 0.001μSv/h	南	S	1.3
5.0μSv/h	—	—		—
3.150μSv/h	< 0.001μSv/h	南南西	SSW	1.3
5.5μSv/h	—	—		—
3.122μSv/h	< 0.001μSv/h	南	S	0.6
5.0μSv/h	—	—		—
3.256μSv/h	< 0.001μSv/h	西	W	1.2
5.0μSv/h	—	—		—
3.104μSv/h	< 0.001μSv/h	北北東	NNE	0.7
4.5μSv/h	—	—		—
3.204μSv/h	< 0.001μSv/h	北	N	0.8
5.0μSv/h	—	—		—
3.360μSv/h	< 0.001μSv/h	北	N	0.7
5.0μSv/h	—	—		—
3.472μSv/h	< 0.001μSv/h	西	W	0.3

4.6μSv/h	ー	ー		ー
3.817μSv/h	0.002	北西	NW	0.6
5.0μSv/h	ー	ー		ー
3.224μSv/h	0.002	西	W	0.6
4.5μSv/h	ー	ー		ー
3.192μSv/h	0.001	南東	SE	0.5
5.2μSv/h	ー	ー		ー
3.467μSv/h	< 0.001μSv/h	南	S	0.6
5.6μSv/h	ー	ー		ー
3.188μSv/h	< 0.001μSv/h	南	S	0.9
5.9μSv/h	ー	ー		ー
3.160μSv/h	< 0.001μSv/h	南	S	1.1
5.7μSv/h	ー	ー		ー
3.625μSv/h	0.002	南南西	SSW	0.9
5.7μSv/h	ー	ー		ー
3.092μSv/h	0.001	西	W	0.8
5.7μSv/h	ー	ー		ー
3.006μSv/h	< 0.001μSv/h	南南西	SSW	1.3
5.7μSv/h	ー	ー		ー
3.652μSv/h	< 0.001μSv/h	西北西	WNW	1.6
7.7μSv/h	ー	ー		ー
3.415μSv/h	0.001	北	N	0.9
8.5μSv/h	ー	ー		ー
3.325μSv/h	< 0.001μSv/h	北	N	0.9
6.0μSv/h	ー	ー		ー
3.530μSv/h	< 0.001μSv/h	北西	NW	0.9
5.6μSv/h	ー	ー		ー
3.413μSv/h	0.001	北西	NW	0.9
7.227μSv/h	< 0.001μSv/h	北西	NW	0.4
3.510μSv/h	0.001	南	S	0.4
3.166μSv/h	< 0.001μSv/h	東	E	0.5
100μSv/h	ー	ー		ー
3.166μSv/h	< 0.001μSv/h	東	E	0.5
100μSv/h	ー	ー		ー
14.730μSv/h	< 0.001μSv/h	南南東	SSE	1.6
80μSv/h	ー	ー		ー
16.030μSv/h	< 0.001μSv/h	南東	SE	1.4
80μSv/h	ー	ー		ー
15.900μSv/h	< 0.001μSv/h	南東		2.0
90μSv/h	ー	ー		ー
10.240μSv/h	< 0.001μSv/h	南南東	SSE	2.4
37μSv/h	ー	ー		ー
143.5μSv/h	ー	東北東	ENE	0.5
175.000μSv/h	< 0.001μSv/h	東	E	1.5
30μSv/h	ー	ー		ー
137.8μSv/h	ー	西北西	WNW	0.8
281.700μSv/h	< 0.001μSv/h	南南西	SSE	1.4

27μSv/h	—	—		—
76.9μSv/h	—	西北西	WNW	1.8
26.000μSv/h	0.001	北	N	1.5
25μSv/h	—	—		—
70.3μSv/h	—	北西	NW	1.8
25μSv/h	—	—		—
66.8μSv/h	—	北西	NW	2.3
23μSv/h	—	—		—
64.7μSv/h	—	北西	NW	2.7
6.512μSv/h	< 0.001μSv/h	北西	NW	3.1
23μSv/h	—	—		—
62.9μSv/h	—	北西	NW	2.6
6.372μSv/h	< 0.001μSv/h	北西	NW	3.2
23μSv/h	—	—		—
61.1μSv/h	—	北西	NW	2.9
8.265μSv/h	< 0.001μSv/h	北北西	NNW	4.2
20μSv/h	—	—		—
61.8μSv/h	—	北西	NW	2.3
6.755μSv/h	< 0.001μSv/h	北	N	2.8
19μSv/h	—	—		—
58.0μSv/h	—	北西	NW	2.4
6.020μSv/h	< 0.001μSv/h	北	N	3.3
19μSv/h	—	—		—
56.8μSv/h	—	北西	NW	2.8
6.038μSv/h	0.002	北北西	NNW	3.3
19μSv/h	—	—		—
55.4μSv/h	—	北西	NW	2.7
5.766μSv/h	< 0.001μSv/h	南東	SE	3.3
18μSv/h	—	—		—
54.3μSv/h	—	北西	NW	2.2
5.610μSv/h	< 0.001μSv/h	南	S	2.4
18μSv/h	—	—		—
53.3μSv/h	—	北北西	NNW	2.3
5.998μSv/h	< 0.001μSv/h	北西	NW	2.8
18μSv/h	—	—		—
53.7μSv/h	—	北西	NW	2.5
7.888μSv/h	< 0.001μSv/h	北西	NW	2.7
17μSv/h	—	—		—
51.3μSv/h	—	北西	NW	2.1
6.837μSv/h	< 0.001μSv/h	西	WNW	2.7
17μSv/h	—	—		—
50.0μSv/h	—	西北西	WNW	3.1
6.617μSv/h	< 0.001μSv/h	北北西	NNW	2.5
17μSv/h	—	—		—
49.4μSv/h	—	北西	NW	2.4
5.545μSv/h	< 0.001μSv/h	東	E	2.4
17μSv/h	—	—		—

48.7μSv/h	―	北西	NW	1.6
5.537μSv/h	< 0.001μSv/h	西	W	2.2
18μSv/h	―	―		―
47.8μSv/h	―	北西	NW	1.3
5.316μSv/h	< 0.001μSv/h	南	S	2.1
18μSv/h	―	―		―
47.1μSv/h	―	北西	NW	2.9
5.495μSv/h	< 0.001μSv/h	北	N	2.0
17μSv/h	―	―		―
46.3μSv/h	―	北西	NW	2.3
5.266μSv/h	< 0.001μSv/h	南南西		2.1
17μSv/h	―	―		―
49.7Sv/h	―	北西	NW	2.8
5.369μSv/h	< 0.001μSv/h	西		2.1
17μSv/h	―	―		―
45.2μSv/h	―	北北西	NNW	1.9
4.953μSv/h	< 0.001μSv/h	北西	NW	2.1
17μSv/h	―	―		―
44.6μSv/h	―	北北西	NNW	2.3
4.794μSv/h	< 0.001μSv/h	南南西	SSW	2.6
17μSv/h	―	―		―
44.0μSv/h	―	西北西	WNW	2.6
4.907μSv/h	< 0.001μSv/h	南	S	2.7
17μSv/h	―	―		―
43.5μSv/h	―	西北西	WNW	2.5
4.852μSv/h	< 0.001μSv/h	南西	SW	1.6
16μSv/h	―	―		―
42.9μSv/h	―	西北西	WNW	1.7
4.883μSv/h	< 0.001μSv/h	北北西	NNW	2.2
16μSv/h	―	―		―
44.0μSv/h	―	北西	NW	1.6
4.965μSv/h	< 0.001μSv/h	南東	SE	1.7
24μSv/h	―	―		―
905.1μSv/h	―	東北東	ENE	1.5
21.880μSv/h	< 0.001μSv/h	南	S	2.6
21μSv/h	―	―		―
499.3μSv/h	―	南	S	0.6
39.710μSv/h	< 0.001μSv/h	南南東	SSE	2.1
21μSv/h	―	―		―
646.0μSv/h	―	東南東	ESE	0.7
57.630μSv/h	< 0.001μSv/h	南南東	SSE	2.5
21μSv/h	―	―		―
135.4μSv/h	―	南	S	0.6
17.610μSv/h	< 0.001μSv/h	南南東	SSE	2.2
32μSv/h	―	―		―
129.9μSv/h	―	南南東	SSE	0.5
10.050μSv/h	< 0.001μSv/h	南東	SE	1.6

52μSv/h	—	—		—
133.0μSv/h	—	南南東	SSE	0.7
10.850μSv/h	< 0.001μSv/h	南南東	SSE	2.0
35μSv/h	—	—		—
169.0μSv/h	—	—		—
8.311μSv/h	< 0.001μSv/h	南西	SW	1.3
52μSv/h	—	—		—
58.7μSv/h	—	南南東	SSE	0.8
5.717μSv/h	< 0.001μSv/h	南南東	SSE	1.6
100μSv/h	—	—		—
54.3μSv/h	—	西北西		2.3
4.717μSv/h	< 0.001μSv/h	南南東		1.6
24μSv/h	—	—		—
54.0μSv/h	—	西北西	WNW	1.1
4.461μSv/h	< 0.001μSv/h	北西	NW	2.0
34μSv/h	—	—		—
51.8μSv/h	—	東北東	ENE	2.1
4.360μSv/h	< 0.001μSv/h	西北西	WNW	1.5
24μSv/h	—	—		—
56.5μSv/h	—	東北東	ENE	1.1
5.469μSv/h	< 0.001μSv/h	南東	SE	2.3
30μSv/h	—	—		—
76.1μSv/h	—	南南東	SSE	0.7
5.154μSv/h	< 0.001μSv/h	南東	SE	2.2
31μSv/h	—	—		—
107.1μSv/h	—	南	S	0.7
4.555μSv/h	< 0.001μSv/h	南	S	1.8
45μSv/h	—	—		—
58.0μSv/h	—	南	S	0.4
4.336μSv/h	< 0.001μSv/h	南	S	1.8
150μSv/h	—	—		—
57.6μSv/h	—	南南東	SSE	0.4
4.277μSv/h	< 0.001μSv/h	南東	SE	1.1
46μSv/h	—	—		—
71.5μSv/h	—	南南東	SSE	0.5
4.235μSv/h	< 0.001μSv/h	南	S	1.0
60μSv/h	—	—		—
57.2μSv/h	—	南南西	SSW	0.4
4.224μSv/h	< 0.001μSv/h	南	S	1.0
30μSv/h	—	—		—
100.1μSv/h	—	南東	SE	0.5
4.301μSv/h	< 0.001μSv/h	南南西	SSW	1.5
120μSv/h	—	—		—
79.4μSv/h	—	南西	SW	0.4
4.213μSv/h	< 0.001μSv/h	南	S	1.8
62μSv/h	—	—		—
60.8μSv/h	—	南西	SW	0.4

4.640μSv/h	< 0.001μSv/h	南南東	SSE	0.6
45μSv/h	—	—		—
57.0μSv/h	—	西南西	WSW	0.5
5.171μSv/h	< 0.001μSv/h	北北西	NNW	0.5
36μSv/h	—	—		—
52.3μSv/h	—	南東	SE	0.4
5.898μSv/h	< 0.001μSv/h	西	W	0.6
40μSv/h	—	—		—
56.8μSv/h	—	北北西	NNW	0.5
5.953μSv/h	< 0.001μSv/h	西	W	0.5
35μSv/h	—	—		—
52.3μSv/h	—	北北西	NNW	0.4
5.382μSv/h	< 0.001μSv/h	北西	NW	0.6
35μSv/h	—	—		—
50.1μSv/h	—	北西		0.6
5.168μSv/h	< 0.001μSv/h	北西	NW	0.8
30μSv/h	—	—		—
49.4μSv/h	—	北北西	NNW	0.6
5.250μSv/h	< 0.001μSv/h	北西	NW	0.9
27μSv/h	—	—		—
48.6μSv/h	—	北北東	NNE	0.3
4.883μSv/h	< 0.001μSv/h	北西	NW	1.1
26μSv/h	—	—		—
47.9μSv/h	—	北北西	NNW	0.3
4.980μSv/h	< 0.001μSv/h	北西	NW	1.3
25μSv/h	—	—		—
47.3μSv/h	—	北	N	0.3
4.831μSv/h	< 0.001μSv/h	北北西	NNW	1.2
25μSv/h	—	—		—
46.7μSv/h	—	北西	NW	0.6
5.224μSv/h	0.001μSv/h未満	北西	NW	1.0
25μSv/h	—	—		—
46.1μSv/h	—	北北西	NNW	0.5
5.077μSv/h	< 0.001μSv/h	西	W	0.8
23μSv/h	—	—		—
46.3μSv/h	—	北西	NW	0.3
4.709μSv/h	< 0.001μSv/h	北西	NW	0.8
22μSv/h	—	—		—
44.8μSv/h	—	北西	NW	0.4
4.622μSv/h	< 0.001μSv/h	南西	SW	0.8
20μSv/h	—	—		—
44.4μSv/h	—	西北西	WNW	0.4
4.844μSv/h	< 0.001μSv/h	西	W	0.6
26μSv/h	—	—		—
44.0μSv/h	—	北	N	0.3
5.577μSv/h	< 0.001μSv/h	西	W	0.5
24μSv/h	—	—		—

43.8μSv/h	—	北北西	NNW	0.5
5.721μSv/h	< 0.001μSv/h	北西	NW	0.6
24μSv/h	—	—		—
43.2μSv/h	—	北西	NW	0.5
4.471μSv/h	< 0.001μSv/h	南西	SW	0.3
450μSv/h	—	—		—
42.8μSv/h	—	北西	NW	0.6
4.521μSv/h	< 0.001μSv/h	北西	NW	0.2
450μSv/h	—	—		—
42.5μSv/h	—	北北東	NNE	0.3
4.427μSv/h	< 0.001μSv/h	西	W	0.5
440μSv/h	—	—		—
42.6μSv/h	—	西北西	WNW	0.4
4.454μSv/h	< 0.001μSv/h	西北西	WNW	0.7
440μSv/h	—	—		—
42.0μSv/h	—	北	N	0.4
4.377μSv/h	< 0.001μSv/h	西北西	WMW	0.6
440μSv/h	—	—		—
41.7μSv/h	—	北北東	NNE	0.3
4.371μSv/h	< 0.001μSv/h	北西	NW	0.8
440μSv/h	—	—		—
41.3μSv/h	—	北	N	0.4
4.480μSv/h	< 0.001μSv/h	北	N	0.5
440μSv/h	—	—		—
41.0μSv/h	—	北	N	0.4
4.463μSv/h	< 0.001μSv/h	北	N	0.5
440μSv/h	—	—		—
40.8μSv/h	—	北北西	NNW	0.4
4.552μSv/h	< 0.001μSv/h	西	W	0.5
440μSv/h	—	—		—
40.6μSv/h	—	北北西	NNW	0.3
4.785μSv/h	< 0.001μSv/h	南	S	0.3
440μSv/h	—	—		—
40.3μSv/h	—	北西	NW	0.4
4.626μSv/h	< 0.001μSv/h	北西	NW	0.3
440μSv/h	—	—		—
40.1μSv/h	—	北	N	0.3
4.636μSv/h	< 0.001μSv/h	北	N	0.3
430μSv/h	—	—		—
39.8μSv/h	—	北北東	NNE	0.3
4.622μSv/h	< 0.001μSv/h	西	W	0.5
430μSv/h	—	—		—
39.7μSv/h	—	北北西	NNW	0.3
5.417μSv/h	< 0.001μSv/h	北	N	0.3
430μSv/h	—	—		—
40.4μSv/h	—	北北西	NNE	0.5
4.645μSv/h	< 0.001μSv/h	西北西	WNW	0.4

430μSv/h	—	—		—
39,3μSv/h	—	東南東	ESE	0.3
4.622μSv/h	< 0.001μSv/h	北東	NE	0.5
430μSv/h	—	—		—
39.1μSv/h	—	北北西	NNW	0.4
4.632μSv/h	< 0.001μSv/h	北西	NW	0.4
420μSv/h	—	—		—
38.9μSv/h	—	北	N	0.5
4.668μSv/h	< 0.001μSv/h	北	N	0.5
420μSv/h	—	—		—
38.7μSv/h	—	北北西	NNW	0.3
4.700μSv/h	< 0.001μSv/h	北	N	0.7
420μSv/h	—	—		—
39.0μSv/h	—	北北西	NNW	0.3
4.647μSv/h	< 0.001μSv/h	北	N	0.3
420μSv/h	—	—		—
38.3μSv/h	—	北北西	NNW	0.4
4.610μSv/h	< 0.001μSv/h	西南西	WSW	0.6
410μSv/h	—	—		—
38.2μSv/h	—	東北東	ENE	0.4
4.828μSv/h	< 0.001μSv/h	西	W	0.4
420μSv/h	—	—		—
38.1μSv/h	—	北北西	NNW	0.3
4.868μSv/h	< 0.001μSv/h	西	E	0.5
410μSv/h	—	—		—
37.9μSv/h	—	北北西	NNW	0.3
4.855μSv/h	< 0.001μSv/h	西	W	0.5
410μSv/h	—	—		—
38.2μSv/h	—	北西	NW	0.3
4.529μSv/h	< 0.001μSv/h	西	W	0.5
410μSv/h	—	—		—
38.4μSv/h	—	北西	NW	0.3
4.582μSv/h	< 0.001μSv/h	西	W	0.4
410μSv/h	—	—		—
37.7μSv/h	—	北	N	0.3
4.469μSv/h	< 0.001μSv/h	北	N	0.4
410μSv/h	—	—		—
37.5μSv/h	—	北北西	NNW	0.3
4.450μSv/h	< 0.001μSv/h	西	W	0.4
410μSv/h	—	—		—
37.3μSv/h	—	北	N	0.5
4.442μSv/h	0.001μSv/h未満	南	S	0.5
410μSv/h	—	—		—
37.0μSv/h	—	南西	SW	0.3
4.447μSv/h	< 0.001μSv/h	南	S	0.5
410μSv/h	—	—		—
38.0μSv/h	—	北北西	NNW	0.3

4.426μSv/h	< 0.001μSv/h	北西	NW	0.4
410μSv/h	—	—		—
36.9μSv/h	—	北北東	NNE	0.3
4.281μSv/h	< 0.001μSv/h	南	S	0.3
410μSv/h	—	—		—
36.7μSv/h	—	南東	SE	0.3
4.321μSv/h	< 0.001μSv/h	西北西	WNW	0.6
410μSv/h	—	—		—
36.5μSv/h	—	北西	NW	0.3
4.322μSv/h	< 0.001μSv/h	西北西	WNW	0.6
410μSv/h	—	—		—
36.4μSv/h	—	北西	NW	0.6
4.371μSv/h	< 0.001μSv/h	西北西	WNW	0.7
410μSv/h	—	—		—
38.3μSv/h	—	北北東	NNE	0.5
4.356μSv/h	< 0.001μSv/h	南東	SE	0.7
410μSv/h	—	—		—
36.4μSv/h	—	東	E	0.4
4.594μSv/h	< 0.001μSv/h	北東	NE	0.7
410μSv/h	—	—		—
36.5μSv/h	—	東南東	ESE	0.4
751.2μSv/h	< 0.001μSv/h	北西	NE	0.5
410μSv/h	—	—		—
44.6μSv/h	—	北北西	NNW	0.4
433.0μSv/h	< 0.001μSv/h	南	S	0.4
440μSv/h	—	—		—
319.3μSv/h	—	北北西	NNW	0.4
420.0μSv/h	< 0.001μSv/h	南西	SW	0.5
650μSv/h	—	—		—
189.7μSv/h	—	北北西	NNW	0.3
66.27μSv/h	< 0.001μSv/h	東北東	ENE	0.7
490μSv/h	—	—		—
86.9μSv/h	—	北	N	0.2
65.520μSv/h	< 0.001μSv/h	西	W	0.5
480μSv/h	—	—		—
144.2μSv/h	—	北	N	0.4
45.5μSv/h	< 0.001μSv/h	西	W	0.5
650μSv/h	—	—		—
129.8μSv/h	—	西北西	WNW	0.3
15.43μSv/h	< 0.001μSv/h	西	W	0.5
650μSv/h	—	—		—
123.9μSv/h	—	北北東	NNE	0.4
18.99μSv/h	< 0.001μSv/h	南東	SE	0.4
720μSv/h	—	—		—
112.9μSv/h	—	西北西	WNW	0.3
14.99μSv/h	< 0.001μSv/h	南	S	0.4
600μSv/h	—	—		—

73.6μSv/h	—	西	W	0.5
10.32μSv/h	< 0.001μSv/h	南	S	0.2
680μSv/h	—	—		—
70.0μSv/h	—	北西	NW	0.3
10.07μSv/h	< 0.001μSv/h	北	N	0.3
820μSv/h	—	—		—
68.8μSv/h	—	北北東	NNE	0.4
6.706μSv/h	< 0.001μSv/h	西北西	WNW	0.6
450μSv/h	—	—		—
54.7μSv/h	—	北北西	NNW	0.5
7.748μSv/h	< 0.001μSv/h	北	N	0.9
430μSv/h	—	—		—
47.6μSv/h	—	北西	NW	0.5
7.710μSv/h	< 0.001μSv/h	東南東	ESE	0.6
420μSv/h	—	—		—
50.0μSv/h	—	—		—
7.045μSv/h	< 0.001μSv/h	北北西	NNW	0.7
420μSv/h	—	—		—
42.9μSv/h	—	北北西	NNW	0.4
6.900μSv/h	< 0.001μSv/h	北	N	0.8
420μSv/h	—	—		—
40.6μSv/h	—	北北西	NNW	0.6
6.65μSv/h	< 0.001μSv/h	南西	SW	0.5
400μSv/h	—	—		—
39.9μSv/h	—	北北西	NNW	0.5
6.516μSv/h	< 0.001μSv/h	西	W	0.4
420μSv/h	—	—		—
39.0μSv/h	—	北西	NW	0.3
6.735μSv/h	< 0.001μSv/h	南東	SE	0.5
420μSv/h	—	—		—
41.3μSv/h	—	東北東	ENE	0.3
41.3μSv/h	< 0.001μSv/h	西北西	WNW	0.4
6.494μSv/h	—	西南西	WSW	0.4
400μSv/h	—	—		—
6.410μSv/h	< 0.001μSv/h	西	W	0.4
420μSv/h	—	—		—
38.3μSv/h	—	西北西	WNW	0.5
6.340μSv/h	< 0.001μSv/h	北西	NW	0.3
400μSv/h	—	—		—
38.1μSv/h	—	北	N	0.5
5.144μSv/h	< 0.001μSv/h	西北西	WNW	0.5
400μSv/h	—	—		—
37.9μSv/h	—	北	N	0.6
5.021μSv/h	< 0.001μSv/h	西	W	0.5
37.8μSv/h	—	北北西	NNW	0.3
5.032μSv/h	< 0.001μSv/h	南西	SW	0.4
37.4μSv/h	—	西南西	WSW	0.6

4.920μSv/h	< 0.001μSv/h	北西	NW	0.4
69μSv/h	—	西	W	0.5
40μSv/h	—	西北西	WNW	1.3
39μSv/h	—	西北西	WNW	1.0
287.2μSv/h	—	西	W	1.3
75μSv/h	—	西	W	0.8
274μSv/h	—	西	W	0.7
40μSv/h	—	西	W	0.8
268μSv/h	0μSv/h	南南西	SSE	0.8
304.8μSv/h	0μSv/h	南南西	SSE	1.2
443.7μSv/h	0μSv/h	西北西	WNW	1.1
518.7μSv/h	0μSv/h	南東	SE	1.1
481.0μSv/h	0μSv/h	南	S	0.8
87.083μSv/h	—	南南西	SSW	0.5
339.4μSv/h	0μSv/h	南	S	1.0
293.7μSv/h	0μSv/h	南	S	1.0
48.899μSv/h	—	南西	SW	0.8
274.9μSv/h	0μSv/h	南南西	SSW	1.2
43.256μSv/h	—	西北西	WSW	1.1
269.4μSv/h	0μSv/h	南西	SW	1.3
41.998μSv/h	—	北西	NW	1.8
266.8μSv/h	0μSv/h	南西	SW	1.3
41.533μSv/h	—	北北西	NNW	2.1
265.4μSv/h	0μSv/h	南西	SW	1.2
40.694μSv/h	—	北西	NW	2.5
261.6μSv/h	0μSv/h	西	W	1.2
40.155μSv/h	—	北西	NW	3.7
261.900μSv/h	0μSv/h	西	W	1.1
39.716μSv/h	—	北西	NW	3.0
261.0μSv/h	0μSv/h	南南西	SSW	0.8
39.406μSv/h	—	北北西	NNW	2.9
50.387μSv/h	0μSv/h	—		—
19.6μSv/h	0μSv/h	—		—
10.816μSv/h	0μSv/h	北北東	NNE	1.9
10.65μSv/h	0μSv/h	西北西	WNW	0.9
4.226μSv/h	0μSv/h	北西	NW	3.1
6.86μSv/h	0μSv/h	北		2.3
31.53μSv/h	0μSv/h	西南西	WSW	3.2
229.7μSv/h	0μSv/h	南東	SE	3.1
12.0μSv/h	—	—		—
34.2μSv/h	0μSv/h	南西	SW	2.4
13.0μSv/h	—	—		—
15.0μSv/h	—	—		—
14.0μSv/h	—	—		—
6.377μSv/h	0μSv/h	北	N	2.7
13.0μSv/h	—	—		—
13.0μSv/h	—	—		—

11.0μSv/h	―	―		―
3.65μSv/h	0μSv/h	北北西	NNW	1.0
12.0μSv/h	―	―		―
13.0μSv/h	―	―		―
15.0μSv/h	―	―		―
6.088μSv/h	0μSv/h	北	N	2.3
29.8μSv/h	0μSv/h	北西	NW	2.6
231.1μSv/h	0μSv/h	北西	NW	2.6
31.3μSv/h	0μSv/h	北	N	2.2
6.2μSv/h	0μSv/h	北	N	3.6
3.9μSv/h	0μSv/h	北	N	2.2
6.0μSv/h	0μSv/h	北北東	NNE	2.6
29.6μSv/h	0μSv/h	西北西	WNW	3.2
226.2μSv/h	0μSv/h	北北西	NNW	3.8
30.4μSv/h	0μSv/h	西北西	WNW	3.6
5.9μSv/h	0μSv/h	西北西	WNW	3.2
3.7μSv/h	0μSv/h	北北東	NNE	2.1
8.1μSv/h	0μSv/h	西北西	WNW	2.5
8.1μSv/h	0μSv/h	北西	NW	3.1
7.275μSv/h	< 0.001μSv/h	西北西	WNW	2.7
7.605μSv/h	< 0.001μSv/h	西	W	2.8
7.620μSv/h	< 0.001μSv/h	南西	SW	1.7
8.044μSv/h	< 0.001μSv/h	西	W	1.9
7.637μSv/h	< 0.001μSv/h	西	W	1.2
7.037μSv/h	< 0.001μSv/h	南	S	1.3
7.177μSv/h	< 0.001μSv/h	北西	NW	1.1
8.047μSv/h	< 0.001μSv/h	南南東	SSE	1.2
10.4μSv/h	< 0.001μSv/h	東	E	0.8
10.1μSv/h	< 0.001μSv/h	南	S	1.3
7.7μSv/h	< 0.001μSv/h	南東	SE	0.7
7.8μSv/h	< 0.001μSv/h	南東	SE	0.8
7.7μSv/h	< 0.001μSv/h	南	S	0.6
8.9μSv/h	< 0.001μSv/h	北	N	0.6
7.6μSv/h	< 0.001μSv/h	西	W	0.7
5.5μSv/h	< 0.001μSv/h	東	E	0.8
5.4μSv/h	< 0.001μSv/h	北	N	0.7
5.4μSv/h	< 0.001μSv/h	北西	NW	0.8
5.4μSv/h	< 0.001μSv/h	西北西	WNW	1.0
5.4μSv/h	< 0.001μSv/h	北西	NW	―
5.4μSv/h	< 0.001μSv/h	西北西	WNW	―
5.8μSv/h	< 0.001μSv/h	西	W	0.9
5.0μSv/h	< 0.001μSv/h	北東	NE	0.9
5.8μSv/h	< 0.001μSv/h	北	N	0.9
5.8μSv/h	< 0.001μSv/h	南西	SW	1.0
6.0μSv/h	< 0.001μSv/h	南西	SW	1.0
5.8μSv/h	< 0.001μSv/h	北	N	0.9
6.0μSv/h	< 0.001μSv/h	北西	NW	0.7

6.8μSv/h	< 0.001μSv/h	南西	SW	0.9
29.7μSv/h	< 0.001μSv/h	南東	SE	1.0
760.0μSv/h	< 0.001μSv/h	南東	SE	1.6
3130.0μSv/h	< 0.001μSv/h	南	S	1.7
431.7μSv/h	< 0.001μSv/h	北	N	1.2
336.6μSv/h	< 0.001μSv/h	北	N	1.2
301.9μSv/h	< 0.001μSv/h	南西	SW	4.6
326.2μSv/h	< 0.001μSv/h	北東	NE	4.2
293.7μSv/h	—	北北東	NNE	4.4
271.7μSv/h	—	北北東	NNE	4.4
267.0μSv/h	—	北北東	NNE	4.4
263.0μSv/h	—	北北東	NNE	4.4
252.7μSv/h	—	北北東	NNE	4.8
242.8μSv/h	—	北東	NE	2.2
235.3μSv/h	—	北東	NE	2.1
231.5μSv/h	—	北	N	2.2
227.0μSv/h	—	北	N	2.2
216.0μSv/h	—	北北西	NNW	1.8
216.0μSv/h	—	北北西	NNW	1.8
211.3μSv/h	—	北北東	NNE	1.8
205.6μSv/h	—	北北西	NNW	1.1
201.7μSv/h	—	北西	NW	1.0
196.2μSv/h	—	西北西	WNW	0.9
192.3μSv/h	—	西	W	0.8
188.9μSv/h	—	西北西	WNW	0.7
185.0μSv/h	—	西北西	WNW	0.7
181.0μSv/h	—	北北東	NNE	0.6
177.3μSv/h	—	北東	NE	0.6
175.8μSv/h	—	北東	NE	0.5
173.3μSv/h	—	北	N	0.5
168.0μSv/h	—	北	N	0.6
164.9μSv/h	—	北	N	0.7
164.4μSv/h	—	北北東	NNE	0.8
167.6μSv/h	—	東北東	ENE	0.8
164.3μSv/h	—	北	N	0.6
151.7μSv/h	—	北西	NW	0.5
150.3μSv/h	—	北北西	NNW	0.5
147.1μSv/h	—	北北東	NNE	0.7
137.8μSv/h	< 0.01μSv/h	北北西	NNW	1.3
135.5μSv/h	0.02μSv/h	北北東	NNE	1.1
130.4μSv/h	0.01μSv/h	北	N	1.0
123.3μSv/h	< 0.01μSv/h	北東	NE	2.8
120.2μSv/h	< 0.01μSv/h	北北東	NNE	3.4
114.1μSv/h	< 0.01μSv/h	北北東	NNE	3.2
111.4μSv/h	< 0.01μSv/h	北	N	3.6
109.6μSv/h	< 0.01μSv/h	北東	NE	3.6
105.4μSv/h	< 0.01μSv/h	北北東	NNE	3.4

94.3μSv/h	< 0.01μSv/h	北	N	3.4
92.8μSv/h	< 0.01μSv/h	北東	NE	4.2
87.0μSv/h	< 0.01μSv/h	北北西	NNW	2.0
81.9μSv/h	< 0.01μSv/h	北	N	2.1
77.6μSv/h	< 0.01μSv/h	北東	NE	1.0
73.6μSv/h	< 0.01μSv/h	北	N	0.8
70.0μSv/h	< 0.01μSv/h	北東	NE	0.9
67.4μSv/h	< 0.01μSv/h	北北西	NNW	0.7
65.7μSv/h	< 0.01μSv/h	北	N	0.7
73.2μSv/h	< 0.01μSv/h	北	N	0.8
807.7μSv/h	< 0.01μSv/h	北東	NE	1.5
8217.0μSv/h	< 0.01μSv/h	北東	NE	1.5
1726.0μSv/h	< 0.01μSv/h	北	N	1.6
2208.0μSv/h	< 0.01μSv/h	北	N	1.8
11930.0μSv/h	< 0.01μSv/h	北北東	NNE	1.5
58.0μSv/h	< 0.01μSv/h	―		―
50.0μSv/h	< 0.01μSv/h	―		―
7241.0μSv/h	< 0.01μSv/h	北東	NE	5.3
8837.0μSv/h	< 0.01μSv/h	―		―
253.8μSv/h	< 0.01μSv/h	―		―
162.4μSv/h	< 0.01μSv/h	―		―
2431.0μSv/h	< 0.01μSv/h	南東	SE	1.2
2434.0μSv/h	< 0.01μSv/h	東	E	1.3
1407.0μSv/h	< 0.01μSv/h	東南東	ESE	3.4
1325.0μSv/h	< 0.01μSv/h	南東	SE	1.3
1267.0μSv/h	< 0.01μSv/h	南	S	1.4
1216.0μSv/h	< 0.01μSv/h	南	S	1.8
1191.0μSv/h	< 0.01μSv/h	南	S	1.3
1148.0μSv/h	< 0.01μSv/h	南	S	1.3
1100.0μSv/h	< 0.01μSv/h	南南東	SSE	1.4
1068.0μSv/h	< 0.01μSv/h	南	S	1.0
1014.0μSv/h	< 0.01μSv/h	南南東	SSE	1.5
969.9μSv/h	< 0.01μSv/h	南	S	1.9
928.2μSv/h	< 0.01μSv/h	南	S	1.6
903.9μSv/h	< 0.01μSv/h	南	S	1.5
874.4μSv/h	< 0.01μSv/h	東南東	ESE	1.4
855.5μSv/h	< 0.01μSv/h	南	S	1.2
821.3μSv/h	< 0.01μSv/h	南南東	SSE	1.2
673.8μSv/h	< 0.01μSv/h	東	E	1.2
649.0μSv/h	< 0.01μSv/h	南東	SE	1.2
628.5μSv/h	< 0.01μSv/h	南	S	1.0
613.8μSv/h	< 0.01μSv/h	南東	SE	1.1
596.4μSv/h	< 0.01μSv/h	南	S	1.1
566.9μSv/h	< 0.01μSv/h	南東	SE	1.1
544.9μSv/h	< 0.01μSv/h	南南東	SSE	1.3
531.6μSv/h	< 0.01μSv/h	南	S	1.0
513.2μSv/h	< 0.01μSv/h	南南東		1.4

502.6μSv/h	< 0.01μSv/h	南	S	1.1
489.8μSv/h	< 0.01μSv/h	南南東	SSE	1.1
473.0μSv/h	< 0.01μSv/h	南南東	SSE	1.3
460.3μSv/h	< 0.01μSv/h	南	S	1.3
449.4μSv/h	< 0.01μSv/h	南	S	1.6
437.5μSv/h	< 0.01μSv/h	南東	SE	1.5
423.5μSv/h	< 0.01μSv/h	南	S	1.1
401.7μSv/h	< 0.01μSv/h	南東	SE	1.2
403.0μSv/h	< 0.01μSv/h	南	S	1.1
353.8μSv/h	< 0.01μSv/h	南	S	1.0
343.3μSv/h	< 0.01μSv/h	南	S	1.1
347.0μSv/h	< 0.01μSv/h	南	S	1.0
311.3μSv/h	< 0.01μSv/h	南南東	SSE	1.3
298.8μSv/h	< 0.01μSv/h	東	S	1.4
282.6μSv/h	< 0.01μSv/h	南南東	SSE	1.8
313.2μSv/h	< 0.01μSv/h	南東	SE	1.6
431.8μSv/h	< 0.01μSv/h	南東	SE	1.6
4548.0μSv/h	< 0.01μSv/h	西	W	0.7
6960.0μSv/h	< 0.01μSv/h	北	N	0.7
2761.0μSv/h	< 0.01μSv/h	南	S	0.9
3648.0μSv/h	< 0.01μSv/h	東	E	0.9
4976.0μSv/h	< 0.01μSv/h	北西	NW	1.0
8080.0μSv/h	< 0.01μSv/h	北西	NW	3.7
6308.0μSv/h	< 0.01μSv/h	東	E	5.6
6592.0μSv/h	< 0.01μSv/h	北北東	NNE	4.0
6847.0μSv/h	< 0.01μSv/h	北北東	NNE	4.0
6066.0μSv/h	< 0.01μSv/h	東	E	2.2
7966.0μSv/h	< 0.01μSv/h	北東	NE	1.7
4351.0μSv/h	< 0.01μSv/h	北北東	NNE	2.5
3504.0μSv/h	< 0.01μSv/h	北西	NW	2.1
3108.0μSv/h	< 0.01μSv/h	北	N	2.4
2609.0μSv/h	< 0.01μSv/h	北西	NW	1.0
2159.0μSv/h	< 0.01μSv/h	北西	NW	0.6
2021.0μSv/h	< 0.01μSv/h	北西	NW	0.6
1937.0μSv/h	< 0.01μSv/h	北東	NE	3.8
1805.0μSv/h	< 0.01μSv/h	北	N	1.1
1708.0μSv/h	< 0.01μSv/h	北西	NW	2.2
1628.0μSv/h	< 0.01μSv/h	北西	NW	1.0
1552.0μSv/h	< 0.01μSv/h	北西	NW	0.9
1522.0μSv/h	< 0.01μSv/h	北北西	NNE	0.9
1453.0μSv/h	< 0.01μSv/h	北西	NW	1.1
1386.0μSv/h	< 0.01μSv/h	北西	NW	1.0
1357.0μSv/h	< 0.01μSv/h	北西	NW	1.0
1316.0μSv/h	< 0.01μSv/h	北西	NW	1.0
1267.0μSv/h	< 0.01μSv/h	北西	NW	1.0
1159.0μSv/h	< 0.01μSv/h	北西	NW	5.0
1047.0μSv/h	< 0.01μSv/h	北	N	4.2

975.3μSv/h	< 0.01μSv/h	北北西	NNW	3.1
918.2μSv/h	< 0.01μSv/h	北西	NW	2.9
868.0μSv/h	< 0.01μSv/h	北北西	NNW	2.6
884.0μSv/h	< 0.01μSv/h	北西	NW	2.0
848.4μSv/h	< 0.01μSv/h	西	W	1.4
837.0μSv/h	< 0.01μSv/h	西北西	WNW	1.4
815.9μSv/h	< 0.01μSv/h	西北西	WNW	1.4
808.8μSv/h	< 0.01μSv/h	北西	NW	1.4
670.3μSv/h	< 0.01μSv/h	北西	NW	1.4
661.8μSv/h	< 0.01μSv/h	北西	NW	1.2
651.1μSv/h	< 0.01μSv/h	北西	NW	1.3
644.0μSv/h	< 0.01μSv/h	西	W	1.2
636.8μSv/h	< 0.01μSv/h	西	W	1.2
627.5μSv/h	< 0.01μSv/h	北北西	NNW	1.2
620.6μSv/h	< 0.01μSv/h	西北西	WNW	1.3
613.9μSv/h	< 0.01μSv/h	北北西	NNW	1.4
606.6μSv/h	< 0.01μSv/h	北北西	NNW	1.4
600.4μSv/h	< 0.01μSv/h	北	N	1.7
593.4μSv/h	< 0.01μSv/h	北北西	NNW	2.2
587.6μSv/h	< 0.01μSv/h	北西	NW	1.7
582.2μSv/h	< 0.01μSv/h	北	N	2.3
582.4μSv/h	< 0.01μSv/h	北西	NW	1.8
582.3μSv/h	< 0.01μSv/h	北西	NW	1.9
641.8μSv/h	< 0.01μSv/h	西	W	1.6
700.6μSv/h	< 0.01μSv/h	北北西	NNW	1.5
810.3μSv/h	< 0.01μSv/h	東北東	ENE	1.8
908.5μSv/h	< 0.01μSv/h	北東	NE	1.5
2399.0μSv/h	< 0.01μSv/h	東北東	ENE	1.4
1361.0μSv/h	< 0.01μSv/h	東	E	
6400.0μSv/h	< 0.01μSv/h	東北東	ENE	4.9
2300.0μSv/h	< 0.01μSv/h	北東	NE	—
2900.0μSv/h	< 0.01μSv/h	—		—
3391.0μSv/h	< 0.01μSv/h	北東	NE	2.0
2720.0μSv/h	< 0.01μSv/h	北北東	NNE	1.9
1900.0μSv/h	< 0.01μSv/h	東北東	ENE	2.3
5350.0μSv/h	< 0.01μSv/h	北東	NE	1.6
2633.0μSv/h	< 0.01μSv/h	東	E	1.8
2578.0μSv/h	< 0.01μSv/h	北	N	1.8
4418.0μSv/h	< 0.01μSv/h	東南東	ESE	1.6
3138.0μSv/h	< 0.01μSv/h	東	E	0.9
3261.0μSv/h	< 0.01μSv/h	北	N	1.8
10850.0μSv/h	< 0.01μSv/h	東北東	ENE	1.4
8234.0μSv/h	< 0.01μSv/h	西	W	1.4
2851.0μSv/h	< 0.01μSv/h	北西	NW	4.1
2672.0μSv/h	< 0.01μSv/h	西南西	WSW	3.0
2538.0μSv/h	< 0.01μSv/h	西南西	WSW	1.0
2430.0μSv/h	< 0.01μSv/h	西南西	WSW	1.2

2331.0μSv/h	< 0.01μSv/h	北	N	2.4
2257.0μSv/h	< 0.01μSv/h	北西	NW	2.7
2182.0μSv/h	< 0.01μSv/h	北西	NW	2.1
2122.0μSv/h	< 0.01μSv/h	東北東	ENE	1.7
2059.0μSv/h	< 0.01μSv/h	南南西	SSW	1.9
2002.0μSv/h	< 0.01μSv/h	南南東	SSE	2.3
1937.0μSv/h	< 0.01μSv/h	西	W	2.1
1888.0μSv/h	< 0.01μSv/h	西北西	WNW	2.1
1835.0μSv/h	< 0.01μSv/h	西南西	WEW	3.1
1788.0μSv/h	< 0.01μSv/h	北西	NW	2.3
1752.0μSv/h	< 0.01μSv/h	北西	NW	3.4
1697.0μSv/h	< 0.01μSv/h	北北西	NNW	3.0
1664.0μSv/h	< 0.01μSv/h	北	N	2.7
1629.0μSv/h	< 0.01μSv/h	北北西	NNW	2.6
1591.0μSv/h	< 0.0 1 μSv/h	西	W	2.6
351.4 μSv/h	< 0.01 μSv/h	北東	NE	1.1
350.1 μSv/h	< 0.01 μSv/h	南南西	SSW	0.4
350.0 μSv/h	< 0.01 μSv/h	北北西	NNW	0.6
348.2 μSv/h	< 0.01 μSv/h	東	E	0.9
345.9 μSv/h	< 0.01 μSv/h	西	W	0.5
344.8 μSv/h	< 0.01 μSv/h	北西	NW	1.5
344.6 μSv/h	< 0.01 μSv/h	北	N	1.5
341.7 μSv/h	< 0.01 μSv/h	西	W	1.8
340.8 μSv/h	< 0.01 μSv/h	西	W	1.8
339.4 μSv/h	< 0.01 μSv/h	北西	NW	1.0
338.3 μSv/h	< 0.01 μSv/h	西	W	1.3
336.1 μSv/h	< 0.01 μSv/h	西	W	2.3
334.7 μSv/h	< 0.01 μSv/h	西	W	3.1
333.8 μSv/h	< 0.01 μSv/h	西	W	3.6
314.5 μSv/h	< 0.01 μSv/h	西	W	3.7
313.5 μSv/h	< 0.01 μSv/h	西	W	3.8
381.3 μSv/h	< 0.01 μSv/h	西	W	3.7
379.0 μSv/h	< 0.01 μSv/h	南西	SW	3.7
373.0 μSv/h	< 0.01 μSv/h	西南西	WSW	3.2
372.5 μSv/h	< 0.01 μSv/h	南西	SW	3.8
372.7 μSv/h	< 0.01 μSv/h	南西	SW	3.4
373.7 μSv/h	< 0.01 μSv/h	南西	SW	3.7
371.9 μSv/h	< 0.01 μSv/h	南西	SW	3.0
3786.0 μSv/h	< 0.01 μSv/h	西	W	5.1
3782.0 μSv/h	< 0.01 μSv/h	西南西	WSW	5.0
3763.0 μSv/h	< 0.01 μSv/h	西	W	6.8
3759.0 μSv/h	< 0.01 μSv/h	北西	NW	5.2
3755.0 μSv/h	< 0.01 μSv/h	北西	NW	5.6
3754.0 μSv/h	< 0.01 μSv/h	西	W	5.2
3750.0 μSv/h	< 0.01 μSv/h	西	W	7.0
3753.0 μSv/h	< 0.01 μSv/h	西南西	WSW	4.5
3743.0 μSv/h	< 0.01 μSv/h	南西	SW	2.2
647.3 μSv/h	< 0.01 μSv/h	北西	NW	4.8

646.2 μSv/h	< 0.01 μSv/h	北北西	NNW	2.3
313.1 μSv/h	< 0.01 μSv/h	北西	NW	4.7
312.5 μSv/h	< 0.01 μSv/h	西	W	4.4
312.3 μSv/h	< 0.01 μSv/h	西北西	WNW	2.9
311.0 μSv/h	< 0.01 μSv/h	西	W	3.5
310.7 μSv/h	< 0.01 μSv/h	西	W	3.5
309.7 μSv/h	< 0.01 μSv/h	西	W	3.8
309.3 μSv/h	< 0.01 μSv/h	西	W	3.5
309.1 μSv/h	< 0.01 μSv/h	西	W	3.1
4175.0 μSv/h	< 0.01 μSv/h	北西	NW	4.5
4165.0 μSv/h	< 0.01 μSv/h	西	W	4.7
3810.0 μSv/h	< 0.01 μSv/h	西	W	5.2
311.1 μSv/h	< 0.01 μSv/h	北西	NW	5.8
310.3 μSv/h	< 0.01 μSv/h	西	W	3.5
309.1 μSv/h	< 0.01 μSv/h	西	W	3.2
309.7 μSv/h	< 0.01 μSv/h	西	W	3.1
3700.0 μSv/h	< 0.01 μSv/h	西	W	5.2
3698.0 μSv/h	< 0.01 μSv/h	西	W	4.3
3695.0 μSv/h	< 0.01 μSv/h	西	W	4.3
3691.0 μSv/h	< 0.01 μSv/h	西	W	4.1
3676.0 μSv/h	< 0.01 μSv/h	西	W	3.1
3675.0 μSv/h	< 0.01 μSv/h	北西	NW	2.8
3672.0 μSv/h	< 0.01 μSv/h	北西	NW	3.3
3667.0 μSv/h	< 0.01 μSv/h	北西	NW	3.4
3639.0 μSv/h	< 0.01 μSv/h	西北西	WNW	3.6
3650.0 μSv/h	< 0.01 μSv/h	西	W	2.7
3649.0 μSv/h	< 0.01 μSv/h	西北西	WNW	2.1
3641.0 μSv/h	< 0.01 μSv/h	北西	NW	2.4
3645.0 μSv/h	< 0.01 μSv/h	西	W	2.6
3643.0 μSv/h	< 0.01 μSv/h	西北西	WNW	2.7
3638.0 μSv/h	< 0.01 μSv/h	北西	NW	2.9
3638.0 μSv/h	< 0.01 μSv/h	西北西	WNW	2.4
3630.0 μSv/h	< 0.01 μSv/h	西南西	WSW	2.7
3626.0 μSv/h	< 0.01 μSv/h	西北西	WNW	2.7
292.2 μSv/h	< 0.01 μSv/h	西北西	WNW	1.2
291.9 μSv/h	< 0.01 μSv/h	北西	NW	0.9
291.7 μSv/h	< 0.01 μSv/h	北西	NW	1.6
291.3 μSv/h	< 0.01 μSv/h	西	W	1.7
291.2 μSv/h	< 0.01 μSv/h	北西	NW	1.8
291.1 μSv/h	< 0.01 μSv/h	北西	NW	1.5
290.9 μSv/h	< 0.01 μSv/h	北西	NW	1.5
290.4 μSv/h	< 0.01 μSv/h	北西	NW	1.4
290.4 μSv/h	< 0.01 μSv/h	北西	NW	1.5
289.9 μSv/h	< 0.01 μSv/h	西北西	WNW	1.3
289.7 μSv/h	< 0.01 μSv/h	北西	NW	1.0
289.6 μSv/h	< 0.01 μSv/h	北西	NW	1.3
289.5 μSv/h	< 0.01 μSv/h	北北西	NNW	1.2
289.0 μSv/h	< 0.01 μSv/h	北西	NW	0.9

289.0 µSv/h	< 0.01 µSv/h	北西	NW	0.9
288.8 µSv/h	< 0.01 µSv/h	北北西	NNW	0.7
288.7 µSv/h	< 0.01 µSv/h	北西	NW	1.2
287.8 µSv/h	< 0.01 µSv/h	北西	NW	1.3
288.9 µSv/h	< 0.01 µSv/h	北西	NW	1.0
287.0 µSv/h	< 0.01 µSv/h	西	W	1.4
287.3 µSv/h	< 0.01 µSv/h	西	W	1.0
286.6 µSv/h	< 0.01 µSv/h	西	W	1.0
286.4 µSv/h	< 0.01 µSv/h	西	W	0.8
286.3 µSv/h	< 0.01 µSv/h	北西	NW	0.9
286.0 µSv/h	< 0.01 µSv/h	西北西	WNW	1.0
285.6 µSv/h	< 0.01 µSv/h	北西	NW	1.6
285.5 µSv/h	< 0.01 µSv/h	北西	NW	1.5
285.2 µSv/h	< 0.01 µSv/h	北西	NW	1.7
284.9 µSv/h	< 0.01 µSv/h	北西	NW	1.4
284.6 µSv/h	< 0.01 µSv/h	北	N	0.9
284.4 µSv/h	< 0.01 µSv/h	北西	NW	0.6
284.0 µSv/h	< 0.01 µSv/h	北西	NW	1.0
283.7 µSv/h	< 0.01 µSv/h	北西	NW	0.5
283.7 µSv/h	< 0.01 µSv/h	北西	NW	0.2
283.5 µSv/h	< 0.01 µSv/h	北西	NW	0.2
283.0 µSv/h	< 0.01 µSv/h	北北東	NNE	0.2
282.9 µSv/h	< 0.01 µSv/h	北西	NW	0.2
282.6 µSv/h	< 0.01 µSv/h	西	W	0.2
282.0 µSv/h	< 0.01 µSv/h	西北西	WNW	0.3
282.0 µSv/h	< 0.01 µSv/h	西北西	WNW	0.4
281.6 µSv/h	< 0.01 µSv/h	西	W	0.7
281.5 µSv/h	< 0.01 µSv/h	北西	NW	0.6
281.2 µSv/h	< 0.01 µSv/h	東	E	0.4
281.1 µSv/h	< 0.01 µSv/h	西	W	0.5
280.9 µSv/h	< 0.01 µSv/h	西	W	0.5
280.7 µSv/h	< 0.01 µSv/h	北	N	0.4
280.2 µSv/h	< 0.01 µSv/h	北西	NW	0.2
280.0 µSv/h	< 0.01 µSv/h	北	N	0.6
279.8 µSv/h	< 0.01 µSv/h	北東	NE	0.5
279.4 µSv/h	< 0.01 µSv/h	北北東	NNE	0.5
279.3 µSv/h	< 0.01 µSv/h	北北西	NNW	0.5
279.0 µSv/h	< 0.01 µSv/h	北	N	0.6
278.9 µSv/h	< 0.01 µSv/h	北西	NW	0.7
278.9 µSv/h	< 0.01 µSv/h	北西	NW	1.0
277.1 µSv/h	< 0.01 µSv/h	北	N	1.0
274.0 µSv/h	< 0.01 µSv/h	北東	NE	1.3
274.0 µSv/h	< 0.01 µSv/h	西	W	1.6
273.8 µSv/h	< 0.01 µSv/h	北	N	1.4
274.1 µSv/h	< 0.01 µSv/h	西	W	1.2
272.7 µSv/h	< 0.01 µSv/h	北西	NW	1.5
273.4 µSv/h	< 0.01 µSv/h	西	W	1.6
272.4 µSv/h	< 0.01 µSv/h	西	W	2.3

271.7 µSv/h	< 0.01 µSv/h	北	N	2.1
271.6 µSv/h	< 0.01 µSv/h	北	N	1.9
271.4 µSv/h	< 0.01 µSv/h	西	W	2.0
271.1 µSv/h	< 0.01 µSv/h	北西	NW	2.9
271.2 µSv/h	< 0.01 µSv/h	北	N	3.0
270.5 µSv/h	< 0.01 µSv/h	北西	NW	2.7
270.3 µSv/h	< 0.01 µSv/h	北西	NW	2.9
269.9 µSv/h	< 0.01 µSv/h	西	W	3.4
269.9 µSv/h	< 0.01 µSv/h	西	W	3.7
269.8 µSv/h	< 0.01 µSv/h	西	W	3.3
269.2 µSv/h	< 0.01 µSv/h	北西	NW	2.5
268.7 µSv/h	< 0.01 µSv/h	西北西	WNW	2.6
267.6 µSv/h	< 0.01 µSv/h	西北西	WNW	2.8
268.9 µSv/h	< 0.01 µSv/h	西	W	2.3
267.5 µSv/h	< 0.01 µSv/h	西	W	3.3
267.0 µSv/h	< 0.01 µSv/h	西	W	2.9
266.9 µSv/h	< 0.01 µSv/h	西北西	WNW	3.1
266.7 µSv/h	< 0.01 µSv/h	北北西	NNW	2.0
266.4 µSv/h	< 0.01 µSv/h	西	W	1.8
266.1 µSv/h	< 0.01 µSv/h	北西	NW	2.2
265.7 µSv/h	< 0.01 µSv/h	北西	NW	2.5
265.4 µSv/h	< 0.01 µSv/h	北	N	2.3
264.8 µSv/h	< 0.01 µSv/h	南西	SW	1.8
265.0 µSv/h	< 0.01 µSv/h	西	W	1.9
264.4 µSv/h	< 0.01 µSv/h	北	N	1.5
264.5 µSv/h	< 0.01 µSv/h	北西	NW	1.3
264.1 µSv/h	< 0.01 µSv/h	南西	SW	1.5
264.4 µSv/h	< 0.01 µSv/h	南西	SW	1.7
263.4 µSv/h	< 0.01 µSv/h	西北西	WNW	1.6
263.5 µSv/h	< 0.01 µSv/h	北	N	1.7
263.1 µSv/h	< 0.01 µSv/h	西	W	1.3
262.9 µSv/h	< 0.01 µSv/h	南東	SE	1.2
263.3 µSv/h	< 0.01 µSv/h	東	E	1.1
264.3 µSv/h	< 0.01 µSv/h	南	S	1.8
261.3 µSv/h	< 0.01 µSv/h	南東	SE	2.7
262.0 µSv/h	< 0.01 µSv/h	南	S	3.0
261.9 µSv/h	< 0.01 µSv/h	東南東	ESE	2.6
262.7 µSv/h	< 0.01 µSv/h	南東	SE	2.5
264.1 µSv/h	< 0.01 µSv/h	東	E	2.0
3484.0 µSv/h	< 0.01 µSv/h	東南東	ESE	1.8
3414.0 µSv/h	< 0.01 µSv/h	南南東	SSE	2.0
3382.0 µSv/h	< 0.01 µSv/h	南東	SE	1.7
3371 µSv/h	< 0.01 µSv/h	東南東	ESE	1.6
3362 µSv/h	< 0.01 µSv/h	南	S	1.7
3357 µSv/h	< 0.01 µSv/h	東南東	ESE	1.9
3352 µSv/h	< 0.01 µSv/h	南東	SE	1.9
3342µSv/h	< 0.01 µSv/h	南南東	SSE	1.7
3348µSv/h	< 0.01 µSv/h	南南東	SSE	1.8

3357μSv/h	< 0.01 μSv/h	南南東	SSE	1.6
3339μSv/h	< 0.01 μSv/h	東南東	ESE	1.5
3346μSv/h	< 0.01 μSv/h	南	S	1.5
3345μSv/h	< 0.01 μSv/h	南東	SE	1.4
3368μSv/h	< 0.01 μSv/h	南	S	1.7
3582μSv/h	< 0.01 μSv/h	南南東	SSE	1.9
4075μSv/h	< 0.01 μSv/h	南南東	SSE	2.3
3823μSv/h	< 0.01 μSv/h	南南東	SSE	2.1
4396μSv/h	< 0.01 μSv/h	南南東	SSE	2.2
4485μSv/h	< 0.01 μSv/h	南南東	SSE	2.4
4352μSv/h	< 0.01 μSv/h	東南東	ESE	2.0
4535μSv/h	< 0.01 μSv/h	南	S	2.1
4419μSv/h	< 0.01 μSv/h	南南西	SSE	1.8
4277μSv/h	< 0.01 μSv/h	東	E	2.1
4735μSv/h	< 0.01 μSv/h	南南東	SSE	2.1
5055μSv/h	< 0.01 μSv/h	南	S	2.0
5033μSv/h	< 0.01 μSv/h	南南東	SSE	2.1
4952μSv/h	< 0.01 μSv/h	南南東	SSE	3.1
4251μSv/h	< 0.01 μSv/h	南	S	2.3
4182μSv/h	< 0.01 μSv/h	南	S	1.8
4090μSv/h	< 0.01 μSv/h	南南西	SSW	1.8
4084μSv/h	< 0.01 μSv/h	南南西	SSW	1.2
4069μSv/h	< 0.01 μSv/h	南	S	1.2
4069μSv/h	< 0.01 μSv/h	南	S	1.2
3922μSv/h	< 0.01 μSv/h	南南西	SSW	1.5
3885μSv/h	< 0.01 μSv/h	南南西	SSW	1.5
3832μSv/h	< 0.01 μSv/h	南南西	SSW	1.4
3788μSv/h	< 0.01 μSv/h	西	W	1.5
3745μSv/h	< 0.01 μSv/h	南西	SW	1.3
3728μSv/h	< 0.01 μSv/h	南西	SW	1.4
3699μSv/h	< 0.01 μSv/h	南南西	SSW	1.4
3669μSv/h	< 0.01 μSv/h	南	S	1.3
3634μSv/h	< 0.01 μSv/h	西南西	WSW	1.5
3611μSv/h	< 0.01 μSv/h	西南西	WSW	1.3
447.6μSv/h	< 0.01 μSv/h	南	S	3.0
441.2μSv/h	< 0.01 μSv/h	西	W	0.5
434.5μSv/h	< 0.01 μSv/h	西北西	WSW	0.7
429.2μSv/h	< 0.01 μSv/h	南西	SW	0.8
423.9μSv/h	< 0.01 μSv/h	西北西	WNW	0.6
419.1μSv/h	< 0.01 μSv/h	南南西	SSW	0.5
414.2μSv/h	< 0.01 μSv/h	西	W	0.6
409.4μSv/h	< 0.01 μSv/h	西	W	0.3
405.2μSv/h	< 0.01 μSv/h	西	W	0.3
401.6μSv/h	< 0.01 μSv/h	北北西	NNW	0.4
397.8μSv/h	< 0.01 μSv/h	西	W	0.5
393.9μSv/h	< 0.01 μSv/h	南西	SW	0.5
389.2μSv/h	< 0.01 μSv/h	南西	SW	0.7
385.9μSv/h	< 0.01 μSv/h	西	W	0.5

382.9µSv/h	< 0.01 µSv/h	西	W	0.5
379.6µSv/h	< 0.01 µSv/h	南西	SW	0.4
375.9µSv/h	< 0.01 µSv/h	西	W	0.4
373.6µSv/h	< 0.01 µSv/h	北	S	0.3
371.2µSv/h	< 0.01 µSv/h	北西	NW	0.4
368.9µSv/h	< 0.01 µSv/h	西北西	WNW	0.3
3254µSv/h	< 0.01 µSv/h	西北西	WNW	2.8
3256µSv/h	< 0.01 µSv/h	北西	NW	1.2
3244µSv/h	< 0.01 µSv/h	西北西	WNW	1.2
3229µSv/h	< 0.01 µSv/h	西南西	WSW	1.4
3224µSv/h	< 0.01 µSv/h	西南西	WSW	1.4
3219µSv/h	< 0.01 µSv/h	南西	SW	1.2
3231µSv/h	< 0.01 µSv/h	南西	SW	1.1
3342µSv/h	< 0.01 µSv/h	西南西	WSW	0.9
3284µSv/h	< 0.01 µSv/h	西	W	1.4
3248µSv/h	< 0.01 µSv/h	西南西	WSW	1.3
3279µSv/h	< 0.01 µSv/h	西南西	WSW	1.3
3247µSv/h	< 0.01 µSv/h	西南西	WSW	1.3
3195µSv/h	< 0.01 µSv/h	西南西	WSW	1.4
3188µSv/h	< 0.01 µSv/h	南西	SW	1.6
3181µSv/h	< 0.01 µSv/h	西南西	WSW	1.3
313.7µSv/h	< 0.01 µSv/h	北	N	3.0
312.2µSv/h	< 0.01 µSv/h	北	N	0.3
311.1µSv/h	< 0.01 µSv/h	南	S	0.3
310µSv/h	< 0.01 µSv/h	西南西	WSW	0.6
309.1µSv/h	< 0.01 µSv/h	西南西	WSW	0.3
308.6µSv/h	< 0.01 µSv/h	北北西	NNW	0.4
306.9µSv/h	< 0.01 µSv/h	西北西	WNW	0.6
306µSv/h	< 0.01 µSv/h	南西	SW	0.7
305.1µSv/h	< 0.01 µSv/h	南南東	SSE	0.7
304.3µSv/h	< 0.01 µSv/h	東	E	0.7
303.6µSv/h	< 0.01 µSv/h	南南東	SSE	0.9
303.1µSv/h	< 0.01 µSv/h	西北西	WNW	0.6
301.7µSv/h	< 0.01 µSv/h	東	E	0.6
301.3µSv/h	< 0.01 µSv/h	西	W	0.5
300.5µSv/h	< 0.01 µSv/h	西北西	WNW	0.4
299.2µSv/h	< 0.01 µSv/h	南東	SE	0.6
299.2µSv/h	< 0.01 µSv/h	西	W	0.6
298.5µSv/h	< 0.01 µSv/h	南	S	0.4
297.5µSv/h	< 0.01 µSv/h	南	S	0.5
296.4µSv/h	< 0.01 µSv/h	南	S	0.5
295.8µSv/h	< 0.01 µSv/h	東	E	0.9
295.1µSv/h	< 0.01 µSv/h	北西	NW	0.9
295.4µSv/h	< 0.01 µSv/h	東	E	0.9
294.3µSv/h	< 0.01 µSv/h	南東	SE	0.9
293.8µSv/h	< 0.01 µSv/h	西	W	0.9
293.6µSv/h	< 0.01 µSv/h	南東	SE	0.7
292.6µSv/h	< 0.01 µSv/h	東北東	ENE	0.5

292.3µSv/h	< 0.01 µSv/h	東南東	ESE	0.4
291.5µSv/h	< 0.01 µSv/h	南南東	NNE	0.3
290.9µSv/h	< 0.01 µSv/h	東	E	0.4
290.6µSv/h	< 0.01 µSv/h	北西	NW	0.7
289.8µSv/h	< 0.01 µSv/h	西	W	0.3
289.1µSv/h	< 0.01 µSv/h	西	W	0.7
288.9µSv/h	< 0.01 µSv/h	西	W	0.8
288.6µSv/h	< 0.01 µSv/h	南西	NW	0.6
287.2µSv/h	< 0.01 µSv/h	南東	SE	0.6
399µSv/h	< 0.01 µSv/h	北北東	NNE	0.3
830.8µSv/h	< 0.01 µSv/h	西北西	WNW	0.5
670.6µSv/h	< 0.01 µSv/h	西南西	WSW	0.3
431.9µSv/h	< 0.01 µSv/h	東	E	0.4
390.5µSv/h	< 0.01 µSv/h	東北東	ENE	0.6
522.5µSv/h	< 0.01 µSv/h	東北東	ENE	0.6
364.5µSv/h	< 0.01 µSv/h	北東	NE	0.9
336.5µSv/h	< 0.01 µSv/h	東	E	1.6
323.8µSv/h	< 0.01 µSv/h	東	E	2.1
425.2µSv/h	< 0.01 µSv/h	東	E	2.0
657.3µSv/h	< 0.01 µSv/h	東	E	1.5
358.3µSv/h	< 0.01 µSv/h	南東	SE	1.8
346.1µSv/h	< 0.01 µSv/h	南東	SE	1.8
341.2µSv/h	< 0.01 µSv/h	南	S	1.9
338.4µSv/h	< 0.01 µSv/h	南東	SE	1.9
334.3µSv/h	< 0.01 µSv/h	東	E	1.7
330.2µSv/h	< 0.01 µSv/h	南南東	SSE	1.5
327.1µSv/h	< 0.01 µSv/h	南南東	SSE	1.5
322.6µSv/h	< 0.01 µSv/h	南西	SW	1.6
319.8µSv/h	< 0.01 µSv/h	西	W	2.2
315.1µSv/h	< 0.01 µSv/h	西北西	WNW	2.9
313.1µSv/h	< 0.01 µSv/h	南西	SW	3.4
3954µSv/h	< 0.01 µSv/h	西北西	WNW	4.0
3901µSv/h	< 0.01 µSv/h	西	W	4.7
3882µSv/h	< 0.01 µSv/h	西	W	6.8
3828µSv/h	< 0.01 µSv/h	西	W	5.7
3802µSv/h	< 0.01 µSv/h	西北西	WNW	5.6
3749µSv/h	< 0.01 µSv/h	西	W	5.7
3704µSv/h	< 0.01 µSv/h	西南西	WSW	5.9
3655µSv/h	< 0.01 µSv/h	西南西	WSW	6.1
3629µSv/h	< 0.01 µSv/h	北西	NW	4.2
3594µSv/h	< 0.01 µSv/h	西	W	3.7
3565µSv/h	< 0.01 µSv/h	北西	NW	5.3
3529µSv/h	< 0.01 µSv/h	西	W	4.3
3491µSv/h	< 0.01 µSv/h	西	W	5.1
3473µSv/h	< 0.01 µSv/h	南南西	SSW	4.9
3443µSv/h	< 0.01 µSv/h	西	W	5.8
3417µSv/h	< 0.01 µSv/h	北東	NE	3.4
3396µSv/h	< 0.01 µSv/h	西	W	4.6

3375μSv/h	< 0.01 μSv/h	北	N	4.9
3348μSv/h	< 0.01 μSv/h	南南西	SSW	3.1
3340μSv/h	< 0.01 μSv/h	南東	SE	2.6
3279μSv/h	< 0.01 μSv/h	西	W	4.9
3281μSv/h	< 0.01 μSv/h	西	W	4.6
3229μSv/h	< 0.01 μSv/h	西	W	3.4
3194μSv/h	< 0.01 μSv/h	南西	SW	3.8
3474μSv/h	< 0.01 μSv/h	南西	SW	4.6
3167μSv/h	< 0.01 μSv/h	南	S	3.9
3165μSv/h	< 0.01 μSv/h	北西	NW	2.4
3137μSv/h	< 0.01 μSv/h	西	W	4.8
3135μSv/h	< 0.01 μSv/h	西	W	5.0
3126μSv/h	< 0.01 μSv/h	西南西	WSW	4.5
3111μSv/h	< 0.01 μSv/h	西南西	WSW	6.1
3089μSv/h	< 0.01 μSv/h	西	W	5.1
3078μSv/h	< 0.01 μSv/h	西	W	5.7
3071μSv/h	< 0.01 μSv/h	西	W	4.5
3058μSv/h	< 0.01 μSv/h	北西	NW	4.1
3051μSv/h	< 0.01 μSv/h	西	W	3.3
3033μSv/h	< 0.01 μSv/h	西	W	3.8
3024μSv/h	< 0.01 μSv/h	西	W	3.5
3020μSv/h	< 0.01 μSv/h	西	W	3.6
3007μSv/h	< 0.01 μSv/h	西	W	2.7
3002μSv/h	< 0.01 μSv/h	西	W	2.8
2998μSv/h	< 0.01 μSv/h	西	W	4.1
2992μSv/h	< 0.01 μSv/h	西	W	3.5
2978μSv/h	< 0.01 μSv/h	西	W	4.4
2972μSv/h	< 0.01 μSv/h	西南西	WSW	4.1
2965μSv/h	< 0.01 μSv/h	西南西	WSW	3.2
2961μSv/h	< 0.01 μSv/h	西南西	WSW	2.7
2957μSv/h	< 0.01 μSv/h	西	W	2.8
2946μSv/h	< 0.01 μSv/h	西	W	2.7
2941μSv/h	< 0.01 μSv/h	西	W	2.2
2937μSv/h	< 0.01 μSv/h	西	W	2.6
2931μSv/h	< 0.01 μSv/h	西	W	3.1
2924μSv/h	< 0.01 μSv/h	西	W	2.6
2917μSv/h	< 0.01 μSv/h	西	W	2.5
2912μSv/h	< 0.01 μSv/h	西	W	2.6
2909μSv/h	< 0.01 μSv/h	西	W	3.1
2906μSv/h	< 0.01 μSv/h	西	W	3.4
2900μSv/h	< 0.01 μSv/h	西	W	3.3
2895μSv/h	< 0.01 μSv/h	西	W	2.3
2891μSv/h	< 0.01 μSv/h	西	W	1.8
2883μSv/h	< 0.01 μSv/h	西	W	2.0
2880μSv/h	< 0.01 μSv/h	西	W	2.2
2880μSv/h	< 0.01 μSv/h	東北東	ENE	1.2
2876μSv/h	< 0.01 μSv/h	西南西	WSW	0.8
2855μSv/h	< 0.01 μSv/h	西	W	1.0

2854μSv/h	< 0.01 μSv/h	西	W	2.0
2847μSv/h	< 0.01 μSv/h	西北西	WNW	1.4
2844μSv/h	< 0.01 μSv/h	西	W	1.8
2841μSv/h	< 0.01 μSv/h	西	W	2.5
2836μSv/h	< 0.01 μSv/h	西北西	WNW	2.4
2828μSv/h	< 0.01 μSv/h	西	W	2.4
2828μSv/h	< 0.01 μSv/h	西北西	WNW	2.9
2821.0 μSv/h	< 0.01 μSv/h	南西	SW	4.5
2814.0 μSv/h	< 0.01 μSv/h	南西	SW	3.7
2808.0 μSv/h	< 0.01 μSv/h	西	W	2.8
2805.0 μSv/h	< 0.01 μSv/h	南西	SW	3.5
2803.0 μSv/h	< 0.01 μSv/h	西南西	WSW	3.0
2791.0 μSv/h	< 0.01 μSv/h	西南西	WSW	3.4
2797.0 μSv/h	< 0.01 μSv/h	北西	NW	4.6
2794.0 μSv/h	< 0.01 μSv/h	北西	NW	3.2
2793.0 μSv/h	< 0.01 μSv/h	西	W	3.0
2788.0 μSv/h	< 0.01 μSv/h	北東	NE	2.9
2785.0 μSv/h	< 0.01 μSv/h	南西	SW	2.1
2781.0 μSv/h	< 0.01 μSv/h	西	NE	2.5
2778.0 μSv/h	< 0.01 μSv/h	南西	W	1.8
2773.0 μSv/h	< 0.01 μSv/h	西北西	WNW	2.1
2771.0 μSv/h	< 0.01 μSv/h	西	W	1.6
2767.0 μSv/h	< 0.01 μSv/h	西	W	1.8
2764.0 μSv/h	< 0.01 μSv/h	北西	NW	1.5
2761.0 μSv/h	< 0.01 μSv/h	北西	NW	2.3
2759.0 μSv/h	< 0.01 μSv/h	西北西	WNW	2.1
2745.0 μSv/h	< 0.01 μSv/h	西南西	WSW	1.0
2745.0 μSv/h	< 0.01 μSv/h	北東	NE	1.1
2741.0 μSv/h	< 0.01 μSv/h	北北東	NNE	1.9
2758.0 μSv/h	< 0.01 μSv/h	西	W	1.1
3185.0 μSv/h	< 0.01 μSv/h	南	S	1.0
2939.0 μSv/h	< 0.01 μSv/h	西	W	0.9
2771.0 μSv/h	< 0.01 μSv/h	北西	NW	0.5
2743.0 μSv/h	< 0.01 μSv/h	南	S	0.8
2739.0 μSv/h	< 0.01 μSv/h	南西	SW	0.8
273.2 μSv/h	< 0.01 μSv/h	北北西	NNW	3.5
271.8 μSv/h	< 0.01 μSv/h	北	N	1.6
271.2 μSv/h	< 0.01 μSv/h	北北西	NNW	1.5
270.9 μSv/h	< 0.01 μSv/h	西北西	WNW	1.5
270.4 μSv/h	< 0.01 μSv/h	北	N	0.7
269.8 μSv/h	< 0.01 μSv/h	北北東	NNE	0.6
269.5 μSv/h	< 0.01 μSv/h	北東	NE	0.6
2683.0 μSv/h	< 0.01 μSv/h	北	N	2.2
2679.0 μSv/h	< 0.01 μSv/h	北東	NE	0.6
2679.0 μSv/h	< 0.01 μSv/h	北東	NE	0.7
2677.0 μSv/h	< 0.01 μSv/h	東北東	ENE	0.9
2670.0 μSv/h	< 0.01 μSv/h	東北東	ENE	0.8
2654.0 μSv/h	< 0.01 μSv/h	東北東	ENE	0.6

2664.0 μSv/h	< 0.01 μSv/h	東	ENE	0.9
2661.0 μSv/h	< 0.01 μSv/h	東北東	ENE	1.1
2661.0 μSv/h	< 0.01 μSv/h	東南東	ESE	0.6
2659.0 μSv/h	< 0.01 μSv/h	南南東	SSE	0.6
2652.0 μSv/h	< 0.01 μSv/h	北東	NE	0.6
2653.0 μSv/h	< 0.01 μSv/h	北東	NE	0.8
2637.0 μSv/h	< 0.01 μSv/h	北	N	0.9
2630.0 μSv/h	< 0.01 μSv/h	北東	NE	1.3
2629.0 μSv/h	< 0.01 μSv/h	東	E	1.3
2627.0 μSv/h	< 0.01 μSv/h	東	E	1.5
2625.0 μSv/h	< 0.01 μSv/h	北東	NE	1.3
2619.0 μSv/h	< 0.01 μSv/h	東	E	1.5
2617.0 μSv/h	< 0.01 μSv/h	北東	NE	1.4
2614.0 μSv/h	< 0.01 μSv/h	東北東	ENE	1.2
2614.0 μSv/h	< 0.01 μSv/h	東北東	ENE	1.2
2608.0 μSv/h	< 0.01 μSv/h	北東	NE	1.0
2623.0 μSv/h	< 0.01 μSv/h	東北東	ENE	1.0
2661.0 μSv/h	< 0.01 μSv/h	北東	NE	1.5
2742.0 μSv/h	< 0.01 μSv/h	北東	NE	1.2
2726.0 μSv/h	< 0.01 μSv/h	東	E	1.2
2608.8 μSv/h	< 0.01 μSv/h	東	E	1.1
2605.0 μSv/h	< 0.01 μSv/h	東	E	1.2
2596.0 μSv/h	< 0.01 μSv/h	北東	NE	1.3
2589.0 μSv/h	< 0.01 μSv/h	東	E	0.7
2583.0 μSv/h	< 0.01 μSv/h	北東	NE	1.3
2579.0 μSv/h	< 0.01 μSv/h	東北東	ENE	1.4
2578.0 μSv/h	< 0.01 μSv/h	東北東	ENE	1.8
2569.0 μSv/h	< 0.01 μSv/h	北東	NE	1.5
2571.0 μSv/h	< 0.01 μSv/h	東北東	ENE	1.4
2562.0 μSv/h	< 0.01 μSv/h	北東	NE	1.2
2564.0μSv/h	< 0.01 μSv/h	北東	NE	1.3
2559.0 μSv/h	< 0.01 μSv/h	東	E	1.3
2558.0 μSv/h	< 0.01 μSv/h	南	S	1.1
2552.0 μSv/h	< 0.01 μSv/h	南東	SE	1.2
2551.0 μSv/h	< 0.01 μSv/h	南東	SE	1.0
2551.0 μSv/h	< 0.01 μSv/h	北東	NE	1.1
2550.0 μSv/h	< 0.01 μSv/h	南東	SE	1.3
2567.0 μSv/h	< 0.01 μSv/h	東	E	1.5
2588.0 μSv/h	< 0.01 μSv/h	南東	SE	1.4
2660.0 μSv/h	< 0.01 μSv/h	南東	SE	1.6
2593.0 μSv/h	< 0.01 μSv/h	南東	SE	1.7
2654.0 μSv/h	< 0.01 μSv/h	南東	SE	1.8
2741.0 μSv/h	< 0.01 μSv/h	南東	SE	2.0
2768.0 μSv/h	< 0.01 μSv/h	南東	SE	1.6
2999.0 μSv/h	< 0.01 μSv/h	南	S	1.7
2923.0 μSv/h	< 0.01 μSv/h	南東	SE	1.8
3056.0 μSv/h	< 0.01 μSv/h	南東	SE	1.9
3202.0 μSv/h	< 0.01 μSv/h	南南東	SSE	2.3

3346.0 µSv/h	< 0.01 µSv/h	南	S	2.1
3054.0 µSv/h	< 0.01 µSv/h	南南東	SSE	2.0
3071.0 µSv/h	< 0.01 µSv/h	南	S	1.9
3342.0 µSv/h	< 0.01 µSv/h	南	S	1.9
3337.0 µSv/h	< 0.01 µSv/h	南	S	1.7
3003.0 µSv/h	< 0.01 µSv/h	南	S	1.9
3046.0 µSv/h	< 0.01 µSv/h	南南東	SSE	2.1
3171.0 µSv/h	< 0.01 µSv/h	南	S	1.8
2940.0 µSv/h	< 0.01 µSv/h	南	S	2.0
2851.0 µSv/h	< 0.01 µSv/h	南	S	1.9
2830.0 µSv/h	< 0.01 µSv/h	南南西	SSW	2.2
2960.0 µSv/h	< 0.01 µSv/h	南	S	2.0
2839.0 µSv/h	< 0.01 µSv/h	南南西	SSW	2.1
2773.0 µSv/h	< 0.01 µSv/h	南	S	2.1
2763.0 µSv/h	< 0.01 µSv/h	南西	SW	1.8
2758.0 µSv/h	< 0.01 µSv/h	南南西	SSW	2.0
2729.0 µSv/h	< 0.01 µSv/h	南東	SE	1.7
2715.0 µSv/h	< 0.01 µSv/h	南南西	SSW	2.1
2707.0 µSv/h	< 0.01 µSv/h	南西	SW	1.7
2693.0 µSv/h	< 0.01 µSv/h	南南西	SSW	1.6
2680.0 µSv/h	< 0.01 µSv/h	南	S	2.6
2673.0 µSv/h	< 0.01 µSv/h	南	S	2.6
2658.0 µSv/h	< 0.01 µSv/h	南西	SW	2.4
2651.0 µSv/h	< 0.01 µSv/h	西南西	WSW	1.8
2658.0 µSv/h	< 0.01 µSv/h	北北東	NNE	1.0
2623.0 µSv/h	< 0.01 µSv/h	西	W	1.4
2683.0 µSv/h	< 0.01 µSv/h	西南西	WSW	1.0
2614.0 µSv/h	< 0.01 µSv/h	南西	SW	2.0
2602.0 µSv/h	< 0.01 µSv/h	南西	SW	1.8
2595.0 µSv/h	< 0.01 µSv/h	北北西	NNW	0.8
2632.0 µSv/h	< 0.01 µSv/h	北東	NE	1.2
2828.0 µSv/h	< 0.01 µSv/h	西	W	1.2
2704.0 µSv/h	< 0.01 µSv/h	北東	NE	1.4
2682.0 µSv/h	< 0.01 µSv/h	北西	NW	1.0
2586.0 µSv/h	< 0.01 µSv/h	西	W	1.6
2552.0 µSv/h	< 0.01 µSv/h	西北西	WNW	1.2
2550.0 µSv/h	< 0.01 µSv/h	北西	NW	1.0
2542.0 µSv/h	< 0.01 µSv/h	西北西	WNW	2.0
2537.0 µSv/h	< 0.01 µSv/h	西	W	2.2
2532.0 µSv/h	< 0.01 µSv/h	西北西	WNW	2.4
2518.0 µSv/h	< 0.01 µSv/h	西	W	2.4
2517.0 µSv/h	< 0.01 µSv/h	西	W	2.0
2510.0 µSv/h	< 0.01 µSv/h	西北西	WNW	2.0
2506.0 µSv/h	< 0.01 µSv/h	西北西	WNW	2.2
2503.0 µSv/h	< 0.01 µSv/h	北西	NW	1.6
2492.0 µSv/h	< 0.01 µSv/h	北西	NW	2.2
2487.0 µSv/h	< 0.01 µSv/h	西北西	WNW	2.6
2485.0 µSv/h	< 0.01 µSv/h	北西	NW	3.2

2483.0 μSv/h	< 0.01 μSv/h	西	W	1.2
2475.0 μSv/h	< 0.01 μSv/h	西北西	WNW	1.3
2469.0 μSv/h	< 0.01 μSv/h	西北西	WNW	0.8
2462.0 μSv/h	< 0.01 μSv/h	西	W	1.0
2455.0 μSv/h	< 0.01 μSv/h	西北西	WNW	1.2
2457.0 μSv/h	< 0.01 μSv/h	西	W	1.0
2453.0 μSv/h	< 0.01 μSv/h	西	W	0.8
2452.0 μSv/h	< 0.01 μSv/h	西	W	1.0
2449.0 μSv/h	< 0.01 μSv/h	西北西	WNW	1.3
2444.0 μSv/h	< 0.01 μSv/h	西	W	0.9
2439.0 μSv/h	< 0.01 μSv/h	西	W	0.8
2438.0 μSv/h	< 0.01 μSv/h	西北西	WNW	0.9
2433.0 μSv/h	< 0.01 μSv/h	西北西	WNW	1.0
2396.0 μSv/h	< 0.01 μSv/h	西北西	WNW	1.0
2392.0 μSv/h	< 0.01 μSv/h	西	W	0.8
2389.0 μSv/h	< 0.01 μSv/h	西	W	0.6
2385.0 μSv/h	< 0.01 μSv/h	西	W	0.5
2383.0 μSv/h	< 0.01 μSv/h	北西	NW	0.7
2380.0 μSv/h	< 0.01 μSv/h	北西	NW	0.8
2396.0 μSv/h	< 0.01 μSv/h	北西	NW	0.5
2392.0 μSv/h	< 0.01 μSv/h	西	W	0.9
2389.0 μSv/h	< 0.01 μSv/h	北西	NW	0.8
2385.0 μSv/h	< 0.01 μSv/h	北西	NW	1.0
2383.0 μSv/h	< 0.01 μSv/h	北	N	1.0
2380.0 μSv/h	< 0.01 μSv/h	西	W	0.6
2378.0 μSv/h	< 0.01 μSv/h	東南東	ESE	0.5
2375.0 μSv/h	< 0.01 μSv/h	西北西	WNW	0.8
2372.0 μSv/h	< 0.01 μSv/h	西	W	0.8
2370.0 μSv/h	< 0.01 μSv/h	北西	NW	0.7
2366.0 μSv/h	< 0.01 μSv/h	北西	NW	0.7
2364.0 μSv/h	< 0.01 μSv/h	西北西	WNW	1.1
2362.0 μSv/h	< 0.01 μSv/h	西北西	WNW	0.8
2356.0 μSv/h	< 0.01 μSv/h	北西	NW	0.6
2351.0 μSv/h	< 0.01 μSv/h	北西	NW	1.1
2350.0 μSv/h	< 0.01 μSv/h	西北西	WNW	1.3
2347.0 μSv/h	< 0.01 μSv/h	西北西	WNW	1.6
2345.0 μSv/h	< 0.01 μSv/h	西北西	WNW	0.9
2343.0 μSv/h	< 0.01 μSv/h	西	W	0.7
2341.0 μSv/h	< 0.01 μSv/h	東	E	0.7
2339.0 μSv/h	< 0.01 μSv/h	東	E	0.8
2336.0 μSv/h	< 0.01 μSv/h	東北東	ENE	0.7
2333.0 μSv/h	< 0.01 μSv/h	東	E	1.0
2330.0 μSv/h	< 0.01 μSv/h	東	E	1.4
2324.0 μSv/h	< 0.01 μSv/h	北東	NE	1.2
2326.0 μSv/h	< 0.01 μSv/h	南西	SW	1.1
2325.0 μSv/h	< 0.01 μSv/h	南西	SW	0.9
2319.0 μSv/h	< 0.01 μSv/h	北東	NE	1.6
2312.0 μSv/h	< 0.01 μSv/h	東	E	1.4

2293.0 μSv/h	< 0.01 μSv/h	東	E	1.2
2283.0 μSv/h	< 0.01 μSv/h	北北東	NNE	1.0
2271.0 μSv/h	< 0.01 μSv/h	北北東	NNE	0.8
2251.0 μSv/h	< 0.01 μSv/h	西北西	WNW	0.7
2232.0 μSv/h	< 0.01 μSv/h	北東	NE	0.8
2215.0 μSv/h	< 0.01 μSv/h	北西	NW	0.8
2200.0 μSv/h	< 0.01 μSv/h	西南西	WSW	0.9
2168.0μSv/h	< 0.01 μSv/h	西	W	1.2
2161.0μSv/h	< 0.01 μSv/h	北西	NW	1.0
2147.0 μSv/h	< 0.01 μSv/h	北西	NW	0.8
2140.0 μSv/h	< 0.01 μSv/h	北西	NW	0.7
2128.0 μSv/h	< 0.01 μSv/h	西	W	0.7
2126.0 μSv/h	< 0.01 μSv/h	西	W	1.7
2122.0 μSv/h	< 0.01 μSv/h	北	N	4.6
2120.0 μSv/h	< 0.01 μSv/h	北東	NE	5.0
2127.0 μSv/h	< 0.01 μSv/h	西	W	3.0
2114.0 μSv/h	< 0.01 μSv/h	西	W	2.0
2111.0 μSv/h	< 0.01 μSv/h	北西	NW	4.4
2108.0 μSv/h	< 0.01 μSv/h	北西	NW	4.1
2098.0 μSv/h	< 0.01 μSv/h	北西	NW	2.1
2100.0 μSv/h	< 0.01 μSv/h	北西	NW	2.6
2100.0 μSv/h	< 0.01 μSv/h	西	W	2.0
2100.0 μSv/h	< 0.01 μSv/h	北西	NW	1.4
2102.0 μSv/h	< 0.01 μSv/h	北西	NW	1.5
2105.0 μSv/h	< 0.01 μSv/h	北西	NW	1.0
2107.0μSv/h	< 0.01 μSv/h	北西	NW	0.9
2107.0 μSv/h	< 0.01 μSv/h	北	N	0.8
2108.0 μSv/h	< 0.01 μSv/h	南西	SW	1.2
2110.0 μSv/h	< 0.01 μSv/h	北	N	1.5
2112.0 μSv/h	< 0.01 μSv/h	北東	NE	1.7
2113.0 μSv/h	< 0.01 μSv/h	東	E	1.5
2108.0 μSv/h	< 0.01 μSv/h	北北東	NNE	1.1
2112.0 μSv/h	< 0.01 μSv/h	南東	SE	0.9
2107.0 μSv/h	< 0.01 μSv/h	西北西	NW	1.9
2111.0 μSv/h	< 0.01 μSv/h	北西	NW	1.1
2112.0 μSv/h	< 0.01 μSv/h	北西	NW	0.9
2110.0 μSv/h	< 0.01 μSv/h	北	N	0.7
2105.0 μSv/h	< 0.01 μSv/h	南西	SW	0.6
2103.0 μSv/h	< 0.01 μSv/h	東	E	0.8
2098.0 μSv/h	< 0.01 μSv/h	北東	NE	1.0
2092.0 μSv/h	< 0.01 μSv/h	東	E	0.8
2089.0 μSv/h	< 0.01 μSv/h	北東	NE	1.5
2068.0 μSv/h	< 0.01 μSv/h	北東	NE	4.3
2064.0 μSv/h	< 0.01 μSv/h	北東	NE	4.0
2053.0 μSv/h	< 0.01 μSv/h	北	N	3.7
2043.0 μSv/h	< 0.01 μSv/h	北東	NE	1.1
2039.0 μSv/h	< 0.01 μSv/h	北東	NE	1.2
2035.0 μSv/h	< 0.01 μSv/h	北	N	1.3

2029.0 μSv/h	< 0.01 μSv/h	北東	NE	3.8
2019.0 μSv/h	< 0.01 μSv/h	北	N	2.1
2019.0 μSv/h	< 0.01 μSv/h	北	N	3.8
2013.0 μSv/h	< 0.01 μSv/h	北東	NE	5.7
2013.0 μSv/h	< 0.01 μSv/h	北東	NE	6.8
2012.0 μSv/h	< 0.01 μSv/h	北東	NE	5.8
2013.0 μSv/h	< 0.01 μSv/h	北東	NE	6.3
2016.0 μSv/h	< 0.01 μSv/h	北	N	4.9
2013.0 μSv/h	< 0.01 μSv/h	北東	NE	5.9
2011.0 μSv/h	< 0.01 μSv/h	北	N	5.7
2015.0 μSv/h	< 0.01 μSv/h	北東	NE	4.8
1140.0 μSv/h	< 0.01 μSv/h	東	E	4.9
508.0 μSv/h	< 0.01 μSv/h	南	S	0.7
1292.0 μSv/h	< 0.01 μSv/h	南西	SW	2.5
729.0 μSv/h	< 0.01 μSv/h	東	E	3.5
494.3 μSv/h	< 0.01 μSv/h	南東	SE	0.9
1383.0 μSv/h	< 0.01 μSv/h	東南東	ESE	0.7
1757.0 μSv/h	< 0.01 μSv/h	東北東	ENE	0.5
1256.0 μSv/h	< 0.01 μSv/h	東北東	ENE	0.7
1428.0 μSv/h	< 0.01 μSv/h	北北西	NNW	0.5
1932.0 μSv/h	< 0.01 μSv/h	南東	SE	0.3
1499.0 μSv/h	< 0.01 μSv/h	南南東	SSE	0.4
1105.0 μSv/h	< 0.01 μSv/h	西南西	WSW	0.3
1201.0 μSv/h	< 0.01 μSv/h	西	W	0.4
823.6 μSv/h	< 0.01 μSv/h	西	W	0.4
700.1 μSv/h	< 0.01 μSv/h	西北西	WNW	0.2
587.3 μSv/h	< 0.01 μSv/h	西	W	0.5
503.9 μSv/h	< 0.01 μSv/h	西南西	WSW	0.7
496.2 μSv/h	< 0.01 μSv/h	西北西	WNW	0.7
493.5 μSv/h	< 0.01 μSv/h	南西	SW	0.7
529.3 μSv/h	< 0.01 μSv/h	南	S	0.3
471.2 μSv/h	< 0.01 μSv/h	西南西	WSW	0.4
442.2 μSv/h	< 0.01 μSv/h	西北西	WNW	0.4
432.4 μSv/h	< 0.01 μSv/h	西北西	WNW	0.7
424.5 μSv/h	< 0.01 μSv/h	西北西	WNW	0.8
417.1 μSv/h	< 0.01 μSv/h	西	W	0.7
410.4 μSv/h	< 0.01 μSv/h	西南西	WSW	0.7
403.8 μSv/h	< 0.01 μSv/h	西北西	WNW	0.7
398.0 μSv/h	< 0.01 μSv/h	西	W	0.7
390.6 μSv/h	< 0.01 μSv/h	西	W	0.7
384.9 μSv/h	< 0.01 μSv/h	西	W	0.6
380.0 μSv/h	< 0.01 μSv/h	西北西	WNW	0.6
374.5 μSv/h	< 0.01 μSv/h	西	W	0.6
369.6 μSv/h	< 0.01 μSv/h	西北西	WNW	0.5
365.0 μSv/h	< 0.01 μSv/h	北西	NW	0.6
360.9 μSv/h	< 0.01 μSv/h	南南西	SSW	0.6
356.0 μSv/h	< 0.01 μSv/h	南西	SW	0.3
352.7 μSv/h	< 0.01 μSv/h	南	S	0.2

348.5 μSv/h	< 0.01 μSv/h	西	W	0.3
344.6 μSv/h	< 0.01 μSv/h	西北西	WNW	0.4
341.5 μSv/h	< 0.01 μSv/h	北西	NW	0.5
338.5 μSv/h	< 0.01 μSv/h	西南西	WNW	0.5
334.1 μSv/h	< 0.01 μSv/h	西	W	0.7
331.8 μSv/h	< 0.01 μSv/h	南東	SE	0.4
329.3 μSv/h	< 0.01 μSv/h	南西	SW	0.4
327.5 μSv/h	< 0.01 μSv/h	西南西	WSW	0.4
325.8 μSv/h	< 0.01 μSv/h	西南西	WSW	0.4
323.9 μSv/h	< 0.01 μSv/h	西	W	0.3
320.8 μSv/h	< 0.01 μSv/h	西南西	WSW	0.4
314.8 μSv/h	< 0.01 μSv/h	西北西	WNW	0.6
313.0 μSv/h	< 0.01 μSv/h	西	W	0.5
311.3 μSv/h	< 0.01 μSv/h	西	W	0.4
308.9 μSv/h	< 0.01 μSv/h	西	W	0.7
308.4 μSv/h	< 0.01 μSv/h	西北西	WNW	0.8
305.9 μSv/h	< 0.01 μSv/h	西北西	WNW	1.0
304.5 μSv/h	< 0.01 μSv/h	西	W	1.1
303.2 μSv/h	< 0.01 μSv/h	西	W	1.3
301.3 μSv/h	< 0.01 μSv/h	西	W	1.1
299.7 μSv/h	< 0.01 μSv/h	西北西	WNW	0.8
298.0 μSv/h	< 0.01 μSv/h	西北西	WNW	1.0
296.2 μSv/h	< 0.01 μSv/h	北北西	NNW	1.0
294.9 μSv/h	< 0.01 μSv/h	北西	NW	0.9
293.8 μSv/h	< 0.01 μSv/h	西北西	WNW	1.0
293.6 μSv/h	< 0.01 μSv/h	北西	NW	0.9
291.6 μSv/h	< 0.01 μSv/h	西北西	WNW	0.9
291.1 μSv/h	< 0.01 μSv/h	西北西	WNW	0.8
290.0 μSv/h	< 0.01 μSv/h	西北西	WNW	0.8
288.9 μSv/h	< 0.01 μSv/h	西北西	WNW	0.8
288.1 μSv/h	< 0.01 μSv/h	西	W	0.6
287.0 μSv/h	< 0.01 μSv/h	北西	NW	0.5
286.0 μSv/h	< 0.01 μSv/h	北北西	NNW	0.4
283.6 μSv/h	< 0.01 μSv/h	北	N	2.1
280.1 μSv/h	< 0.01 μSv/h	北西	NW	1.1
273.9 μSv/h	< 0.01 μSv/h	北西	NW	2.0
271.0 μSv/h	< 0.01 μSv/h	北西	NW	1.8
268.0 μSv/h	< 0.01 μSv/h	西	W	1.6
267.4 μSv/h	< 0.01 μSv/h	北西	NW	1.9
265.8 μSv/h	< 0.01 μSv/h	西	W	1.7
265.3 μSv/h	< 0.01 μSv/h	西	W	1.6
264.6 μSv/h	< 0.01 μSv/h	北	N	1.3
264.3 μSv/h	< 0.01 μSv/h	北西	NW	1.3
265.5 μSv/h	< 0.01 μSv/h	西	W	1.5
263.7 μSv/h	< 0.01 μSv/h	西北西	WNW	1.8
262.6 μSv/h	< 0.01 μSv/h	西北西	WNW	2.3
262.1 μSv/h	< 0.01 μSv/h	北西	NW	2.3
261.9 μSv/h	< 0.01 μSv/h	西北西	WNW	1.8

261.8 μSv/h	< 0.01 μSv/h	北西	NW	2.0
261.7 μSv/h	< 0.01 μSv/h	西北西	WNW	1.9
261.6 μSv/h	< 0.01 μSv/h	北西	NW	1.8
261.2 μSv/h	< 0.01 μSv/h	西北西	WNW	2.2
261.0 μSv/h	< 0.01 μSv/h	西北西	WNW	2.4
260.9 μSv/h	< 0.01 μSv/h	西北西	WNW	1.8
260.8 μSv/h	< 0.01 μSv/h	西	W	1.4
260.5 μSv/h	< 0.01 μSv/h	西	W	1.5
260.3 μSv/h	< 0.01 μSv/h	西	W	1.4
260.4 μSv/h	< 0.01 μSv/h	北西	NW	1.2
260.2 μSv/h	< 0.01 μSv/h	西	W	1.1
260.2 μSv/h	< 0.01 μSv/h	西	W	1.5
260.1 μSv/h	< 0.01 μSv/h	北西	NW	1.3
260.0 μSv/h	< 0.01 μSv/h	西北西	WNW	1.1
259.9 μSv/h	< 0.01 μSv/h	北西	NW	1.5
259.4 μSv/h	< 0.01 μSv/h	西	W	1.7
259.5 μSv/h	< 0.01 μSv/h	西北西	WNW	1.8
260.2 μSv/h	< 0.01 μSv/h	西北西	WNW	1.8
259.4 μSv/h	< 0.01 μSv/h	北西	NW	1.3
258.9 μSv/h	< 0.01 μSv/h	西北西	WNW	1.4
258.7 μSv/h	< 0.01 μSv/h	北西	NW	1.5
258.4 μSv/h	< 0.01 μSv/h	北	N	1.5
257.3 μSv/h	< 0.01 μSv/h	北北西	NNW	1.6
257.5 μSv/h	< 0.01 μSv/h	北北西	NNW	1.7
257.1 μSv/h	< 0.01 μSv/h	北	NW	2.2
256.9 μSv/h	< 0.01 μSv/h	北北西	NNW	1.3
256.5 μSv/h	< 0.01 μSv/h	西	W	1.7
256.5 μSv/h	< 0.01 μSv/h	北北西	NNW	1.5
256.4 μSv/h	< 0.01 μSv/h	北北西	NNW	2.3
256.3 μSv/h	< 0.01 μSv/h	北	N	1.5
256.0 μSv/h	< 0.01 μSv/h	北	N	1.4
256.1 μSv/h	< 0.01 μSv/h	北	N	1.3
256.3 μSv/h	< 0.01 μSv/h	北西	NW	1.3
255.6 μSv/h	< 0.01 μSv/h	北	N	1.7
255.8 μSv/h	< 0.01 μSv/h	北北西	NNW	1.4
255.6 μSv/h	< 0.01 μSv/h	北	N	1.8
255.7 μSv/h	< 0.01 μSv/h	北	N	1.6
255.2 μSv/h	< 0.01 μSv/h	北東	NE	1.4
254.8 μSv/h	< 0.01 μSv/h	北北西	NNW	1.5
254.8 μSv/h	< 0.01 μSv/h	北	N	2.3
254.5 μSv/h	< 0.01 μSv/h	北	N	2.1
254.6 μSv/h	< 0.01 μSv/h	北西	NW	1.6
254.3 μSv/h	< 0.01 μSv/h	北西	NW	1.7
254.4 μSv/h	< 0.01 μSv/h	北	N	1.8
254.3 μSv/h	< 0.01 μSv/h	北	N	1.6
244.3 μSv/h	< 0.01 μSv/h	西北西	WNW	1.6
254.4 μSv/h	< 0.01 μSv/h	北	N	1.2
254.1 μSv/h	< 0.01 μSv/h	北東	NE	1.2

255.3 μSv/h	< 0.01 μSv/h	北西	NW	0.8
265.7 μSv/h	< 0.01 μSv/h	北	N	1.1
277.5 μSv/h	< 0.01 μSv/h	東南東	ESE	1.1
265.2 μSv/h	< 0.01 μSv/h	東	E	1.2
258.8 μSv/h	< 0.01 μSv/h	東	E	0.7
274.0 μSv/h	< 0.01 μSv/h	東	E	0.7
280.6 μSv/h	< 0.01 μSv/h	南東	SW	0.7
330.6 μSv/h	< 0.01 μSv/h	南東	SW	0.6
352.3 μSv/h	< 0.01 μSv/h	東	E	0.6
384.2 μSv/h	< 0.01 μSv/h	北北東	NNE	0.6
294.0 μSv/h	< 0.01 μSv/h	北	N	0.6
330.8 μSv/h	< 0.01 μSv/h	南東	SE	0.4
351.6 μSv/h	< 0.01 μSv/h	北東	NE	0.4
278.9 μSv/h	< 0.01 μSv/h	北北西	NNW	0.5
275.2 μSv/h	< 0.01 μSv/h	西北西	WNW	0.6
265.5 μSv/h	< 0.01 μSv/h	西	W	0.9
264.1 μSv/h	< 0.01 μSv/h	西北西	WNW	0.6
261.5 μSv/h	< 0.01 μSv/h	北西	NW	0.4
324.6 μSv/h	< 0.01 μSv/h	西	W	0.6
322.8 μSv/h	< 0.01 μSv/h	西	W	0.3
303.8 μSv/h	< 0.01 μSv/h	北北西	NNW	0.5
367.9 μSv/h	< 0.01 μSv/h	南西	SW	0.3
363.1 μSv/h	< 0.01 μSv/h	南西	SW	0.5
320.9 μSv/h	< 0.01 μSv/h	西南西	WSW	0.1
472.7 μSv/h	< 0.01 μSv/h	南西	SW	0.5
340.7 μSv/h	< 0.01 μSv/h	西	W	0.6
258.0 μSv/h	< 0.01 μSv/h	西北西	WNW	0.9
254.1 μSv/h	< 0.01 μSv/h	西北西	WNW	1.0
253.4 μSv/h	< 0.01 μSv/h	西	W	1.0
252.5 μSv/h	< 0.01 μSv/h	西北西	WNW	0.8
251.5 μSv/h	< 0.01 μSv/h	北西	NW	0.6
250.5 μSv/h	< 0.01 μSv/h	北西	NW	0.9
249.1 μSv/h	< 0.01 μSv/h	西	W	0.8
246.1 μSv/h	< 0.01 μSv/h	西	W	0.6
244.4 μSv/h	< 0.01 μSv/h	南西	SW	0.4
242.8 μSv/h	< 0.01 μSv/h	西	W	0.5
241.0 μSv/h	< 0.01 μSv/h	西	W	0.6
240.6 μSv/h	< 0.01 μSv/h	北西	NW	0.7
239.5 μSv/h	< 0.01 μSv/h	西北西	WNW	1.0
239.3 μSv/h	< 0.01 μSv/h	西北西	WNW	1.2
237.0 μSv/h	< 0.01 μSv/h	西	W	1.3
237.4 μSv/h	< 0.01 μSv/h	西	W	1.1
236.2 μSv/h	< 0.01 μSv/h	西南西	WSW	0.8
235.7 μSv/h	< 0.01 μSv/h	西北西	WNW	1.0
235.8 μSv/h	< 0.01 μSv/h	西	W	0.9
235.9 μSv/h	< 0.01 μSv/h	西	W	1.2
233.4 μSv/h	< 0.01 μSv/h	北西	NW	1.8
233.3 μSv/h	< 0.01 μSv/h	北西	NW	1.8

232.3 μSv/h	< 0.01 μSv/h	北北西	NNW	2.6
231.6 μSv/h	< 0.01 μSv/h	西	W	4.3
230.1 μSv/h	< 0.01 μSv/h	北西	NW	2.5
229.4 μSv/h	< 0.01 μSv/h	北東	NE	5.5
227.5 μSv/h	< 0.01 μSv/h	北	N	2.4
227.4 μSv/h	< 0.01 μSv/h	北東	NE	6.5
227.2 μSv/h	< 0.01 μSv/h	北北西	NNW	6.0
226.2 μSv/h	< 0.01 μSv/h	北北西	NNW	4.2
226.8 μSv/h	< 0.01 μSv/h	北北西	NNW	3.4
226.7 μSv/h	< 0.01 μSv/h	北	N	3.3
226.7 μSv/h	< 0.01 μSv/h	北	N	3.2
226.9 μSv/h	< 0.01 μSv/h	北	N	2.8
227.1 μSv/h	< 0.01 μSv/h	北西	NW	2.8
227.1 μSv/h	< 0.01 μSv/h	北	N	2.9
227.2 μSv/h	< 0.01 μSv/h	北	N	3.0
227.3 μSv/h	< 0.01 μSv/h	北西	NW	3.1
227.6 μSv/h	< 0.01 μSv/h	北北西	NNW	2.9
228.5 μSv/h	< 0.01 μSv/h	北	N	2.2
228.7 μSv/h	< 0.01 μSv/h	北北西	NNW	2.3
228.8 μSv/h	< 0.01 μSv/h	北北西	NNW	2.3
228.8 μSv/h	< 0.01 μSv/h	北	N	2.6
229.0 μSv/h	< 0.01 μSv/h	北西	NW	2.2
229.1 μSv/h	< 0.01 μSv/h	北	N	2.1
229.1 μSv/h	< 0.01 μSv/h	北西	NW	2.1
229.4 μSv/h	< 0.01 μSv/h	北北西	NNW	2.4
229.3 μSv/h	< 0.01 μSv/h	北西	NW	1.7
229.5 μSv/h	< 0.01 μSv/h	北北西	NNW	1.8
229.5 μSv/h	< 0.01 μSv/h	北	N	2.1
229.5 μSv/h	< 0.01 μSv/h	北	N	2.1
229.3 μSv/h	< 0.01 μSv/h	北	N	1.8
229.6 μSv/h	< 0.01 μSv/h	北北西	NNW	2.2
229.5 μSv/h	< 0.01 μSv/h	北西	NW	2.1
229.5 μSv/h	< 0.01 μSv/h	北北西	NNW	2.2
229.7 μSv/h	< 0.01 μSv/h	北西	NW	2.4
229.6 μSv/h	< 0.01 μSv/h	北北西	NNW	2.5
229.6 μSv/h	< 0.01 μSv/h	北北西	NNW	2.5
229.4 μSv/h	< 0.01 μSv/h	北西	NW	2.6
229.6 μSv/h	< 0.01 μSv/h	北北西	NNW	2.7
229.5 μSv/h	< 0.01 μSv/h	北西	NW	2.4
229.5 μSv/h	< 0.01 μSv/h	北北西	NNW	2.1
229.3 μSv/h	< 0.01 μSv/h	北北西	NNW	2.7
229.5 μSv/h	< 0.01 μSv/h	北北西	NNW	2.4
229.3 μSv/h	< 0.01 μSv/h	北北西	NNW	2.6
229.5 μSv/h	< 0.01 μSv/h	北北西	NNW	2.8
229.0 μSv/h	< 0.01 μSv/h	北	N	3.0
229.3 μSv/h	< 0.01 μSv/h	北	N	2.5
229.4 μSv/h	< 0.01 μSv/h	北	N	3.1
229.5 μSv/h	< 0.01 μSv/h	北	N	3.2

229.2 μSv/h	< 0.01 μSv/h	北北西	NNW	3.5
229.4 μSv/h	< 0.01 μSv/h	北北西	NNW	3.9
229.1 μSv/h	< 0.01 μSv/h	北北西	NNW	4.4
229.1 μSv/h	< 0.01 μSv/h	北北西	NNW	3.1
229.1 μSv/h	< 0.01 μSv/h	北	N	3.5
228.7 μSv/h	< 0.01 μSv/h	北北東	NNE	3.3
227.6 μSv/h	< 0.01 μSv/h	北	N	2.9
226.9 μSv/h	< 0.01 μSv/h	北	N	3.4
228.6 μSv/h	< 0.01 μSv/h	北北東	NNE	2.5
227.6 μSv/h	< 0.01 μSv/h	北北東	NNE	3.1
211.4 μSv/h	< 0.01 μSv/h	北	N	2.6
227.7 μSv/h	< 0.01 μSv/h	北	N	2.7
227.2 μSv/h	< 0.01 μSv/h	北北東	NNE	3.1
227.3 μSv/h	< 0.01 μSv/h	北	N	2.9
227.1 μSv/h	< 0.01 μSv/h	北北西	NNW	2.9
227.2 μSv/h	< 0.01 μSv/h	北	N	3.1
227.0 μSv/h	< 0.01 μSv/h	北北西	NNW	3.0
226.8 μSv/h	< 0.01 μSv/h	北	N	2.6
226.8 μSv/h	< 0.01 μSv/h	北北東	NNE	2.5
226.3 μSv/h	< 0.01 μSv/h	北北東	NNE	2.1
225.7 μSv/h	< 0.01 μSv/h	北	N	2.2
226.3 μSv/h	< 0.01 μSv/h	北	N	1.5
225.2 μSv/h	< 0.01 μSv/h	北北西	NNW	1.6
226.0 μSv/h	< 0.01 μSv/h	北北東	NNE	2.6
224.8 μSv/h	< 0.01 μSv/h	西	W	1.6
224.9 μSv/h	< 0.01 μSv/h	西	W	1.6
224.7 μSv/h	< 0.01 μSv/h	西北西	WNW	1.5
224.8 μSv/h	< 0.01 μSv/h	東	E	1.4
225.4 μSv/h	< 0.01 μSv/h	東	E	1.2
224.8 μSv/h	< 0.01 μSv/h	東南東	ESE	1.9
225.7 μSv/h	< 0.01 μSv/h	北	N	2.0
224.1 μSv/h	< 0.01 μSv/h	北	N	1.5
223.7 μSv/h	< 0.01 μSv/h	北東	NE	1.3
222.7 μSv/h	< 0.01 μSv/h	北西	NW	1.2
222.4 μSv/h	< 0.01 μSv/h	北	N	1.4
231.1 μSv/h	< 0.01 μSv/h	北東	NE	1.0
435.0 μSv/h	< 0.01 μSv/h	東南東	ESE	1.6
288.7 μSv/h	< 0.01 μSv/h	東	E	0.9
309.7 μSv/h	< 0.01 μSv/h	東南東	ESE	1.6
267.8 μSv/h	< 0.01 μSv/h	東南東	ESE	1.7
265.4 μSv/h	< 0.01 μSv/h	北東	NE	1.6
396.0 μSv/h	< 0.01 μSv/h	北	N	1.5
415.6 μSv/h	< 0.01 μSv/h	東	E	1.3
414.7 μSv/h	< 0.01 μSv/h	南南東	SSE	1.0
401.6 μSv/h	< 0.01 μSv/h	東南東	ESE	1.1
318.4 μSv/h	< 0.01 μSv/h	東南東	ESE	0.7
331.5 μSv/h	< 0.01 μSv/h	東	E	0.9
313.4 μSv/h	< 0.01 μSv/h	南	S	0.9

280.9 μSv/h	< 0.01 μSv/h	南東	SE	1.3
283.7 μSv/h	< 0.01 μSv/h	南南西	SSW	1.0
274.4 μSv/h	< 0.01 μSv/h	南南東	SSE	0.8
269.3 μSv/h	< 0.01 μSv/h	南西	SW	0.9
265.1 μSv/h	< 0.01 μSv/h	北	N	0.5
262.1 μSv/h	< 0.01 μSv/h	東	E	0.6
259.5 μSv/h	< 0.01 μSv/h	北北西	NNW	2.1
257.0 μSv/h	< 0.01 μSv/h	北西	NW	2.2
255.8 μSv/h	< 0.01 μSv/h	西	W	2.7
254.2 μSv/h	< 0.01 μSv/h	西北西	WNW	2.0
253.0 μSv/h	< 0.01 μSv/h	北西	NW	1.5
251.3 μSv/h	< 0.01 μSv/h	北北西	NNW	0.9
241.2 μSv/h	< 0.01 μSv/h	北	N	2.3
249.0 μSv/h	< 0.01 μSv/h	北西	NW	2.1
246.9 μSv/h	< 0.01 μSv/h	北北西	NNW	2.3
245.8 μSv/h	< 0.01 μSv/h	北東	NE	1.7
244.6 μSv/h	< 0.01 μSv/h	北	N	1.2
243.5 μSv/h	< 0.01 μSv/h	北	N	1.4
242.1 μSv/h	< 0.01 μSv/h	北	N	0.8
241.0 μSv/h	< 0.01 μSv/h	北北東	NNE	0.4
240.2 μSv/h	< 0.01 μSv/h	西	W	0.4
237.6 μSv/h	< 0.01 μSv/h	西南西	WSW	0.8
236.5 μSv/h	< 0.01 μSv/h	北北東	NNE	0.2
235.8 μSv/h	< 0.01 μSv/h	東	E	0.2
235.3 μSv/h	< 0.01 μSv/h	南西	SW	0.3
234.3 μSv/h	< 0.01 μSv/h	南西	SW	0.3
233.2 μSv/h	< 0.01 μSv/h	東	E	0.5
232.8 μSv/h	< 0.01 μSv/h	東	E	0.3
232.3 μSv/h	< 0.01 μSv/h	西南西	WSW	0.3
231.5 μSv/h	< 0.01 μSv/h	南東	SE	0.5
230.6 μSv/h	< 0.01 μSv/h	南南東	SSE	0.3
230.2 μSv/h	< 0.01 μSv/h	南西	SW	0.4
229.5 μSv/h	< 0.01 μSv/h	西	W	0.4
228.8 μSv/h	< 0.01 μSv/h	西南西	WSW	0.4
228.3 μSv/h	< 0.01 μSv/h	西	W	0.5
227.3 μSv/h	< 0.01 μSv/h	西	W	0.4
226.8 μSv/h	< 0.01 μSv/h	西	W	0.3
226.5 μSv/h	< 0.01 μSv/h	西	W	0.4
225.8 μSv/h	< 0.01 μSv/h	西北西	WNW	0.4
225.4 μSv/h	< 0.01 μSv/h	西北西	WNW	0.5
224.9 μSv/h	< 0.01 μSv/h	西	W	0.5
224.7 μSv/h	< 0.01 μSv/h	北西	NW	0.5
224.3 μSv/h	< 0.01 μSv/h	西	W	0.5
224.0 μSv/h	< 0.01 μSv/h	西	W	0.6
223.0 μSv/h	< 0.01 μSv/h	南西	SW	0.5
223.0 μSv/h	< 0.01 μSv/h	南東	SE	0.4
222.3 μSv/h	< 0.01 μSv/h	北西	NW	0.3
222.0 μSv/h	< 0.01 μSv/h	南	S	0.4

221.8 μSv/h	< 0.01 μSv/h	北	N	0.5
221.5 μSv/h	< 0.01 μSv/h	西	W	1.2
221.7 μSv/h	< 0.01 μSv/h	西北西	WNW	1.3
221.0 μSv/h	< 0.01 μSv/h	西北西	WNW	1.4
220.6 μSv/h	< 0.01 μSv/h	西北西	WNW	1.6
220.4 μSv/h	< 0.01 μSv/h	西北西	WNW	1.6
220.0 μSv/h	< 0.01 μSv/h	北西	NW	1.3
219.7 μSv/h	< 0.01 μSv/h	北	N	0.8
219.2 μSv/h	< 0.01 μSv/h	北西	NW	0.6
219.2 μSv/h	< 0.01 μSv/h	西	W	0.8
218.9 μSv/h	< 0.01 μSv/h	西北西	WNW	1.3
218.7 μSv/h	< 0.01 μSv/h	西北西	WNW	1.7
217.5 μSv/h	< 0.01 μSv/h	西北西	WNW	1.6
217.2 μSv/h	< 0.01 μSv/h	西北西	WNW	1.2
216.8 μSv/h	< 0.01 μSv/h	西	W	1.0
216.6 μSv/h	< 0.01 μSv/h	西南西	WSW	0.5
216.6 μSv/h	< 0.01 μSv/h	西	W	1.0
216.5 μSv/h	< 0.01 μSv/h	西南西	WSW	0.9
216.2 μSv/h	< 0.01 μSv/h	南西	SW	0.6
215.5 μSv/h	< 0.01 μSv/h	南西	SW	0.7
215.7 μSv/h	< 0.01 μSv/h	西	W	0.9
215.4 μSv/h	< 0.01 μSv/h	西	W	1.0
215.1 μSv/h	< 0.01 μSv/h	西北西	WNW	0.5
215.0 μSv/h	< 0.01 μSv/h	北	N	0.6
214.7 μSv/h	< 0.01 μSv/h	南	S	0.3
214.5 μSv/h	< 0.01 μSv/h	北	N	0.2
214.7 μSv/h	< 0.01 μSv/h	北北西	NNW	1.2
214.3 μSv/h	< 0.01 μSv/h	西	W	1.2
214.4 μSv/h	< 0.01 μSv/h	南東	SE	0.9
214.0 μSv/h	< 0.01 μSv/h	南南東	SSE	0.7
213.6 μSv/h	< 0.01 μSv/h	南	S	0.6
213.8 μSv/h	< 0.01 μSv/h	東南東	ESE	0.8
216.2 μSv/h	< 0.01 μSv/h	南西	SW	0.8
213.6 μSv/h	< 0.01 μSv/h	西	W	0.7
212.8 μSv/h	< 0.01 μSv/h	北	N	0.4
212.8 μSv/h	< 0.01 μSv/h	北	N	0.7
214.7 μSv/h	< 0.01 μSv/h	南南東	SSE	0.5
230.9 μSv/h	< 0.01 μSv/h	東南東	ESE	0.8
213.7 μSv/h	< 0.01 μSv/h	西南西	WSW	0.7
212.3 μSv/h	< 0.01 μSv/h	西北西	WNW	0.7
212.2 μSv/h	< 0.01 μSv/h	北西	NW	0.9
212.0 μSv/h	< 0.01 μSv/h	西	W	1.1
211.8 μSv/h	< 0.01 μSv/h	西	W	0.8
211.9 μSv/h	< 0.01 μSv/h	南東	SE	1.2
211.9 μSv/h	< 0.01 μSv/h	南	S	1.0
211.7 μSv/h	< 0.01 μSv/h	南	S	0.8
211.6 μSv/h	< 0.01 μSv/h	南西	SW	0.8
211.6 μSv/h	< 0.01 μSv/h	南	S	1.2

21.6 µSv/h	< 0.01 µSv/h	南	S	1.2
211.2 µSv/h	< 0.01 µSv/h	南東	SE	1.7
211.5 µSv/h	< 0.01 µSv/h	南東	SE	1.7
211.1 µSv/h	< 0.01 µSv/h	南東	SE	1.5
210.1 µSv/h	< 0.01 µSv/h	南東	SE	1.8
210.8 µSv/h	< 0.01 µSv/h	東南東	ESE	2.5
210.8 µSv/h	< 0.01 µSv/h	南東	SE	2.2
210.7 µSv/h	< 0.01 µSv/h	東南東	ESE	2.5
210.6 µSv/h	< 0.01 µSv/h	南南東	SSE	2.3
210.5 µSv/h	< 0.01 µSv/h	南東	SE	2.2
210.1 µSv/h	< 0.01 µSv/h	南東	SE	2.6
210.0 µSv/h	< 0.01 µSv/h	南東	SE	2.7
209.7 µSv/h	< 0.01 µSv/h	南南東	SSE	2.4
209.7 µSv/h	< 0.01 µSv/h	東南東	ESE	2.7
209.5 µSv/h	< 0.01 µSv/h	南東	SE	22.4
209.6 µSv/h	< 0.01 µSv/h	南東	SE	2.8
209.3 µSv/h	< 0.01 µSv/h	南	S	2.5
209.2 µSv/h	< 0.01 µSv/h	南	S	2.8
209.5 µSv/h	< 0.01 µSv/h	東南東	ESE	2.7
209.5 µSv/h	< 0.01 µSv/h	南	S	2.5
209.6 µSv/h	< 0.01 µSv/h	東南東	ESE	2.7
209.1 µSv/h	< 0.01 µSv/h	南南東	SSE	2.9
209.4 µSv/h	< 0.01 µSv/h	南	S	3.0
209.4 µSv/h	< 0.01 µSv/h	南東	SE	3.0
209.2 µSv/h	< 0.01 µSv/h	南東	SE	2.8
201.1 µSv/h	< 0.01 µSv/h	南	S	2.5
208.8 µSv/h	< 0.01 µSv/h	南	S	3.1
208.7 µSv/h	< 0.01 µSv/h	東南東	ESE	3.2
208.1 µSv/h	< 0.01 µSv/h	南東	SE	3.1
207.9 µSv/h	< 0.01 µSv/h	南	S	3.7
207.5 µSv/h	< 0.01 µSv/h	南	S	3.7
207.5 µSv/h	< 0.01 µSv/h	南東	SE	3.1
207.2 µSv/h	< 0.01 µSv/h	南	S	4.2
209.3 µSv/h	< 0.01 µSv/h	南東	SE	3.1
209.0 µSv/h	< 0.01 µSv/h	南東	SE	4.1
208.5 µSv/h	< 0.01 µSv/h	南東	SE	4.0
429.5 µSv/h	< 0.01 µSv/h	南	S	2.3
427.0 µSv/h	< 0.01 µSv/h	南	S	1.4
210.0 µSv/h	< 0.01 µSv/h	南	S	5.8
209.8 µSv/h	< 0.01 µSv/h	南東	SE	4.5
209.4 µSv/h	< 0.01 µSv/h	南東	SE	4.4
209.2 µSv/h	< 0.01 µSv/h	南	S	4.3
208.8 µSv/h	< 0.01 µSv/h	南	S	4.3
208.0 µSv/h	< 0.01 µSv/h	南	S	3.8
207.6 µSv/h	< 0.01 µSv/h	南	S	4.3
207.4 µSv/h	< 0.01 µSv/h	南東	SE	4.5
207.3 µSv/h	< 0.01 µSv/h	南	S	4.0
207.1 µSv/h	< 0.01 µSv/h	南	S	3.6

207.0 μSv/h	< 0.01 μSv/h	南	S	4.3
206.9 μSv/h	< 0.01 μSv/h	南	S	3.2
206.5 μSv/h	< 0.01 μSv/h	南東	SE	2.5
206.4 μSv/h	< 0.01 μSv/h	南東	SE	1.8
206.3 μSv/h	< 0.01 μSv/h	南	S	1.7
206.1 μSv/h	< 0.01 μSv/h	南西	SW	1.3
206.0 μSv/h	< 0.01 μSv/h	南	S	1.3
205.6 μSv/h	< 0.01 μSv/h	南	S	1.7
205.3 μSv/h	< 0.01 μSv/h	南	S	1.4
204.6 μSv/h	< 0.01 μSv/h	南	S	1.3
204.9 μSv/h	< 0.01 μSv/h	南南東	SSE	1.0
204.7 μSv/h	< 0.01 μSv/h	西	W	0.5
204.5 μSv/h	< 0.01 μSv/h	西南西	WSW	0.6.
204.4 μSv/h	< 0.01 μSv/h	西	W	0.6
204.4 μSv/h	< 0.01 μSv/h	西	W	0.8
204.3 μSv/h	< 0.01 μSv/h	西南西	WSW	1.0
204.2 μSv/h	< 0.01 μSv/h	西	W	0.7
203.9 μSv/h	< 0.01 μSv/h	西北西	WNW	1.0
203.5 μSv/h	< 0.01 μSv/h	北西	NW	1.3
203.0 μSv/h	< 0.01 μSv/h	西	W	1.4
202.9 μSv/h	< 0.01 μSv/h	西	W	1.4
202.9 μSv/h	< 0.01 μSv/h	北西	NW	0.8
202.6 μSv/h	< 0.01 μSv/h	西北西	WNW	0.7
202.5 μSv/h	< 0.01 μSv/h	西北西	WNW	1.6
202.4 μSv/h	< 0.01 μSv/h	西	W	0.9
202.4 μSv/h	< 0.01 μSv/h	西	W	0.7
202.2 μSv/h	< 0.01 μSv/h	西北西	WNW	1.2
202.0 μSv/h	< 0.01 μSv/h	北西	NW	1.2
202.0 μSv/h	< 0.01 μSv/h	北西	NW	1.0
201.7 μSv/h	< 0.01 μSv/h	北北西	NNW	0.8
201.4 μSv/h	< 0.01 μSv/h	北西	NW	0.4
201.3 μSv/h	< 0.01 μSv/h	北	N	0.8
201.3 μSv/h	< 0.01 μSv/h	西	W	0.6
201.2 μSv/h	< 0.01 μSv/h	西北西	WNW	0.7
201.1 μSv/h	< 0.01 μSv/h	北北西	NNW	0.5
201.2 μSv/h	< 0.01 μSv/h	北西	NW	0.9
200.5 μSv/h	< 0.01 μSv/h	西北西	WNW	1.5
200.6 μSv/h	< 0.01 μSv/h	西北西	WNW	1.2
200.4 μSv/h	< 0.01 μSv/h	北西	NW	1.0
200.2 μSv/h	< 0.01 μSv/h	西北西	WNW	1.6
199.9 μSv/h	< 0.01 μSv/h	西北西	WNW	1.5
200.0 μSv/h	< 0.01 μSv/h	北西	NW	1.1
199.8 μSv/h	< 0.01 μSv/h	北北西	NNW	1.3
199.8 μSv/h	< 0.01 μSv/h	北西	NW	0.9
199.6 μSv/h	< 0.01 μSv/h	北西	NW	0.9
199.5 μSv/h	< 0.01 μSv/h	北西	NW	1.3
199.3 μSv/h	< 0.01 μSv/h	西	W	0.8
199.0 μSv/h	< 0.01 μSv/h	西	W	0.8

199.0 μSv/h	< 0.01 μSv/h	西	W	0.5
198.9 μSv/h	< 0.01 μSv/h	北西	NW	0.8
198.8 μSv/h	< 0.01 μSv/h	西北西	WNW	0.7
198.6 μSv/h	< 0.01 μSv/h	西	W	1.0
197.7 μSv/h	< 0.01 μSv/h	西南西	WSW	0.7
197.0 μSv/h	< 0.01 μSv/h	西	W	0.5
196.9 μSv/h	< 0.01 μSv/h	南西	SW	0.5
196.5 μSv/h	< 0.01 μSv/h	南西	SW	0.6
196.5 μSv/h	< 0.01 μSv/h	西	W	0.6
196.5 μSv/h	< 0.01 μSv/h	南東	SE	0.5
196.4 μSv/h	< 0.01 μSv/h	南南西	SSW	0.5
196.3 μSv/h	< 0.01 μSv/h	北北西	NNW	0.7
196.1 μSv/h	< 0.01 μSv/h	西	W	0.5
195.9 μSv/h	< 0.01 μSv/h	西南西	WSW	0.5
195.8 μSv/h	< 0.01 μSv/h	西	W	0.7
195.7 μSv/h	< 0.01 μSv/h	西	W	1.0
195.7 μSv/h	< 0.01 μSv/h	西	W	1.0
195.6 μSv/h	< 0.01 μSv/h	西	W	0.8
195.6 μSv/h	< 0.01 μSv/h	北西	NW	1.8
195.5 μSv/h	< 0.01 μSv/h	北西	NW	1.1
195.1 μSv/h	< 0.01 μSv/h	北	N	1.0
195.1 μSv/h	< 0.01 μSv/h	西	W	0.8
195.0 μSv/h	< 0.01 μSv/h	北西	NW	1.7
195.0 μSv/h	< 0.01 μSv/h	北西	NW	1.2
195.0 μSv/h	< 0.01 μSv/h	北北西	NNW	1.1
194.5 μSv/h	< 0.01 μSv/h	北	N	0.9
194.5 μSv/h	< 0.01 μSv/h	北	N	0.8
194.4 μSv/h	< 0.01 μSv/h	西北西	WNW	0.9
194.4 μSv/h	< 0.01 μSv/h	北北西	NNW	0.8
194.3 μSv/h	< 0.01 μSv/h	北西	NW	0.9
194.2 μSv/h	< 0.01 μSv/h	北西	NW	0.9
194.1 μSv/h	< 0.01 μSv/h	北西	NW	1.8
193.8 μSv/h	< 0.01 μSv/h	西北西	WNW	1.6
193.8 μSv/h	< 0.01 μSv/h	西北西	WNW	1.5
193.6 μSv/h	< 0.01 μSv/h	西北西	WNW	1.0
193.0μSv/h	< 0.01 μSv/h	西北西	WNW	1.1
192.9 μSv/h	< 0.01 μSv/h	西北西	WNW	0.9
193.0 μSv/h	< 0.01 μSv/h	西	W	1.0
192.5 μSv/h	< 0.01 μSv/h	北西	NW	1.1
192.6 μSv/h	< 0.01 μSv/h	西	W	0.9
192.5 μSv/h	< 0.01 μSv/h	北北西	NNW	0.9
192.7 μSv/h	< 0.01 μSv/h	北北西	NNW	0.8
192.3 μSv/h	< 0.01 μSv/h	北北西	NNW	1.1
192.5 μSv/h	< 0.01 μSv/h	北北西	NNW	1.3
193.3 μSv/h	< 0.01 μSv/h	北	N	1.2
193.8 μSv/h	< 0.01 μSv/h	北北西	NNW	1.0
193.9 μSv/h	< 0.01 μSv/h	北	N	1.3
193.3 μSv/h	< 0.01 μSv/h	北	N	1.6

196.3 μSv/h	< 0.01 μSv/h	北	N	1.1
196.3 μSv/h	< 0.01 μSv/h	北東	NE	1.1
192.8 μSv/h	< 0.01 μSv/h	北北東	NNE	1.4
192.6 μSv/h	< 0.01 μSv/h	北	N	1.9
192.3 μSv/h	< 0.01 μSv/h	北	N	3.1
192.5 μSv/h	< 0.01 μSv/h	北東	NE	2.3
193.7 μSv/h	< 0.01 μSv/h	北	N	2.3
191.7 μSv/h	< 0.01 μSv/h	東	E	2.2
204.2 μSv/h	< 0.01 μSv/h	北東	NE	1.6
216.2 μSv/h	< 0.01 μSv/h	東	E	1.7
203.2 μSv/h	< 0.01 μSv/h	東北東	ENE	1.7
430.8 μSv/h	< 0.01 μSv/h	東	E	2.0
540.0 μSv/h	< 0.01 μSv/h	東	E	1.9
286.5 μSv/h	< 0.01 μSv/h	東南東	ESE	2.1
264.7 μSv/h	< 0.01 μSv/h	東南東	ESE	2.4
259.0 μSv/h	< 0.01 μSv/h	東南東	ESE	2.8
255.2 μSv/h	< 0.01 μSv/h	南東	SE	2.9
250.9 μSv/h	< 0.01 μSv/h	南東	SE	3.4
248.6 μSv/h	< 0.01 μSv/h	東南東	ESE	2.8
244.3 μSv/h	< 0.01 μSv/h	南東	SE	3.2
240.0 μSv/h	< 0.01 μSv/h	東	E	3.0
235.8 μSv/h	< 0.01 μSv/h	南南東	SSE	3.7
232.8 μSv/h	< 0.01 μSv/h	南東	SE	3.5
231.6 μSv/h	< 0.01 μSv/h	南東	SE	3.3
229.5 μSv/h	< 0.01 μSv/h	南東	SE	3.0
226.7 μSv/h	< 0.01 μSv/h	東南東	ESE	2.9
224.5 μSv/h	< 0.01 μSv/h	南東	SE	3.3
222.3 μSv/h	< 0.01 μSv/h	南東	SE	2.5
221.2 μSv/h	< 0.01 μSv/h	南東	SE	2.5
218.8 μSv/h	< 0.01 μSv/h	南東	SE	3.0
216.4 μSv/h	< 0.01 μSv/h	南東	SE	2.7
216.2 μSv/h	< 0.01 μSv/h	南東	SE	2.8
213.7 μSv/h	< 0.01 μSv/h	南東	SE	2.7
212.6 μSv/h	< 0.01 μSv/h	東	E	2.9
210.8 μSv/h	< 0.01 μSv/h	南	S	2.9
209.0 μSv/h	< 0.01 μSv/h	南南東	SSE	2.7
209.0 μSv/h	< 0.01 μSv/h	南東	SE	2.6
297.2 μSv/h	< 0.01 μSv/h	東	E	2.1
206.6 μSv/h	< 0.01 μSv/h	南東	SE	2.5
205.8 μSv/h	< 0.01 μSv/h	南東	SE	2.2
204.8 μSv/h	< 0.01 μSv/h	東	E	2.2
203.6 μSv/h	< 0.01 μSv/h	南	S	2.2
202.5 μSv/h	< 0.01 μSv/h	南東	SE	2.1
201.7 μSv/h	< 0.01 μSv/h	南東	SE	2.6
199.5 μSv/h	< 0.01 μSv/h	南東	SE	1.8
197.4 μSv/h	< 0.01 μSv/h	南	S	2.0
196.9 μSv/h	< 0.01 μSv/h	東南東	ESE	2.1
197.6 μSv/h	< 0.01 μSv/h	南東	SE	2.1

196.1 μSv/h	< 0.01 μSv/h	南東	SE	1.6
197.2 μSv/h	< 0.01 μSv/h	南東	SE	1.5
196.8 μSv/h	< 0.01 μSv/h	南	S	1.9
196.0 μSv/h	< 0.01 μSv/h	南東	SE	2.6
195.9 μSv/h	< 0.01 μSv/h	南東	SE	1.8
194.9 μSv/h	< 0.01 μSv/h	南東	SE	1.6
195.4 μSv/h	< 0.01 μSv/h	東	E	1.8
194.5 μSv/h	< 0.01 μSv/h	東	E	2.0
195.6 μSv/h	< 0.01 μSv/h	東	E	2.2
194.7 μSv/h	< 0.01 μSv/h	東	E	1.7
194.4 μSv/h	< 0.01 μSv/h	東南東	ESE	1.6
193.6 μSv/h	< 0.01 μSv/h	東南東	ESE	1.7
199.5 μSv/h	< 0.01 μSv/h	南東	SE	1.3
194.4 μSv/h	< 0.01 μSv/h	東南東	ESE	1.6
193.6 μSv/h	< 0.01 μSv/h	東南東	ESE	1.7
199.5 μSv/h	< 0.01 μSv/h	南東	SE	1.3
261.7 μSv/h	< 0.01 μSv/h	北北東	NNE	1.1
221.9 μSv/h	< 0.01 μSv/h	東	E	1.1
225.0 μSv/h	< 0.01 μSv/h	東南東	ENE	1.0
215.4 μSv/h	< 0.01 μSv/h	南東	SE	1.1
243.0 μSv/h	< 0.01 μSv/h	東	E	1.0
213.9 μSv/h	< 0.01 μSv/h	東	E	1.5
206.3 μSv/h	< 0.01 μSv/h	南東	SE	2.8
205.2 μSv/h	< 0.01 μSv/h	東南東	ESE	2.2
228.4 μSv/h	< 0.01 μSv/h	南東	SE	1.5
205.9 μSv/h	< 0.01 μSv/h	北東	NE	0.7
239.6 μSv/h	< 0.01 μSv/h	南東	SE	0.7
204.9 μSv/h	< 0.01 μSv/h	北	N	0.9
μSv/h	< 0.01 μSv/h			
μSv/h	< 0.01 μSv/h			
μSv/h	< 0.01 μSv/h			
μSv/h	< 0.01 μSv/h			
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μSv/h	< 0.01 μSv/h			
μSv/h	< 0.01 μSv/h			
μSv/h	< 0.01 μSv/h			
μSv/h	< 0.01 μSv/h			
184.4 μSv/h	< 0.01 μSv/h	北西	NW	2.3
184.0 μSv/h	< 0.01 μSv/h	北西	NW	1.8
183.8 μSv/h	< 0.01 μSv/h	西	W	2.5

183.2 μSv/h	< 0.01 μSv/h	北西	NW	2.2
182.8 μSv/h	< 0.01 μSv/h	北北西	NNW	2.6
182.7 μSv/h	< 0.01 μSv/h	北北西	NNW	3.2
182.5 μSv/h	< 0.01 μSv/h	北西	NW	3.2
182.4 μSv/h	< 0.01 μSv/h	北西	NW	2.7
182.3 μSv/h	< 0.01 μSv/h	西	W	2.4
182.1 μSv/h	< 0.01 μSv/h	北西	NW	2.7
181.8 μSv/h	< 0.01 μSv/h	北西	NW	1.9
180.8 μSv/h	< 0.01 μSv/h	北西	NW	3.0
179.9 μSv/h	< 0.01 μSv/h	北	N	5.3
178.1 μSv/h	< 0.01 μSv/h	北北西	NNW	4.0
176.6 μSv/h	< 0.01 μSv/h	北北西	NNW	2.9
175.5 μSv/h	< 0.01 μSv/h	北	N	3.5
174.4 μSv/h	< 0.01 μSv/h	北北西	NNW	3.2
173.0 μSv/h	< 0.01 μSv/h	北	N	5.0
172.4 μSv/h	< 0.01 μSv/h	北	N	5.9
171.0 μSv/h	< 0.01 μSv/h	北北西	NNW	3.7
170.7 μSv/h	< 0.01 μSv/h	北北西	NNW	3.0
169.8 μSv/h	< 0.01 μSv/h	北西	NW	3.0
169.2 μSv/h	< 0.01 μSv/h	北西	NW	2.7
169.5 μSv/h	< 0.01 μSv/h	北西	NW	2.9
169.2 μSv/h	< 0.01 μSv/h	北西	NW	2.6
169.1 μSv/h	< 0.01 μSv/h	北西	NW	2.8
168.1 μSv/h	< 0.01 μSv/h	北西	NW	2.6
167.8 μSv/h	< 0.01 μSv/h	北西	NW	2.3
167.1 μSv/h	< 0.01 μSv/h	北西	NW	2.7
167.1 μSv/h	< 0.01 μSv/h	北	N	3.2
166.9 μSv/h	< 0.01 μSv/h	北西	NW	6.1
167.1 μSv/h	< 0.01 μSv/h	北	N	3.4
167.4 μSv/h	< 0.01 μSv/h	北北西	NNW	3.0
167.6 μSv/h	< 0.01 μSv/h	北西	NW	2.7
167.8 μSv/h	< 0.01 μSv/h	北西	NW	2.7
168.0 μSv/h	< 0.01 μSv/h	北西	NW	2.9
169.0 μSv/h	< 0.01 μSv/h	北西	NW	2.5
168.0 μSv/h	< 0.01 μSv/h	西北西	WNW	2.7
168.3 μSv/h	< 0.01 μSv/h	北西	NW	2.7
169.2 μSv/h	< 0.01 μSv/h	北西	NW	2.5
169.6 μSv/h	< 0.01 μSv/h	北北西	NNW	2.2
169.7 μSv/h	< 0.01 μSv/h	北西	NW	2.4
169.5 μSv/h	< 0.01 μSv/h	西北西	WNW	2.3
169.0 μSv/h	< 0.01 μSv/h	西北西	WNW	2.6
169.8 μSv/h	< 0.01 μSv/h	北北西	NNW	2.8
170.0 μSv/h	< 0.01 μSv/h	北西	NW	2.3
169 μSv/h	< 0.01 μSv/h	北	N	2.9
170.1 μSv/h	< 0.01 μSv/h	北北西	NNW	2.7
170.3 μSv/h	< 0.01 μSv/h	北	N	2.6
170.3 μSv/h	< 0.01 μSv/h	北北西	NNW	2.7
170.6 μSv/h	< 0.01 μSv/h	北北西	NNW	3.5

170.7 μSv/h	< 0.01 μSv/h	北北東	NNE	3.4
170.7 μSv/h	< 0.01 μSv/h	北北西	NNW	2.9
170.8 μSv/h	< 0.01 μSv/h	北北西	NNW	3.0
170.8 μSv/h	< 0.01 μSv/h	北北東	NNE	3.0
170.7 μSv/h	< 0.01 μSv/h	北北東	NNE	3.1
170.5 μSv/h	< 0.01 μSv/h	北西	NW	2.8
170.6 μSv/h	< 0.01 μSv/h	北北西	NNW	2.4
170.6 μSv/h	< 0.01 μSv/h	北	N	2.6
170.8 μSv/h	< 0.01 μSv/h	北	N	2.5
170.5 μSv/h	< 0.01 μSv/h	北北西	NNW	2.6
170.8 μSv/h	< 0.01 μSv/h	北西	NW	2.5
170.6 μSv/h	< 0.01 μSv/h	北西	NW	3.9
170.5 μSv/h	< 0.01 μSv/h	北北西	NNW	4.4
170.8 μSv/h	< 0.01 μSv/h	北北西	NNW	3.5
170.8 μSv/h	< 0.01 μSv/h	西北西	WNW	3.8
170.7 μSv/h	< 0.01 μSv/h	北西	NW	5.1
N/A	N/A	N/A	N/A	N/A
146.7 μSv/h	< 0.01 μSv/h	北西	NW	2.9
146.7 μSv/h	< 0.01 μSv/h	北北西	NNW	2.6
146.6 μSv/h	< 0.01 μSv/h	西	W	2.9
146.9 μSv/h	< 0.01 μSv/h	西	W	3.5
146.8 μSv/h	< 0.01 μSv/h	北	N	2.4
146.8 μSv/h	< 0.01 μSv/h	西	W	3.7
146.8 μSv/h	< 0.01 μSv/h	北西	NW	3.8
146.6 μSv/h	< 0.01 μSv/h	西	W	4.5
146.8 μSv/h	< 0.01 μSv/h	北北西	NNW	3.4
146.8 μSv/h	< 0.01 μSv/h	北	N	3.4
146.7 μSv/h	< 0.01 μSv/h	北西	NW	3.4
146.7 μSv/h	< 0.01 μSv/h	西	W	4.3
146.7 μSv/h	< 0.01 μSv/h	北北西	NNW	3.4
146.6 μSv/h	< 0.01 μSv/h	北西	NW	3.1
147.2 μSv/h	< 0.01 μSv/h	西北西	WNW	3.4
147.0 μSv/h	< 0.01 μSv/h	北西	NW	3.3
146.9 μSv/h	< 0.01 μSv/h	西北西	WNW	3.6
146.9 μSv/h	< 0.01 μSv/h	西	W	3.5
146.8 μSv/h	< 0.01 μSv/h	西北西	WNW	3.8
146.7 μSv/h	< 0.01 μSv/h	北西	NW	3.0
146.7 μSv/h	< 0.01 μSv/h	北西	NW	2.6
146.6 μSv/h	< 0.01 μSv/h	北西	NW	2.2
146.6 μSv/h	< 0.01 μSv/h	北西	NW	2.4
146.2 μSv/h	< 0.01 μSv/h	北西	NW	2.4
146.4 μSv/h	< 0.01 μSv/h	北西	NW	3.5
146.0 μSv/h	< 0.01 μSv/h	北西	NW	2.8
146.0 μSv/h	< 0.01 μSv/h	北	N	2.6
146.0 μSv/h	< 0.01 μSv/h	西	W	1.9
145.9 μSv/h	< 0.01 μSv/h	西北西	WNW	2.5
145.8 μSv/h	< 0.01 μSv/h	北北西	NNW	2.3
145.8 μSv/h	< 0.01 μSv/h	北西	NW	2.7

145.5 μSv/h	< 0.01 μSv/h	西北西	WNW	2.8
145.4 μSv/h	< 0.01 μSv/h	北西	NW	2.8
145.4 μSv/h	< 0.01 μSv/h	北西	NW	2.4
145.3 μSv/h	< 0.01 μSv/h	北北西	NNW	2.7
145.2 μSv/h	< 0.01 μSv/h	西北西	WNW	2.6
145.2 μSv/h	< 0.01 μSv/h	北西	NW	2.0
145.0 μSv/h	< 0.01 μSv/h	北西	NW	2.2
145.0 μSv/h	< 0.01 μSv/h	北西	NW	2.2
144.6 μSv/h	< 0.01 μSv/h	西北西	WNW	2.5
144.5 μSv/h	< 0.01 μSv/h	北西	NW	2.0
144.7 μSv/h	< 0.01 μSv/h	北西	NW	1.7
144.4 μSv/h	< 0.01 μSv/h	西北西	WNW	1.7
143.9 μSv/h	< 0.01 μSv/h	西北西	WNW	1.4
144.1 μSv/h	< 0.01 μSv/h	北西	NW	0.7
144.2 μSv/h	< 0.01 μSv/h	北	N	0.6
143.9 μSv/h	< 0.01 μSv/h	北北東	NNE	0.7
143.8 μSv/h	< 0.01 μSv/h	北	N	0.6
143.5 μSv/h	< 0.01 μSv/h	北西	NW	0.5
143.5 μSv/h	< 0.01 μSv/h	北北西	NNW	0.4
143.3 μSv/h	< 0.01 μSv/h	東	E	0.3
143.4 μSv/h	< 0.01 μSv/h	北北西	NNW	0.7
143.0 μSv/h	< 0.01 μSv/h	西北西	WNW	1.1
143.1 μSv/h	< 0.01 μSv/h	西北西	WNW	1.4
143.0 μSv/h	< 0.01 μSv/h	西北西	WNW	1.8
143.0 μSv/h	< 0.01 μSv/h	西	W	2.0
142.8 μSv/h	< 0.01 μSv/h	西南西	WSW	0.8
142.9 μSv/h	< 0.01 μSv/h	西	W	0.7
142.8 μSv/h	< 0.01 μSv/h	西北西	WNW	1.6
142.7 μSv/h	< 0.01 μSv/h	西北西	WNW	2.2
142.8 μSv/h	< 0.01 μSv/h	西北西	WNW	1.8
142.5 μSv/h	< 0.01 μSv/h	西	W	0.9
142.6 μSv/h	< 0.01 μSv/h	西	W	1.5
142.0 μSv/h	< 0.01 μSv/h	西南西	WSW	0.9
141.8 μSv/h	< 0.01 μSv/h	西	W	1.1
141.5 μSv/h	< 0.01 μSv/h	北	N	1.3
141.3 μSv/h	< 0.01 μSv/h	北西	NW	0.5
141.2 μSv/h	< 0.01 μSv/h	西南西	WSW	0.9
141.1 μSv/h	< 0.01 μSv/h	西	W	1.5
141.1 μSv/h	< 0.01 μSv/h	西	W	1.1
140.9 μSv/h	< 0.01 μSv/h	西北西	WNW	1.6
140.8 μSv/h	< 0.01 μSv/h	西北西	WNW	1.7
140.8 μSv/h	< 0.01 μSv/h	西	W	1.6
140.6 μSv/h	< 0.01 μSv/h	西北西	WNW	1.3
140.7 μSv/h	< 0.01 μSv/h	西北西	WNW	1.0
140.4 μSv/h	< 0.01 μSv/h	西北西	WNW	1.2
140.3 μSv/h	< 0.01 μSv/h	北西	NW	1.1
140.3 μSv/h	< 0.01 μSv/h	北西	NW	1.0
140.2 μSv/h	< 0.01 μSv/h	北北西	NNW	0.6

140.1 µSv/h	< 0.01 µSv/h	北西	NW	0.5
140.3 µSv/h	< 0.01 µSv/h	北西	NW	0.5
140.3 µSv/h	< 0.01 µSv/h	北西	NW	0.8
140.3 µSv/h	< 0.01 µSv/h	北西	NW	0.7
140.2 µSv/h	< 0.01 µSv/h	北北西	NNW	0.7
140.1 µSv/h	< 0.01 µSv/h	北西	NW	0.8
140.1 µSv/h	< 0.01 µSv/h	北西	NW	0.6
140.0 µSv/h	< 0.01 µSv/h	北北東	NNE	0.4
140.0 µSv/h	< 0.01 µSv/h	西	W	0.3
139.9 µSv/h	< 0.01 µSv/h	南	S	0.5
139.7 µSv/h	< 0.01 µSv/h	西	W	0.5
139.7 µSv/h	< 0.01 µSv/h	西	W	0.4
139.7 µSv/h	< 0.01 µSv/h	北西	NW	0.5
139.7 µSv/h	< 0.01 µSv/h	西	W	1.4
139.6 µSv/h	< 0.01 µSv/h	西北西	WNW	1.6
139.4 µSv/h	< 0.01 µSv/h	北西	NW	2.0
138.3 µSv/h	< 0.01 µSv/h	西	W	1.5
138.3 µSv/h	< 0.01 µSv/h	北西	NW	0.9
139.2 µSv/h	< 0.01 µSv/h	西	W	1.2
137.7 µSv/h	< 0.01 µSv/h	西	W	1.5
137.5 µSv/h	< 0.01 µSv/h	西	W	1.4
137.5 µSv/h	< 0.01 µSv/h	西	W	1.2
137.5 µSv/h	< 0.01 µSv/h	北西	NW	1.2
137.4 µSv/h	< 0.01 µSv/h	南西	SW	1.4
137.5 µSv/h	< 0.01 µSv/h	西	W	1.1
137.4 µSv/h	< 0.01 µSv/h	北西	NW	1.0
137.3 µSv/h	< 0.01 µSv/h	北西	NW	1.0
137.1 µSv/h	< 0.01 µSv/h	南	S	0.7
137.2 µSv/h	< 0.01 µSv/h	北	N	0.5
136.9 µSv/h	< 0.01 µSv/h	北東	NE	0.6
137.0 µSv/h	< 0.01 µSv/h	北	N	0.7
136.7 µSv/h	< 0.01 µSv/h	北	N	0.6
136.7 µSv/h	< 0.01 µSv/h	北	N	0.4
136.6 µSv/h	< 0.01 µSv/h	東北東	ENE	0.5
136.6 µSv/h	< 0.01 µSv/h	北東	NE	0.5
136.6 µSv/h	< 0.01 µSv/h	東北東	ENE	0.4
136.2 µSv/h	< 0.01 µSv/h	北北西	NNW	0.5
136.4 µSv/h	< 0.01 µSv/h	北西	NW	0.5
136.2 µSv/h	< 0.01 µSv/h	北西	NW	1.7
136.3 µSv/h	< 0.01 µSv/h	西北西	WNW	2.2
136.2 µSv/h	< 0.01 µSv/h	西南西	WSW	1.7
136.1 µSv/h	< 0.01 µSv/h	西北西	WNW	2.3
136.0 µSv/h	< 0.01 µSv/h	西北西	WNW	2.0
136.0 µSv/h	< 0.01 µSv/h	西	W	2.3
135.8 µSv/h	< 0.01 µSv/h	西	W	2.4
135.8 µSv/h	< 0.01 µSv/h	北	N	2.0
135.8 µSv/h	< 0.01 µSv/h	西南西	WSW	1.8
135.7 µSv/h	< 0.01 µSv/h	西	W	2.5

135.6 μSv/h	< 0.01 μSv/h	西	W	2.0
135.6 μSv/h	< 0.01 μSv/h	北西	NW	1.8
135.4 μSv/h	< 0.01 μSv/h	西	W	2.1
135.5 μSv/h	< 0.01 μSv/h	北	N	2.0
135.4 μSv/h	< 0.01 μSv/h	西	W	2.1
135.4 μSv/h	< 0.01 μSv/h	南西	SW	2.2
135.3 μSv/h	< 0.01 μSv/h	西北西	WNW	1.8
135.4 μSv/h	< 0.01 μSv/h	北北西	NNW	1.8
135.5 μSv/h	< 0.01 μSv/h	西	W	0.5
135.1 μSv/h	< 0.01 μSv/h	西	W	1.3
135.1 μSv/h	< 0.01 μSv/h	西	W	1.9
135.1 μSv/h	< 0.01 μSv/h	西	W	1.3
135.0 μSv/h	< 0.01 μSv/h	北	N	1.7
134.8 μSv/h	< 0.01 μSv/h	北西	NW	1.9
134.9 μSv/h	< 0.01 μSv/h	西	W	1.7
134.7 μSv/h	< 0.01 μSv/h	北東	NE	1.2
134.6 μSv/h	< 0.01 μSv/h	西北西	WNW	1.5
135.1 μSv/h	< 0.01 μSv/h	北	N	1.8
134.6 μSv/h	< 0.01 μSv/h	北西	NW	1.8
134.5 μSv/h	< 0.01 μSv/h	北北西	NNW	2.0
134.6 μSv/h	< 0.01 μSv/h	北西	NW	1.9
134.6 μSv/h	< 0.01 μSv/h	北西	NW	1.6
134.6 μSv/h	< 0.01 μSv/h	北西	NW	1.9
134.4 μSv/h	< 0.01 μSv/h	西北西	WNW	2.5
134.3 μSv/h	< 0.01 μSv/h	西北西	WNW	1.9
134.4 μSv/h	< 0.01 μSv/h	西	W	1.9
134.0 μSv/h	< 0.01 μSv/h	西北西	WNW	1.9
134.0 μSv/h	< 0.01 μSv/h	西北西	WNW	2.1
134.0 μSv/h	< 0.01 μSv/h	西北西	WNW	0.3
133.9 μSv/h	< 0.01 μSv/h	北西	NW	2.0
133.8 μSv/h	< 0.01 μSv/h	西北西	WNW	2.5
133.6 μSv/h	< 0.01 μSv/h	西北西	WNW	2.0
133.6 μSv/h	< 0.01 μSv/h	西	W	2.3
133.4 μSv/h	< 0.01 μSv/h	西北西	WNW	2.4
133.2 μSv/h	< 0.01 μSv/h	西	W	0.7
133.2 μSv/h	< 0.01 μSv/h	西	W	2.2
133.1 μSv/h	< 0.01 μSv/h	西	W	0.4
133.1 μSv/h	< 0.01 μSv/h	西北西	WNW	1.9
133.0 μSv/h	< 0.01 μSv/h	西	W	2.2
132.8 μSv/h	< 0.01 μSv/h	西	W	1.9
132.9 μSv/h	< 0.01 μSv/h	北西	NW	1.7
132.8 μSv/h	< 0.01 μSv/h	西北西	WNW	1.6
132.8 μSv/h	< 0.01 μSv/h	北西	NW	1.7
132.6 μSv/h	< 0.01 μSv/h	北西	NW	1.6
132.5 μSv/h	< 0.01 μSv/h	西北西	WNW	1.4
132.5 μSv/h	< 0.01 μSv/h	西	W	1.6
132.5 μSv/h	< 0.01 μSv/h	西	W	2.0
132.5 μSv/h	< 0.01 μSv/h	西	W	0.3

132.4 µSv/h	< 0.01 µSv/h	西北西	WNW	2.0
132.3 µSv/h	< 0.01 µSv/h	西北西	WNW	1.6
132.1 µSv/h	< 0.01 µSv/h	西北西	WNW	1.7
132.1 µSv/h	< 0.01 µSv/h	北西	NW	2.2
132.1 µSv/h	< 0.01 µSv/h	北西	NW	2.0
131.8 µSv/h	< 0.01 µSv/h	西北西	WNW	1.8
131.9 µSv/h	< 0.01 µSv/h	西北西	WNW	1.8
131.4 µSv/h	< 0.01 µSv/h	西北西	WNW	1.6
131.3 µSv/h	< 0.01 µSv/h	北西	NW	1.8
131.2 µSv/h	< 0.01 µSv/h	西北西	WNW	1.4
131.1 µSv/h	< 0.01 µSv/h	西	W	0.9
131.0 µSv/h	< 0.01 µSv/h	西南西	WSW	1.5
131.0 µSv/h	< 0.01 µSv/h	西北西	WNW	1.3
130.8 µSv/h	< 0.01 µSv/h	西	W	1.1
130.8 µSv/h	< 0.01 µSv/h	西南西	WSW	0.7
130.7 µSv/h	< 0.01 µSv/h	西	W	1.3
130.6 µSv/h	< 0.01 µSv/h	西北西	WNW	1.6
130.4 µSv/h	< 0.01 µSv/h	北西	NW	0.9
130.4 µSv/h	< 0.01 µSv/h	北西	NW	0.9
130.4 µSv/h	< 0.01 µSv/h	西北西	WNW	0.9
130.4 µSv/h	< 0.01 µSv/h	西南西	WSW	0.7
130.3 µSv/h	< 0.01 µSv/h	西北西	WNW	0.7
130.3 µSv/h	< 0.01 µSv/h	西	W	0.6
130.1 µSv/h	< 0.01 µSv/h	西南西	WSW	0.3
130.1 µSv/h	< 0.01 µSv/h	西北西	WNW	0.3
130.0 µSv/h	< 0.01 µSv/h	北西	NW	0.3
130.1 µSv/h	< 0.01 µSv/h	西	W	0.8
129.9 µSv/h	< 0.01 µSv/h	西北西	WNW	0.9
129.9 µSv/h	< 0.01 µSv/h	西	W	0.8
129.8 µSv/h	< 0.01 µSv/h	西北西	WNW	1.1
129.7 µSv/h	< 0.01 µSv/h	北西	NW	0.7
129.7 µSv/h	< 0.01 µSv/h	北西	NW	0.6
129.6 µSv/h	< 0.01 µSv/h	南	SW	0.8
129.5 µSv/h	< 0.01 µSv/h	南南西	SSW	0.7
129.4 µSv/h	< 0.01 µSv/h	西北西	WNW	0.5
129.3 µSv/h	< 0.01 µSv/h	北北西	NNW	0.6
128.9 µSv/h	< 0.01 µSv/h	北西	NW	0.4
128.9 µSv/h	< 0.01 µSv/h	北西	NW	0.4
128.8 µSv/h	< 0.01 µSv/h	南西	SW	0.5
128.4 µSv/h	< 0.01 µSv/h	北西	NW	0.6
128.3 µSv/h	< 0.01 µSv/h	西南西	WSW	0.7
128.1 µSv/h	< 0.01 µSv/h	西	W	0.6
128.0 µSv/h	< 0.01 µSv/h	西北西	WNW	0.5
128.0 µSv/h	< 0.01 µSv/h	西南西	WSW	0.4
128.0 µSv/h	< 0.01 µSv/h	北西	NW	0.4
128.0 µSv/h	< 0.01 µSv/h	西	W	0.3
127.9 µSv/h	< 0.01 µSv/h	西	W	0.5
127.8 µSv/h	< 0.01 µSv/h	西南西	WSW	0.8

127.0 µSv/h	< 0.01 µSv/h	北西	NW	0.6
127.7 µSv/h	< 0.01 µSv/h	南南東	NNE	0.4
127.6 µSv/h	< 0.01 µSv/h	北東	NE	0.6
127.5 µSv/h	< 0.01 µSv/h	北	N	0.3
127.3 µSv/h	< 0.01 µSv/h	北西	NW	0.4
127.3 µSv/h	< 0.01 µSv/h	北	N	0.4
127.3 µSv/h	< 0.01 µSv/h	西	W	0.4
127.3 µSv/h	< 0.01 µSv/h	北北東	NNE	0.4
127.1 µSv/h	< 0.01 µSv/h	北	N	0.7
127.1 µSv/h	< 0.01 µSv/h	北	N	0.5
127.0 µSv/h	< 0.01 µSv/h	北西	NW	0.4
126.9 µSv/h	< 0.01 µSv/h	北西	NW	0.8
126.9 µSv/h	< 0.01 µSv/h	北西	NW	1.0
126.8 µSv/h	< 0.01 µSv/h	北	N	0.7
126.8 µSv/h	< 0.01 µSv/h	北	N	0.6
126.7 µSv/h	< 0.01 µSv/h	北	N	0.6
126.4 µSv/h	< 0.01 µSv/h	北	N	0.4
126.5 µSv/h	< 0.01 µSv/h	西	W	0.3
126.4 µSv/h	< 0.01 µSv/h	南	S	0.4
126.1 µSv/h	< 0.01 µSv/h	北東	NE	0.4
126.3 µSv/h	< 0.01 µSv/h	北	N	0.3
126.2 µSv/h	< 0.01 µSv/h	西南西	WSW	0.8
125.9 µSv/h	< 0.01 µSv/h	西北西	WNW	0.5
126.0 µSv/h	< 0.01 µSv/h	南南西	SSW	0.5
125.7 µSv/h	< 0.01 µSv/h	西	W	0.7
125.7 µSv/h	< 0.01 µSv/h	北西	NW	0.9
125.5 µSv/h	< 0.01 µSv/h	西	W	0.8
125.7 µSv/h	< 0.01 µSv/h	西	W	0.7
125.5 µSv/h	< 0.01 µSv/h	西	W	0.5
125.7 µSv/h	< 0.01 µSv/h	北北西	NNW	0.5
125.0 µSv/h	< 0.01 µSv/h	北北西	NNW	0.4
125.4 µSv/h	< 0.01 µSv/h	西	W	0.7
125.5 µSv/h	< 0.01 µSv/h	北西	NW	0.8
125.8 µSv/h	< 0.01 µSv/h	西	W	1.0
125.5 µSv/h	< 0.01 µSv/h	北西	NW	0.5
125.4 µSv/h	< 0.01 µSv/h	西	W	0.6
125.1 µSv/h	< 0.01 µSv/h	西	W	0.6
125.2 µSv/h	< 0.01 µSv/h	西南西	WSW	0.6
125.3 µSv/h	< 0.01 µSv/h	西南西	WSW	0.7
125.1 µSv/h	< 0.01 µSv/h	南南西	SSW	0.6
125.3 µSv/h	< 0.01 µSv/h	南	S	0.8
125.1 µSv/h	< 0.01 µSv/h	北西	NW	0.9
125.0 µSv/h	< 0.01 µSv/h	西南西	WSW	0.5
125.1 µSv/h	< 0.01 µSv/h	北西	NW	0.7
125.0 µSv/h	< 0.01 µSv/h	南	S	0.8
124.9 µSv/h	< 0.01 µSv/h	西	W	0.8
125.0 µSv/h	< 0.01 µSv/h	北北西	NNW	0.9
124.9 µSv/h	< 0.01 µSv/h	北北西	NNW	0.8

124.8 μSv/h	< 0.01 μSv/h	北東	NE	0.7
128.0 μSv/h	< 0.01 μSv/h	南	S	0.6
152.7 μSv/h	< 0.01 μSv/h	東	E	1.8
140.4 μSv/h	< 0.01 μSv/h	東	E	1.7
132.9 μSv/h	< 0.01 μSv/h	東	E	0.9
130.2 μSv/h	< 0.01 μSv/h	東	E	1.8
135.5 μSv/h	< 0.01 μSv/h	東	E	2.3
130.3 μSv/h	< 0.01 μSv/h	東南東	ESE	2.8
128.0 μSv/h	< 0.01 μSv/h	東北東	ENE	3.2
128.1 μSv/h	< 0.01 μSv/h	東北東	ENE	2.6
127.5 μSv/h	< 0.01 μSv/h	東	E	1.8
127.1 μSv/h	< 0.01 μSv/h	東	E	2.2
127.1 μSv/h	< 0.01 μSv/h	南南東	NNE	1.9
126.7 μSv/h	< 0.01 μSv/h	東	E	3.7
126.4 μSv/h	< 0.01 μSv/h	東	E	3.7
126.1 μSv/h	< 0.01 μSv/h	東	E	2.6
126.0 μSv/h	< 0.01 μSv/h	南東	NE	2.6
125.8 μSv/h	< 0.01 μSv/h	南東	NE	2.8
125.6 μSv/h	< 0.01 μSv/h	東南東	ENE	2.3
125.5 μSv/h	< 0.01 μSv/h	南東	SE	2.3
125.5 μSv/h	< 0.01 μSv/h	東	E	3.8
124.4 μSv/h	< 0.01 μSv/h	南南東	SSE	2.8
124.4 μSv/h	< 0.01 μSv/h	南東	SE	3.0
125.2 μSv/h	< 0.01 μSv/h	東	E	1.3
125.1 μSv/h	< 0.01 μSv/h	東	E	2.4
125.0 μSv/h	< 0.01 μSv/h	東	E	3.5
124.9 μSv/h	< 0.01 μSv/h	東南東	ESE	3.8
124.7 μSv/h	< 0.01 μSv/h	東	E	3.1
124.7 μSv/h	< 0.01 μSv/h	南東	SE	3.0
124.6 μSv/h	< 0.01 μSv/h	南西	SW	2.4
124.3 μSv/h	< 0.01 μSv/h	南	S	2.1
123.9 μSv/h	< 0.01 μSv/h	東南東	ESE	2.0
124.0 μSv/h	< 0.01 μSv/h	北西	NW	3.2
123.8 μSv/h	< 0.01 μSv/h	南	S	2.7
123.7 μSv/h	< 0.01 μSv/h	東南東	ESE	2.3
123.5 μSv/h	< 0.01 μSv/h	東	E	2.4
123.4 μSv/h	< 0.01 μSv/h	南	S	3.2
123.2 μSv/h	< 0.01 μSv/h	東	E	2.3
123.3 μSv/h	< 0.01 μSv/h	東	E	2.4
123.1 μSv/h	< 0.01 μSv/h	南	S	2.1
123.0 μSv/h	< 0.01 μSv/h	南東	SE	2.0
123.0 μSv/h	< 0.01 μSv/h	南東	SE	2.1
122.8 μSv/h	< 0.01 μSv/h	東	E	1.8
122.8 μSv/h	< 0.01 μSv/h	南	S	1.9
122.6 μSv/h	< 0.01 μSv/h	南南西	SSW	1.3
122.7 μSv/h	< 0.01 μSv/h	東	E	1.7
122.5 μSv/h	< 0.01 μSv/h	東	E	1.9
122.5 μSv/h	< 0.01 μSv/h	南南東	SSE	2.3

122.5 μSv/h	< 0.01 μSv/h	南	S	1.3
122.4 μSv/h	< 0.01 μSv/h	東南東	ESE	1.6
122.2 μSv/h	< 0.01 μSv/h	東	E	1.2
121.9 μSv/h	< 0.01 μSv/h	南南東	SSE	1.9
122.0 μSv/h	< 0.01 μSv/h	東南東	ESE	0.9
121.9 μSv/h	< 0.01 μSv/h	南東	SE	1.2
121.8 μSv/h	< 0.01 μSv/h	東	E	0.8
121.8 μSv/h	< 0.01 μSv/h	南西	SW	0.6
121.7 μSv/h	< 0.01 μSv/h	南南西	SSW	0.6
121.6 μSv/h	< 0.01 μSv/h	西南西	WSW	0.5
121.6 μSv/h	< 0.01 μSv/h	南西	SW	0.4
121.7 μSv/h	< 0.01 μSv/h	南南東	SSE	0.3
121.4 μSv/h	< 0.01 μSv/h	北	N	0.5
120.8 μSv/h	< 0.01 μSv/h	南	S	0.3
120.8 μSv/h	< 0.01 μSv/h	北西	NW	0.6
120.7 μSv/h	< 0.01 μSv/h	西南西	WSW	0.5
120.6 μSv/h	< 0.01 μSv/h	南西	SW	0.4
120.4 μSv/h	< 0.01 μSv/h	南西	SW	0.7
120.4 μSv/h	< 0.01 μSv/h	北西	NW	0.6
120.5 μSv/h	< 0.01 μSv/h	北西	NW	0.5
120.4 μSv/h	< 0.01 μSv/h	西南西	WSW	0.7
120.4 μSv/h	< 0.01 μSv/h	北西	NW	0.7
120.3 μSv/h	< 0.01 μSv/h	北	N	0.4
120.0 μSv/h	< 0.01 μSv/h	西	W	0.6
120.1 μSv/h	< 0.01 μSv/h	西北西	WNW	0.7
118.6 μSv/h	< 0.01 μSv/h	南西	SW	0.8
120.0 μSv/h	< 0.01 μSv/h	西	W	1.0
120.0 μSv/h	< 0.01 μSv/h	西南西	WSW	0.9
119.9 μSv/h	< 0.01 μSv/h	北西	NW	0.8
120.0 μSv/h	< 0.01 μSv/h	西南西	WSW	0.8
119.9 μSv/h	< 0.01 μSv/h	西南西	WSW	1.1
118.1 μSv/h	< 0.01 μSv/h	西北西	WNW	1.1
119.7 μSv/h	< 0.01 μSv/h	西北西	WNW	1.0
119.6 μSv/h	< 0.01 μSv/h	西南西	WSW	0.8
118.1 μSv/h	< 0.01 μSv/h	西	W	1.3
119.6 μSv/h	< 0.01 μSv/h	西北西	WNW	1.1
118.0 μSv/h	< 0.01 μSv/h	西	W	0.8
117.8 μSv/h	< 0.01 μSv/h	西南西	WSW	0.9
118.0 μSv/h	< 0.01 μSv/h	西	W	0.8
117.8 μSv/h	< 0.01 μSv/h	西北西	WNW	0.8
117.9 μSv/h	< 0.01 μSv/h	西北西	WNW	0.9
117.8 μSv/h	< 0.01 μSv/h	西南西	WSW	0.9
117.6 μSv/h	< 0.01 μSv/h	西南西	WSW	0.7
117.8 μSv/h	< 0.01 μSv/h	西	W	0.4
117.7 μSv/h	< 0.01 μSv/h	北西	NW	0.5
117.8 μSv/h	< 0.01 μSv/h	北西	NW	0.6
117.7 μSv/h	< 0.01 μSv/h	北西	NW	0.7
117.7 μSv/h	< 0.01 μSv/h	西北西	WNW	0.6

117.5 µSv/h	< 0.01 µSv/h	西北西	WNW	0.5
117.5 µSv/h	< 0.01 µSv/h	北西	NW	0.3
117.5 µSv/h	< 0.01 µSv/h	北北西	NNW	0.3
117.5 µSv/h	< 0.01 µSv/h	北西	NW	0.4
117.4 µSv/h	< 0.01 µSv/h	南西	SW	0.4
117.4 µSv/h	< 0.01 µSv/h	南南東	SSE	0.4
117.3 µSv/h	< 0.01 µSv/h	南東	SE	0.3
117.2 µSv/h	< 0.01 µSv/h	北西	NW	0.4
117.1 µSv/h	< 0.01 µSv/h	北北西	NNW	0.6
117.2 µSv/h	< 0.01 µSv/h	北西	NW	0.5
117.1 µSv/h	< 0.01 µSv/h	西	W	1.0
116.9 µSv/h	< 0.01 µSv/h	西北西	WNW	1.2
116.7 µSv/h	< 0.01 µSv/h	西北西	WNW	1.2
116.7 µSv/h	< 0.01 µSv/h	西	W	1.1
116.8 µSv/h	< 0.01 µSv/h	西	W	1.0
116.6 µSv/h	< 0.01 µSv/h	西	W	0.9
116.5 µSv/h	< 0.01 µSv/h	西	W	1.0
116.4 µSv/h	< 0.01 µSv/h	西	W	1.2
116.4 µSv/h	< 0.01 µSv/h	西南西	WSW	1.0
116.3 µSv/h	< 0.01 µSv/h	北西	NW	0.8
116.3 µSv/h	< 0.01 µSv/h	西	W	0.5
116.2 µSv/h	< 0.01 µSv/h	西	W	0.6
116.2 µSv/h	< 0.01 µSv/h	北東	NE	0.4
175.1 µSv/h	< 0.01 µSv/h	北	N	0.3
150.0 µSv/h	< 0.01 µSv/h	西	W	0.3
175.5 µSv/h	< 0.01 µSv/h	西	W	0.4
173.0 µSv/h	< 0.01 µSv/h	西	W	0.6
182.0 µSv/h	< 0.01 µSv/h	西南西	WSW	0.8
155.0 µSv/h	< 0.01 µSv/h	西	W	0.8
134.3 µSv/h	< 0.01 µSv/h	西	W	0.8
127.0 µSv/h	< 0.01 µSv/h	西	W	0.7
126.6 µSv/h	< 0.01 µSv/h	西南西	WSW	0.8
128.5 µSv/h	< 0.01 µSv/h	西	W	0.9
127.6 µSv/h	< 0.01 µSv/h	西	W	0.8
122.3 µSv/h	< 0.01 µSv/h	西南西	WSW	1.0
120.1 µSv/h	< 0.01 µSv/h	西	W	0.7
120.0 µSv/h	< 0.01 µSv/h	西	W	0.8
118.2 µSv/h	< 0.01 µSv/h	西	W	0.8
117.8 µSv/h	< 0.01 µSv/h	西南西	WSW	0.5
117.6 µSv/h	< 0.01 µSv/h	西南西	WSW	0.5
117.4 µSv/h	< 0.01 µSv/h	西南西	WSW	0.4
117.3 µSv/h	< 0.01 µSv/h	西北西	WNW	0.2
117.4 µSv/h	< 0.01 µSv/h	北北東	NNE	0.4
117.7 µSv/h	< 0.01 µSv/h	南東	SE	0.6
116.6 µSv/h	< 0.01 µSv/h	南	S	1.0
132.7 µSv/h	< 0.01 µSv/h	東南東	ESE	0.8
134.7 µSv/h	< 0.01 µSv/h	東	ESE	1.3
128.0 µSv/h	< 0.01 µSv/h	東	ESE	1.9

130.3 µSv/h	< 0.01 µSv/h	東南東	ESE	1.8
183.8 µSv/h	< 0.01 µSv/h	東	ESE	2.3
140.2 µSv/h	< 0.01 µSv/h	南東	SE	2.1
137.8 µSv/h	< 0.01 µSv/h	東	E	1.8
131.9 µSv/h	< 0.01 µSv/h	東	E	2.0
130.3 µSv/h	< 0.01 µSv/h	東	E	3.1
129.6 µSv/h	< 0.01 µSv/h	南東	SE	2.5
127.8 µSv/h	< 0.01 µSv/h	東南東	ESE	2.7
127.0 µSv/h	< 0.01 µSv/h	南東	SE	2.4
126.6 µSv/h	< 0.01 µSv/h	南東	SE	2.1
126.1 µSv/h	< 0.01 µSv/h	東	E	1.7
128.7 µSv/h	< 0.01 µSv/h	東	E	3.2
130.6 µSv/h	< 0.01 µSv/h	東	E	3.8
128.1 µSv/h	< 0.01 µSv/h	東	E	3.0
127.9 µSv/h	< 0.01 µSv/h	南東	SE	3.1
125.4 µSv/h	< 0.01 µSv/h	東	E	3.0
124.9 µSv/h	< 0.01 µSv/h	東	E	1.9
124.0 µSv/h	< 0.01 µSv/h	東	E	2.5
123.3 µSv/h	< 0.01 µSv/h	南東	SE	2.0
123.2 µSv/h	< 0.01 µSv/h	西南西	WSW	0.5
122.7 µSv/h	< 0.01 µSv/h	南西	SW	2.5
122.5 µSv/h	< 0.01 µSv/h	西南西	WSW	2.8
121.8 µSv/h	< 0.01 µSv/h	南西	SW	2.6
121.4 µSv/h	< 0.01 µSv/h	西	W	2.8
120.8 µSv/h	< 0.01 µSv/h	西	W	2.7
120.5 µSv/h	< 0.01 µSv/h	西	W	2.5
120.4 µSv/h	< 0.01 µSv/h	西	W	3.3
120.2 µSv/h	< 0.01 µSv/h	北西	NW	3.4
118.5 µSv/h	< 0.01 µSv/h	西	W	2.8
119.4 µSv/h	< 0.01 µSv/h	西	W	2.4
118.0 µSv/h	< 0.01 µSv/h	西	W	2.2
117.7 µSv/h	< 0.01 µSv/h	南南西	SSW	2.0
117.5 µSv/h	< 0.01 µSv/h	北北西	NNW	1.6
117.2 µSv/h	< 0.01 µSv/h	東	E	2.6
116.7 µSv/h	< 0.01 µSv/h	東	E	2.0
116.9 µSv/h	< 0.01 µSv/h	東南東	ESE	2.3
116.5 µSv/h	< 0.01 µSv/h	東南東	ESE	1.5
116.4 µSv/h	< 0.01 µSv/h	東	E	1.5
116.1 µSv/h	< 0.01 µSv/h	東南東	ESE	1.7
116.0 µSv/h	< 0.01 µSv/h	南南東	SSE	1.5
115.8 µSv/h	< 0.01 µSv/h	東	E	1.9
117.6 µSv/h	< 0.01 µSv/h	東	E	0.5
137.8 µSv/h	< 0.01 µSv/h	東	E	2.7
119.5 µSv/h	< 0.01 µSv/h	東南東	ESE	2.8
117.5 µSv/h	< 0.01 µSv/h	南東	SE	2.5
117.5 µSv/h	< 0.01 µSv/h	南東	SE	2.7
126.2 µSv/h	< 0.01 µSv/h	東北東	ENE	2.1
121.4 µSv/h	< 0.01 µSv/h	東	E	2.0

127.9 µSv/h	< 0.01 µSv/h	東	E	1.7
123.1 µSv/h	< 0.01 µSv/h	東南東	ESE	1.5
119.9 µSv/h	< 0.01 µSv/h	東	E	1.8
121.5 µSv/h	< 0.01 µSv/h	東	E	1.4
119.9 µSv/h	< 0.01 µSv/h	東南東	ESE	1.3
118.1 µSv/h	< 0.01 µSv/h	東	E	0.9
117.7 µSv/h	< 0.01 µSv/h	東南東	ESE	1.7
117.7 µSv/h	< 0.01 µSv/h	東	E	1.5
117.5 µSv/h	< 0.01 µSv/h	東	E	1.4
117.1 µSv/h	< 0.01 µSv/h	東	E	1.0
120.1 µSv/h	< 0.01 µSv/h	北	N	0.7
118.1 µSv/h	< 0.01 µSv/h	北西	NW	0.4
120.2 µSv/h	< 0.01 µSv/h	北西	NW	0.7
117.4 µSv/h	< 0.01 µSv/h	西北西	WNW	0.6
116.4 µSv/h	< 0.01 µSv/h	西	W	0.8
116.0 µSv/h	< 0.01 µSv/h	西	W	1.0
115.9 µSv/h	< 0.01 µSv/h	北西	NW	0.8
115.7 µSv/h	< 0.01 µSv/h	北西	NW	0.9
115.4 µSv/h	< 0.01 µSv/h	西	W	0.9
115.3 µSv/h	< 0.01 µSv/h	西	W	1.0
115.1 µSv/h	< 0.01 µSv/h	北西	NW	1.1
115.0 µSv/h	< 0.01 µSv/h	北西	NW	0.9
115.0 µSv/h	< 0.01 µSv/h	西	W	0.8
114.5 µSv/h	< 0.01 µSv/h	西	W	0.9
114.4 µSv/h	< 0.01 µSv/h	西南西	WSW	0.7
114.3 µSv/h	< 0.01 µSv/h	北西	NW	0.5
114.2 µSv/h	< 0.01 µSv/h	西	W	0.7
114.0 µSv/h	< 0.01 µSv/h	北西	NW	0.9
113.9 µSv/h	< 0.01 µSv/h	北西	NW	0.6
113.7 µSv/h	< 0.01 µSv/h	北西	NW	0.6
113.2 µSv/h	< 0.01 µSv/h	南西	SW	0.2
113.2 µSv/h	< 0.01 µSv/h	南南西	SSW	0.3
113.1 µSv/h	< 0.01 µSv/h	西南西	WSW	0.4
113.1 µSv/h	< 0.01 µSv/h	西	W	0.4
113.0 µSv/h	< 0.01 µSv/h	西	W	0.5
112.9 µSv/h	< 0.01 µSv/h	北東	NE	0.4
112.7 µSv/h	< 0.01 µSv/h	北	N	0.3
112.6 µSv/h	< 0.01 µSv/h	西	W	0.4
112.5 µSv/h	< 0.01 µSv/h	西北西	WNW	0.4
112.4 µSv/h	< 0.01 µSv/h	南西	SW	0.5
112.6 µSv/h	< 0.01 µSv/h	南西	SW	0.5
112.4 µSv/h	< 0.01 µSv/h	南東	SE	0.6
112.2 µSv/h	< 0.01 µSv/h	南東	SE	0.6
112.5 µSv/h	< 0.01 µSv/h	東	E	0.4
113.2 µSv/h	< 0.01 µSv/h	東	E	0.5
112.5 µSv/h	< 0.01 µSv/h	北東	NE	0.3
112.4 µSv/h	< 0.01 µSv/h	北東	NE	0.5
112.1 µSv/h	< 0.01 µSv/h	東	E	0.4

111.8 μSv/h	< 0.01 μSv/h	北東	NE	0.4
111.8 μSv/h	< 0.01 μSv/h	東	E	0.4
111.9 μSv/h	< 0.01 μSv/h	北西	NW	0.8
111.8 μSv/h	< 0.01 μSv/h	北北西	NNW	0.8
111.7 μSv/h	< 0.01 μSv/h	北西	NW	1.1
111.6 μSv/h	< 0.01 μSv/h	北西	NW	1.0
111.4 μSv/h	< 0.01 μSv/h	北西	NW	0.9
111.2 μSv/h	< 0.01 μSv/h	南西	SW	0.8
111.2 μSv/h	< 0.01 μSv/h	南	S	0.9
111.1 μSv/h	< 0.01 μSv/h	南	S	0.9
111.1 μSv/h	< 0.01 μSv/h	南南東	SSE	0.5
110.9 μSv/h	< 0.01 μSv/h	南南東	SSE	0.5
110.8 μSv/h	< 0.01 μSv/h	西南西	WSW	0.4
110.8 μSv/h	< 0.01 μSv/h	北北西	NNW	0.5
110.7 μSv/h	< 0.01 μSv/h	西	W	0.2
110.7 μSv/h	< 0.01 μSv/h	北西	NW	0.3
111.3 μSv/h	< 0.01 μSv/h	西	W	0.3
111.3 μSv/h	< 0.01 μSv/h	北	N	0.4
111.1 μSv/h	< 0.01 μSv/h	北西	NW	0.6
111.1 μSv/h	< 0.01 μSv/h	西	W	0.3
111.0 μSv/h	< 0.01 μSv/h	北西	NW	0.7
111.9 μSv/h	< 0.01 μSv/h	西	W	0.6
111.8 μSv/h	< 0.01 μSv/h	西	W	0.6
111.8 μSv/h	< 0.01 μSv/h	西南西	WSW	0.6
111.8 μSv/h	< 0.01 μSv/h	南西	SW	0.7
110.6 μSv/h	< 0.01 μSv/h	南西	SW	0.7
110.6 μSv/h	< 0.01 μSv/h	西南西	WSW	0.7
110.6 μSv/h	< 0.01 μSv/h	北北西	NNW	0.5
110.6 μSv/h	< 0.01 μSv/h	西	W	0.5
110.4 μSv/h	< 0.01 μSv/h	西南西	WSW	0.8
110.3 μSv/h	< 0.01 μSv/h	西	W	0.6
110.2 μSv/h	< 0.01 μSv/h	北北東	NNE	0.4
110.1 μSv/h	< 0.01 μSv/h	西北西	WNW	0.4
110.2 μSv/h	< 0.01 μSv/h	東北東	ENE	0.4
110.3 μSv/h	< 0.01 μSv/h	西	W	0.3
110.1 μSv/h	< 0.01 μSv/h	西南西	WSW	0.3
109.9 μSv/h	< 0.01 μSv/h	西南西	WSW	0.5
109.8 μSv/h	< 0.01 μSv/h	西北西	WNW	0.6
110.0 μSv/h	< 0.01 μSv/h	北西	NW	0.5
110.0 μSv/h	< 0.01 μSv/h	西北西	WNW	0.5
109.8 μSv/h	< 0.01 μSv/h	西南西	WSW	0.8
109.9 μSv/h	< 0.01 μSv/h	西	W	0.6
109.9 μSv/h	< 0.01 μSv/h	西北西	WNW	0.5
109.7 μSv/h	< 0.01 μSv/h	北西	NW	0.6
109.8 μSv/h	< 0.01 μSv/h	北北西	NNW	0.6
109.8 μSv/h	< 0.01 μSv/h	西北西	WNW	0.6
109.7 μSv/h	< 0.01 μSv/h	北東	NE	0.6
109.6 μSv/h	< 0.01 μSv/h	北	N	0.8

109.4 µSv/h	< 0.01 µSv/h	東北東	ENE	1.4
109.5 µSv/h	< 0.01 µSv/h	東	E	1.6
109.6 µSv/h	< 0.01 µSv/h	東南東	ESE	2.2
109.3 µSv/h	< 0.01 µSv/h	東	E	2.2
109.5 µSv/h	< 0.01 µSv/h	東	E	2.3
109.7 µSv/h	< 0.01 µSv/h	東	E	2.2
110.6 µSv/h	< 0.01 µSv/h	東	E	2.8
109.2 µSv/h	< 0.01 µSv/h	東	E	2.8
109.1 µSv/h	< 0.01 µSv/h	東	E	2.7
109.3 µSv/h	< 0.01 µSv/h	東	E	2.3
113.1 µSv/h	< 0.01 µSv/h	東	E	2.4
112.1 µSv/h	< 0.01 µSv/h	東	E	2.9
114.3 µSv/h	< 0.01 µSv/h	東	E	2.6
112.4 µSv/h	< 0.01 µSv/h	東	E	2.6
116.0 µSv/h	< 0.01 µSv/h	東	E	2.5
111.5 µSv/h	< 0.01 µSv/h	東	E	2.6
109.9 µSv/h	< 0.01 µSv/h	東南東	ESE	2.2
109.7 µSv/h	< 0.01 µSv/h	東南東	ESE	2.8
109.5 µSv/h	< 0.01 µSv/h	東南東	ESE	2.1
109.6 µSv/h	< 0.01 µSv/h	東南東	ESE	2.9
109.6 µSv/h	< 0.01 µSv/h	東南東	ESE	2.8
109.2 µSv/h	< 0.01 µSv/h	東南東	ESE	2.8
109.0 µSv/h	< 0.01 µSv/h	東南東	ESE	2.4
109.3 µSv/h	< 0.01 µSv/h	東	E	2.9
109.2 µSv/h	< 0.01 µSv/h	東	E	3.2
109.1 µSv/h	< 0.01 µSv/h	東南東	ESE	2.8
108.9 µSv/h	< 0.01 µSv/h	東	E	2.5
109.0 µSv/h	< 0.01 µSv/h	東北東	ENE	2.1
108.8 µSv/h	< 0.01 µSv/h	南東	SE	2.3
108.8 µSv/h	< 0.01 µSv/h	東	E	2.5
108.6 µSv/h	< 0.01 µSv/h	東	E	2.9
108.2 µSv/h	< 0.01 µSv/h	東	E	3.0
108.3 µSv/h	< 0.01 µSv/h	東	E	3.4
108.2 µSv/h	< 0.01 µSv/h	東	E	3.4
108.1 µSv/h	< 0.01 µSv/h	東	E	3.1
108.2 µSv/h	< 0.01 µSv/h	東南東	ESE	2.2
108.1 µSv/h	< 0.01 µSv/h	東	E	2.4
108.1 µSv/h	< 0.01 µSv/h	東	E	2.6
107.8 µSv/h	< 0.01 µSv/h	南東	SE	2.4
107.7 µSv/h	< 0.01 µSv/h	東	E	2.4
107.6 µSv/h	< 0.01 µSv/h	東	E	1.3
107.5 µSv/h	< 0.01 µSv/h	南	S	1.0
107.7 µSv/h	< 0.01 µSv/h	南南西	SSW	1.1
107.4 µSv/h	< 0.01 µSv/h	南東	SE	1.0
107.3 µSv/h	< 0.01 µSv/h	南東	SE	1.2
107.3 µSv/h	< 0.01 µSv/h	東	SE	1.2
107.1 µSv/h	< 0.01 µSv/h	東南東	ESE	1.2
107.1 µSv/h	< 0.01 µSv/h	南	S	1.2

106.9 µSv/h	< 0.01 µSv/h	南	S	1.1
106.8 µSv/h	< 0.01 µSv/h	南東	SE	1.2
107.7 µSv/h	< 0.01 µSv/h	西南西	WSW	0.7
106.7 µSv/h	< 0.01 µSv/h	南西	SW	0.7
106.8 µSv/h	< 0.01 µSv/h	南南西	SSW	0.7
106.8 µSv/h	< 0.01 µSv/h	東	E	0.8
106.7 µSv/h	< 0.01 µSv/h	東	E	1.3
106.4 µSv/h	< 0.01 µSv/h	東	E	1.0
106.5 µSv/h	< 0.01 µSv/h	東南東	ESE	1.0
106.7 µSv/h	< 0.01 µSv/h	東南東	ESE	1.0
106.6 µSv/h	< 0.01 µSv/h	東	E	1.3
106.5 µSv/h	< 0.01 µSv/h	南東	SE	1.5
106.3 µSv/h	< 0.01 µSv/h	南東	SE	1.0
106.2 µSv/h	< 0.01 µSv/h	東	E	0.8
106.3 µSv/h	< 0.01 µSv/h	東南東	ESE	0.9
106.1 µSv/h	< 0.01 µSv/h	南西	SW	0.5
105.9 µSv/h	< 0.01 µSv/h	南西	SW	0.4
105.8 µSv/h	< 0.01 µSv/h	西南西	WSW	0.6
105.5 µSv/h	< 0.01 µSv/h	北西	NW	0.6
105.3 µSv/h	< 0.01 µSv/h	西	W	0.9
105.4 µSv/h	< 0.01 µSv/h	北西	NW	0.8
105.0 µSv/h	< 0.01 µSv/h	西	W	0.8
104.5 µSv/h	< 0.01 µSv/h	北西	NW	0.8
104.0 µSv/h	< 0.01 µSv/h	北西	NW	0.6
103.4 µSv/h	< 0.01 µSv/h	北北西	NNW	0.5
103.2 µSv/h	< 0.01 µSv/h	北西	NW	0.7
102.9 µSv/h	< 0.01 µSv/h	北東	NE	0.3
102.8 µSv/h	< 0.01 µSv/h	北西	NW	0.3
102.7 µSv/h	< 0.01 µSv/h	北北西	NNW	0.5
102.6 µSv/h	< 0.01 µSv/h	北北東	NNE	0.4
102.2 µSv/h	< 0.01 µSv/h	北東	NE	0.3
101.9 µSv/h	< 0.01 µSv/h	南東	SE	0.2
102.1 µSv/h	< 0.01 µSv/h	南東	SE	0.3
101.9 µSv/h	< 0.01 µSv/h	北	N	0.3
101.8 µSv/h	< 0.01 µSv/h	南東	SE	0.3
101.6 µSv/h	< 0.01 µSv/h	北東	NE	0.8
101.8 µSv/h	< 0.01 µSv/h	東	E	0.6
101.5 µSv/h	< 0.01 µSv/h	西	W	0.4
101.5 µSv/h	< 0.01 µSv/h	北東	NE	5.4
101.3 µSv/h	< 0.01 µSv/h	東南東	ESE	0.9
101.6 µSv/h	< 0.01 µSv/h	西	W	0.4
101.1 µSv/h	< 0.01 µSv/h	西	W	0.5
100.9 µSv/h	< 0.01 µSv/h	北東	NE	1.9
100.7 µSv/h	< 0.01 µSv/h	西	W	3.9
100.8 µSv/h	< 0.01 µSv/h	東	E	5.4
100.8 µSv/h	< 0.01 µSv/h	北東	NE	3.9
100.8 µSv/h	< 0.01 µSv/h	南東	SE	0.9
105.4 µSv/h	< 0.01 µSv/h	南	S	2.8

101.0 μSv/h	< 0.01 μSv/h	北東	NE	4.3
100.4 μSv/h	< 0.01 μSv/h	西北西	WNW	1.6
100.3 μSv/h	< 0.01 μSv/h	北東	NE	4.0
100.2 μSv/h	< 0.01 μSv/h	北東	NE	5.8
100.4 μSv/h	< 0.01 μSv/h	北東	NE	5.9
100.3 μSv/h	< 0.01 μSv/h	北東	NE	6.0
100.1 μSv/h	< 0.01 μSv/h	東	E	2.0
100.2 μSv/h	< 0.01 μSv/h	南南西	SSW	0.5
100.1 μSv/h	< 0.01 μSv/h	南南東	SSE	0.5
100.0 μSv/h	< 0.01 μSv/h	西南西	WNW	0.8
100.0 μSv/h	< 0.01 μSv/h	南南東	SSE	0.9
100.0 μSv/h	< 0.01 μSv/h	東北東	ENE	0.9
100.1 μSv/h	< 0.01 μSv/h	西南西	WSW	1.8
100.0 μSv/h	< 0.01 μSv/h	西北西	WNW	2.2
100.1 μSv/h	< 0.01 μSv/h	南	S	3.6
99.9 μSv/h	< 0.01 μSv/h	南西	SW	2.2
100.3 μSv/h	< 0.01 μSv/h	北東	NE	4.7
100.1 μSv/h	< 0.01 μSv/h	西南西	WSW	4.3
100.0 μSv/h	< 0.01 μSv/h	西北西	WNW	1.8
100.1 μSv/h	< 0.01 μSv/h	西	W	0.6
99.9 μSv/h	< 0.01 μSv/h	北東	NE	0.3
99.9 μSv/h	< 0.01 μSv/h	西南西	WSW	3.4
99.9 μSv/h	< 0.01 μSv/h	西南西	WSW	0.5
99.9 μSv/h	< 0.01 μSv/h	北東	NE	0.7
99.9 μSv/h	< 0.01 μSv/h	南南西	SSW	2.4
99.9 μSv/h	< 0.01 μSv/h	南西	NW	0.4
99.8 μSv/h	< 0.01 μSv/h	北東	NE	2.4
99.7 μSv/h	< 0.01 μSv/h	北東	NE	0.7
99.8 μSv/h	< 0.01 μSv/h	北東	NE	4.3
99.7 μSv/h	< 0.01 μSv/h	北東	NE	5.6
99.6 μSv/h	< 0.01 μSv/h	北東	NE	5.7
99.6 μSv/h	< 0.01 μSv/h	北東	NE	5.5
99.5 μSv/h	< 0.01 μSv/h	北東	NE	3.9
99.4 μSv/h	< 0.01 μSv/h	西南西	WSW	2.2
99.3 μSv/h	< 0.01 μSv/h	北東	NE	3.0
99.4 μSv/h	< 0.01 μSv/h	北東	NE	2.1
99.4 μSv/h	< 0.01 μSv/h	北東	NE	4.9
99.4 μSv/h	< 0.01 μSv/h	西	W	1.5
99.3 μSv/h	< 0.01 μSv/h	北西	NW	0.7
99.3 μSv/h	< 0.01 μSv/h	西	W	0.6
99.2 μSv/h	< 0.01 μSv/h	西	W	0.5
99.2 μSv/h	< 0.01 μSv/h	西	W	0.9
99.3 μSv/h	< 0.01 μSv/h	北西	NW	0.5
99.0 μSv/h	< 0.01 μSv/h	北西	NW	0.5
99.2 μSv/h	< 0.01 μSv/h	西	W	1.0
99.0 μSv/h	< 0.01 μSv/h	北	N	0.9
99.0 μSv/h	< 0.01 μSv/h	北北西	NNW	0.7
98.9 μSv/h	< 0.01 μSv/h	西	W	1.5

98.7 µSv/h	< 0.01 µSv/h	北東	NE	1.1
98.4 µSv/h	< 0.01 µSv/h	西	W	1.6
98.4 µSv/h	< 0.01 µSv/h	北	N	1.0
98.5 µSv/h	< 0.01 µSv/h	北	N	0.9

From: OST01 HOC
Sent: Friday, April 01, 2011 2:56 AM
To: PMT02 Hoc; PMT11 Hoc; Hoc, PMT12
Cc: FOIA Response.hoc Resource
Subject: FW: monitoring data（latest version）
Attachments: 110401135708(0001).pdf

-----Original Message-----
From: HOO Hoc [mailto:HOO.Hoc@nrc.gov]
Sent: Friday, April 01, 2011 2:53 AM
To: LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: monitoring data（latest version）

From: JapanEmbassy, TaskForce[SMTP:JAPANEMBASSYTASKFORCE@STATE.GOV]
Sent: Friday, April 01, 2011 2:48:35 AM
(b)(6)

Subject: FW: monitoring data（latest version）
Auto forwarded by a Rule

fyi

on behalf of the Japan Emergency Command Center, +81-3-3224- 5533

Lynda Hinds
Staff Assistant to Ambassador John V. Roos U.S. Embassy
1-10-5 Akasaka, Minato-ku
Tokyo 107-8420
Tel. (03) 3224- 5370

Twitter.com/AmbassadorRoos

000489

-----Original Message-----
From: NAKAGAWA TOMOHIRO [mailto:tomohiro.nakagawa@mofa.go.jp]
Sent: Friday, April 01, 2011 2:04 PM
(b)(6)

Subject: monitoring data（latest version）

Huntington-san, Craig-san;

Please find here attached the latest monitoring data.
Thank you.

V/R Tomohiro Nakagawa
****
中川智博(Tomohiro NAKAGAWA)
外務省北米局日米地位協定室
Status of U.S. Forces Agreement Division North American Affairs Bureau Ministry of Foreign Affairs
Tel：5501-8000（x 2478）
Fax：5501-8281
****

ERC各班 → リエゾン　情報共有　011236

リエゾン→幹

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

4月1日　　福島第一(1F)

測定場所		③																						
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
MC	測定値(μSv/h)	94.3	94.3	94.2	94.1	94.1	94.1	93.8	93.9	93.9	93.9	98.9	93.7	93.7	93.8	93.7	93.4	93.5	93.4	93.3	93.3	93.3	93.4	93.3
	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
可搬	⑥本館南(μSv/h)	940	-	-	940	-	-	940	-	-	940	-	-	940	-	-	940	-	-	940	-	-	940	-
	⑦正門(μSv/h)	145	-	-	146	-	-	145	-	-	145	-	-	146	-	-	146	-	-	146	-	-	146	-
	③西門(μSv/h)	69.3	-	-	68.9	-	-	68.6	-	-	68.7	-	-	68.8	-	-	68.7	-	-	68	-	-	68.3	-
風向		北西	西北西	西	北西	西	西	北西	西北西	西	北西	西	北西	西北西	西北西	西	北西	北西	北西	西北西	北西	西	西	西
風速(m/s)		0.6	0.7	0.8	0.4	0.6	0.6	0.8	0.8	0.8	0.5	0.8	0.7	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.5	0.6	0.8

測定場所		③																						
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
MC	測定値(μSv/h)	93.1	93.0	93.0	93.1	92.8	92.9	92.8	92.8	92.7	92.5	92.4	92.3	92.3	92.4	92.4	92.3	92.2	92.2	92.3	92.3	92.3	92.2	92.2
	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
可搬	⑥本館南(μSv/h)	940	-	-	940	-	-	930	-	-	930	-	-	930	-	-	930	-	-	930	-	-	930	-
	⑦正門(μSv/h)	145	-	-	145	-	-	144	-	-	144	-	-	146	-	-	146	-	-	145	-	-	143	-
	③西門(μSv/h)	70	-	-	68.4	-	-	68.8	-	-	69	-	-	69.9	-	-	69	-	-	68.8	-	-	68.2	-
風向		西	西	西	西	西	西	西	西	西	西	西	西	西南西	西北西	西	西	西南西	西北西	西北西	北西	北北西	北北西	西
風速(m/s)		0.8	0.7	0.7	0.6	0.6	0.7	0.7	0.8	0.7	0.7	0.8	0.8	0.7	0.9	1.0	0.8	0.5	0.6	0.8	0.8	0.8	0.6	0.5

測定場所		③																						
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
MC	測定値(μSv/h)	97.6	96.8	99.6	98.6	95.1	94.3	94.5	94.5	94.5	96.9	94.1	93.5	93.5	93.6	93.3	93.1	92.9	92.9	92.6	92.4	92.8	92.3	
	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	
可搬	⑥本館南(μSv/h)	930	-	-	920	-	-	910	-	-	910	-	-	910	-	-	920	-	-	910	-	-	910	
	⑦正門(μSv/h)	145	-	-	145	-	-	150	-	-	148	-	-	146	-	-	145	-	-	145	-	-	149	
	③西門(μSv/h)	68.5	-	-	76.8	-	-	70.8	-	-	71.9	-	-	67.2	-	-	67.2	-	-	66.7	-	-	67.5	
風向		東	南東	東	東南東	東	東	東	東	東	東	南東	東南東	東南東	東	東	南南東	東	東南東	東	東	東南東	南	
風速(m/s)		1.8	1.7	2.3	2.5	2.2	2.5	2.8	3.1	3.1	3.0	3.1	3.0	2.2	2.6	3.2	3.0	2.8	2.4	2.4	3.0	2.2	1.7	

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31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																						
時刻		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
MC	測定値(μSv/h)	98.9	98.1	97.9	97.7	98.7	97.9	97.7	100.8	100.5	99.2	99.8	97.6	98.9	97.6	96.8	96.5	96.5	96.6	98.5	96.7	98.7	96.9	98.1
	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
可搬	⑥本館南(μSv/h)	950	-	-	940	-	-	940	-	-	940	-	-	940	-	-	930	-	-	930	-	-	930	-
	⑦正門(μSv/h)	155	-	-	155	-	-	162	-	-	157	-	-	157	-	-	153	-	-	150	-	-	151	-
	③西門(μSv/h)	70.3	-	-	70.8	-	-	68.8	-	-	72.0	-	-	69.3	-	-	69.4	-	-	69.7	-	-	69.6	-
風向		東	北東	北	東	東	東	東	東	北東	北東	南東	南東	東	北北東	南東	東	西	南西	北西	東	北北東	東	東
風速(m/s)		2.3	1.3	1.0	1.8	1.7	1.8	2.3	2.5	2.7	2.3	2.6	2.3	2.0	1.4	0.8	0.6	0.5	0.7	0.7	0.6	0.6	0.5	1.2

測定場所		③																						
時刻		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
MC	測定値(μSv/h)	107.0	108.2	98.6	98.0	98.1	97.9	97.7	97.6	97.6	97.3	97.2	97.0	97.0	96.9	96.8	96.7	96.6	96.5	96.3	96.4	96.3	96.1	96.3
	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
可搬	⑥本館南(μSv/h)	950	-	-	930	-	-	930	-	-	930	-	-	930	-	-	930	-	-	940	-	-	940	-
	⑦正門(μSv/h)	154	-	-	164	-	-	154	-	-	150	-	-	151	-	-	149	-	-	148	-	-	148	-
	③西門(μSv/h)	82.8	-	-	71.5	-	-	70	-	-	69.4	-	-	68.3	-	-	70.1	-	-	67.8	-	-	68.4	-
風向		南東	東	南東	東	東	東	北東	北	北西	西南西	東	北東	南西	西北西	北北東	北北西	北西	西	西	西	北西	北西	西北西
風速(m/s)		1.5	1.8	1.8	1.0	1.5	0.9	0.7	0.4	0.6	0.5	0.4	0.6	0.5	0.7	0.7	0.3	0.4	0.7	0.3	0.6	0.8	0.7	1.0

測定場所		③																						
時刻		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
MC	測定値(μSv/h)	96.2	96.2	96.0	95.9	95.0	95.7	95.7	95.6	95.4	95.3	95.3	95.3	95.2	95.3	95.0	94.9	95.1	94.8	94.8	94.8	94.7	94.7	94.6
	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
可搬	⑥本館南(μSv/h)	940	-	-	940	-	-	940	-	-	940	-	-	940	-	-	940	-	-	940	-	-	940	-
	⑦正門(μSv/h)	148	-	-	146	-	-	148	-	-	148	-	-	148	-	-	146	-	-	148	-	-	145	-
	③西門(μSv/h)	70.9	-	-	70.6	-	-	69.9	-	-	70.5	-	-	69.6	-	-	72.1	-	-	69.9	-	-	69.9	-
風向		北西	西北西	北西	北西	北東	北西	北北東	西	北西	北西	北西	北北西	西	北西	西	西	西	西	西南西	北西	西	西	西
風速(m/s)		1.1	1.4	1.3	0.9	0.8	0.8	0.5	0.3	0.3	0.4	0.4	0.2	0.4	0.5	0.7	1.0	0.7	0.7	0.8	0.8	0.5	0.4	0.5

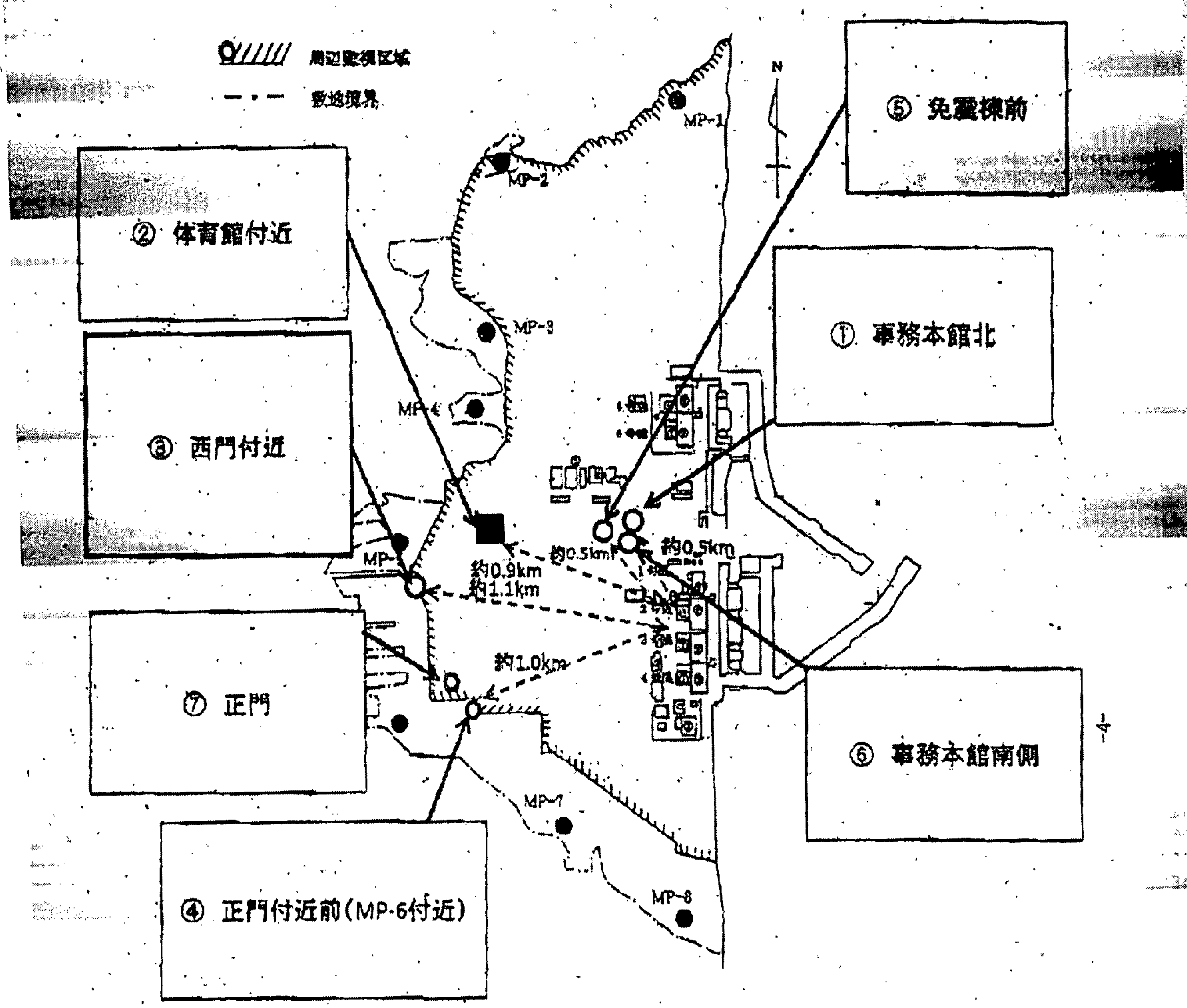
3月31日　福島第一(1F)

測定場所　①事務本館北(2号機より北西約0.[illegible]キロ)　②体育館付近(MP−6東側[illegible]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[illegible]1キロ)　④正門付近前(MP−6付近)([illegible]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
MC 測定値(μSv/h)	100.8	100.8	105.4	101.0	100.4	100.3	100.2	100.4	100.3	100.1	100.2	100.1	100.0	100.0	100.0	100.1	100.0	100.1	99.9	100.3	100.1	100.0	100.1
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
可搬 ⑥本館南(μSv/h)	990	−	−	1,000	−	−	990	−	−	990	−	−	1,000	−	−	990	−	−	990	−	−	990	−
可搬 ⑦正門(μSv/h)	154	−	−	152	−	−	154	−	−	152	−	−	152	−	−	153	−	−	152	−	−	151	−
可搬 ③西門(μSv/h)	71.5	−	−	73.6	−	−	72.2	−	−	71.9	−	−	71.3	−	−	72.5	−	−	71.9	−	−	70.5	−
風向	北東	南東	南	北東	西北西	北東	北東	北東	北東	東	南南西	南南東	西南西	南南東	東北東	西南西	西北西	南	南西	北東	西南西	西北西	西
風速(m/s)	3.9	0.9	2.8	4.1	1.6	4.0	5.8	5.9	6.0	2.1	0.5	0.5	0.8	0.9	0.9	1.8	2.2	3.6	2.2	4.7	4.3	1.8	0.6

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
MC 測定値(μSv/h)	99.9	99.9	99.9	99.9	99.9	99.8	99.7	99.6	99.7	99.6	99.6	99.5	99.4	99.3	99.4	99.4	99.4	99.3	99.3	99.2	99.2	99.3	99.0
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
可搬 ⑥本館南(μSv/h)	990	−	−	980	−	−	990	−	−	980	−	−	990	−	−	980	−	−	990	−	−	980	−
可搬 ⑦正門(μSv/h)	152	−	−	152	−	−	150	−	−	151	−	−	152	−	−	152	−	−	150	−	−	150	−
可搬 ③西門(μSv/h)	70.9	−	−	71.2	−	−	71.2	−	−	70.9	−	−	72	−	−	71.8	−	−	72.8	−	−	71.4	−
風向	西南西	西南西	北東	南南西	南西	北東	北東	北東	北東	北東	北東	北東	西南西	北東	北東	北東	西	北西	西	西	西	北西	北西
風速(m/s)	3.4	0.6	0.7	2.4	0.4	2.4	0.7	4.3	5.6	5.7	5.5	3.9	2.2	3.0	2.1	4.9	1.5	0.7	0.8	0.5	0.9	0.5	0.5

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
MC 測定値(μSv/h)	99.0	99.0	98.9	98.7	98.4	98.4	98.5	98.6	98.6	98.6	98.4	98.7	98.5	98.4	99.9	98.6	100.0	100.9	98.7	98.5	100.6	98.6	98.4
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
可搬 ⑥本館南(μSv/h)	980	−	−	980	−	−	970	−	−	970	−	−	970	−	−	960	−	−	960	−	−	950	−
可搬 ⑦正門(μSv/h)	150	−	−	150	−	−	149	−	−	149	−	−	151	−	−	160	−	−	158	−	−	159	−
可搬 ③西門(μSv/h)	72.1	−	−	69.8	−	−	71	−	−	72.9	−	−	70	−	−	70.1	−	−	72.4	−	−	72.5	−
風向	北	北北西	西	北東	西	北	北	北西	北西	北西	北西	北北西	北西	西北西	北北東	東	東	東	東	東	東	東	東
風速(m/s)	0.9	0.7	1.5	1.1	1.6	1.0	0.9	1.2	1.0	0.7	0.7	0.7	0.7	9.0	1.5	1.8	0.5	2.9	3.1	2.9	3.7	3.8	3.3


周辺監視区域
敷地境界
N
⑤ 免震棟前
MP-1
MP-2
② 体育館付近
① 事務本館北
MP-3
MP-4
③ 西門付近
約0.5km
約0.5km
約0.9km
約1.1km
⑦ 正門
約1.0km
⑥ 事務本館南側
MP-7
MP-8
④ 正門付近前(MP-6付近)

各発電所等の環境モニタリング情報

単位：μSv/h

通常の平常値の範囲	会社名	発電所名	3月31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	0.025	0.025	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026
0.024~0.060	東北電力㈱	女川原子力発電所	0.55	0.54	0.54	0.54	0.54	0.54	0.54	0.53	0.53	0.53	0.53	0.53
0.012~0.060		東通原子力発電所	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.016	0.017	0.017	0.017	0.017
0.033~0.050	東京電力㈱	福島第一原子力発電所※	99.9	97.7	99.9	98.5	107.0	97.7	97.8	86.3	96.2	95.7	95.2	94.8
0.036~0.052		福島第二原子力発電所	6.977	6.957	6.943	6.907	6.900	6.880	6.840	6.847	6.810	6.793	6.747	6.733
0.011~0.159		柏崎刈羽原子力発電所	0.065	0.064	0.064	0.065	0.065	0.065	0.066	0.065	0.066	0.066	0.065	0.066
0.036~0.053	日本原子力発電㈱	東海第二発電所	0.603	0.602	0.600	0.589	0.599	0.598	0.591	0.594	0.587	0.592	0.584	0.587
0.039~0.110		敦賀発電所	0.074	0.075	0.074	0.073	0.074	0.072	0.074	0.074	0.073	0.074	0.074	0.074
0.064~0.108	中部電力㈱	浜岡原子力発電所	0.075	0.075	0.075	0.075	0.075	0.074	0.074	0.074	0.074	0.075	0.075	0.075
0.0207~0.132	北陸電力㈱	志賀原子力発電所	0.034	0.034	0.034	0.033	0.033	0.033	0.032	0.032	0.033	0.033	0.033	0.031
0.028~0.130	中国電力㈱	島根原子力発電所	0.030	0.029	0.029	0.031	0.030	0.032	0.030	0.030	0.030	0.031	0.030	0.030
0.070~0.077	関西電力㈱	美浜発電所	0.071	0.072	0.072	0.072	0.072	0.073	0.073	0.073	0.073	0.073	0.073	0.074
0.045~0.047		高浜発電所	0.043	0.043	0.043	0.044	0.043	0.043	0.042	0.043	0.042	0.043	0.043	0.042
0.036~0.040		大飯発電所	0.036	0.035	0.036	0.035	0.034	0.034	0.035	0.035	0.036	0.035	0.036	0.036
0.011~0.080	四国電力㈱	伊方発電所	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.013	0.014	0.014	0.014
0.023~0.087	九州電力㈱	玄海原子力発電所	0.026	0.027	0.026	0.026	0.027	0.028	0.025	0.028	0.027	0.025	0.026	0.026
0.034~0.120		川内原子力発電所	0.036	0.037	0.037	0.036	0.036	0.036	0.037	0.037	0.037	0.036	0.036	0.034
0.009~0.069	日本原燃㈱	六ケ所 再処理事業所	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.017	0.016	0.016	0.016
0.009~0.071		六ケ所 埋設事業所	0.022	0.022	0.022	0.021	0.022	0.027	0.022	0.022	0.022	0.021	0.021	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。

通常の平常値の範囲	会社名	発電所名	4月1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	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.027	0.026		
0.024~0.060	東北電力㈱	女川原子力発電所	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.51		
0.012~0.060		東通原子力発電所	0.016	0.017	0.016	0.017	0.016	0.016	0.017	0.016	0.017	0.017		
0.033~0.050	東京電力㈱	福島第一原子力発電所※	94.3	93.9	93.7	93.3	93.1	92.8	92.3	92.3	97.6	94.5		
0.036~0.052		福島第二原子力発電所	6.730	6.710	6.697	6.670	6.633	6.620	6.610	6.567	6.657	6.587		
0.011~0.159		柏崎刈羽原子力発電所	0.064	0.066	0.065	0.065	0.066	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	0.583	0.584	0.578	0.581	0.582	0.577	0.568	0.581	0.578	0.571		
0.039~0.110		敦賀発電所	0.074	0.075	0.074	0.074	0.074	0.075	0.074	0.075	0.072	0.072		
0.064~0.108	中部電力㈱	浜岡原子力発電所	0.075	0.075	0.075	0.075	0.075	0.076	0.075	0.075	0.075	0.075		
0.0207~0.132	北陸電力㈱	志賀原子力発電所	0.033	0.032	0.033	0.033	0.033	0.033	0.033	0.033	0.034	0.033		
0.028~0.130	中国電力㈱	島根原子力発電所	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.032		
0.070~0.077	関西電力㈱	美浜発電所	0.075	0.074	0.074	0.074	0.073	0.074	0.074	0.074	0.072	0.074		
0.045~0.047		高浜発電所	0.043	0.042	0.043	0.043	0.042	0.043	0.043	0.042	0.043	0.043		
0.036~0.040		大飯発電所	0.036	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	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	0.014	0.014	0.016		
0.023~0.087	九州電力㈱	玄海原子力発電所	0.028	0.026	0.027	0.027	0.027	0.026	0.026	0.027	0.025	0.027		
0.034~0.120		川内原子力発電所	0.036	0.040	0.035	0.039	0.039	0.039	0.038	0.035	0.039	0.041		
0.009~0.069	日本原燃㈱	六ケ所 再処理事業所	0.016	0.017	0.016	0.017	0.016	0.017	0.017	0.017	0.017	0.017		
0.009~0.071		六ケ所 埋設事業所	0.022	0.022	0.022	0.022	0.023	0.023	0.023	0.022	0.023	0.023		

※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。

4/1(金) 9時時点

From: OST01 HOC
Sent: Friday, April 01, 2011 4:42 AM
To: PMT02 Hoc; PMT11 Hoc; Hoc, PMT12
Cc: FOIA Response.hoc Resource
Subject: FW: 1APR 1734 Speedi Data
Attachments: FUKUSHIMA1 air concentrationüi17-18hüj.gif; FUKUSHIMA1 air concentrationüi18-19hüj.gif; FUKUSHIMA1 air concentrationüi19-20hüj.gif; FUKUSHIMA1 air doseüi17-18hüj.gif; FUKUSHIMA1 air doseüi18-19hüj.gif; FUKUSHIMA1 air doseüi19-20hüj.gif; FUKUSHIMA1 wind(17hüj.gif

-----Original Message-----
From: HOO Hoc [mailto:HOO.Hoc@nrc.gov]
Sent: Friday, April 01, 2011 4:40 AM
To: LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: 1APR 1734 Speedi Data

From: JapanEmbassy, TaskForce[SMTP:JAPANEMBASSYTASKFORCE@STATE.GOV]
Sent: Friday, April 01, 2011 4:38:47 AM
(b)(6)

Subject: 1APR 1734 Speedi Data
Auto forwarded by a Rule

1APR 1734 Speedi Data attached

000/490

on behalf of the Japan Emergency Command Center, +81-3-3224- 5533

Lynda Hinds
Staff Assistant to Ambassador John V. Roos U.S. Embassy
1-10-5 Akasaka, Minato-ku
Tokyo 107-8420
Tel. (03) 3224- 5370

Twitter.com/AmbassadorRoos

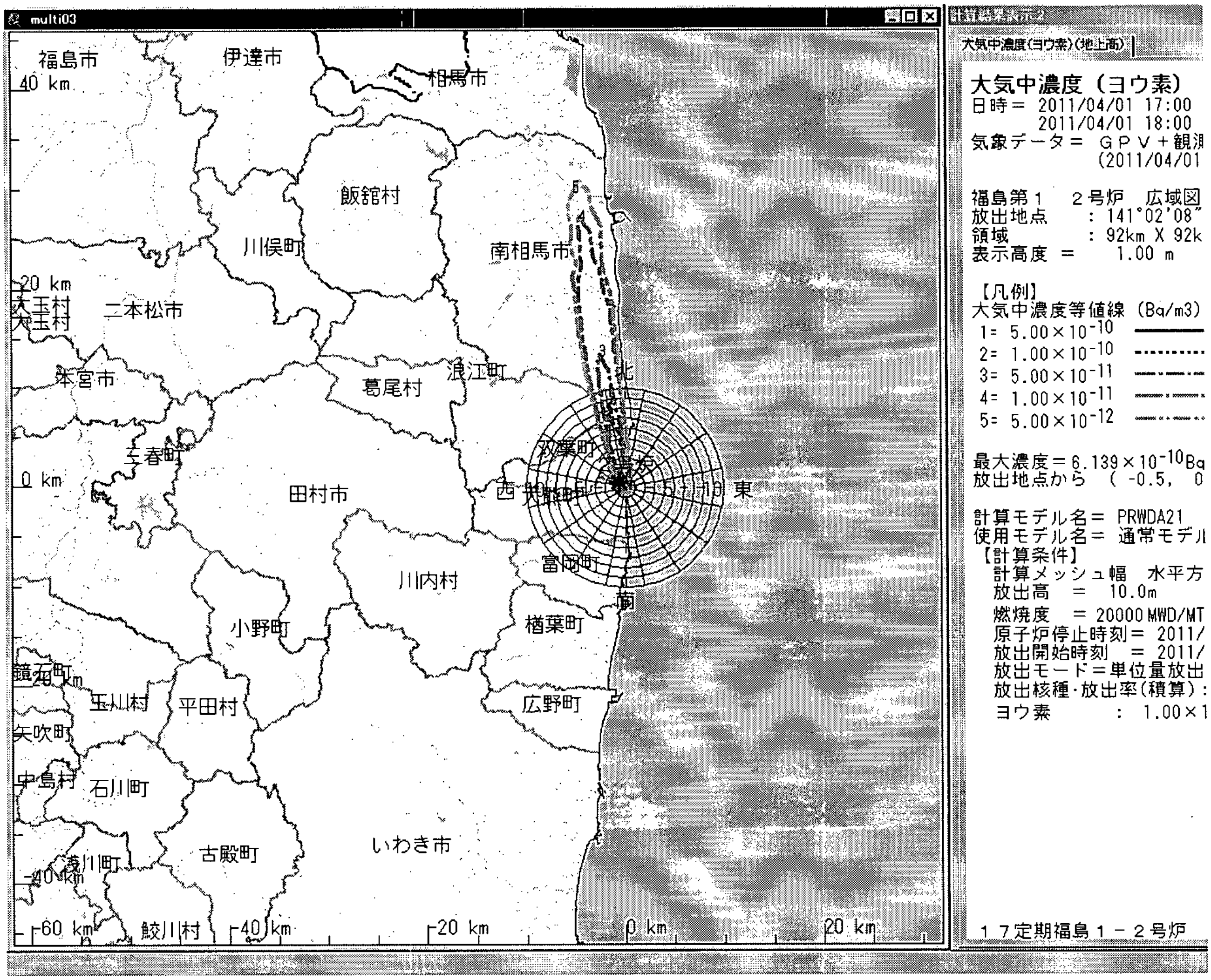
-----Original Message-----
From: nustec [mailto:spd01@nustec.or.jp]
Sent: Friday, April 01, 2011 5:34 PM
(b)(6)

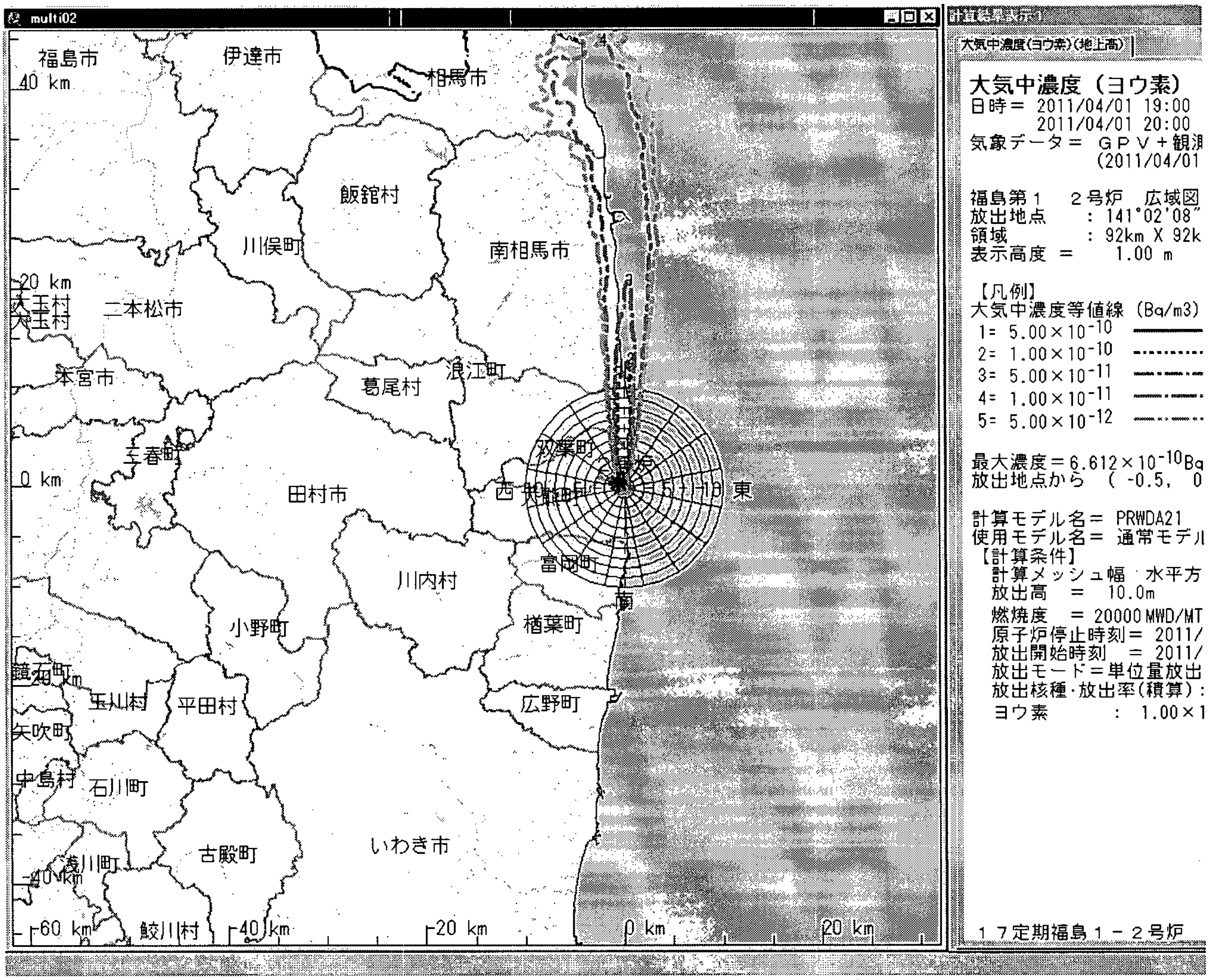
Subject: 4/1　17時SPEEDI単位量放出図形イメージの送付

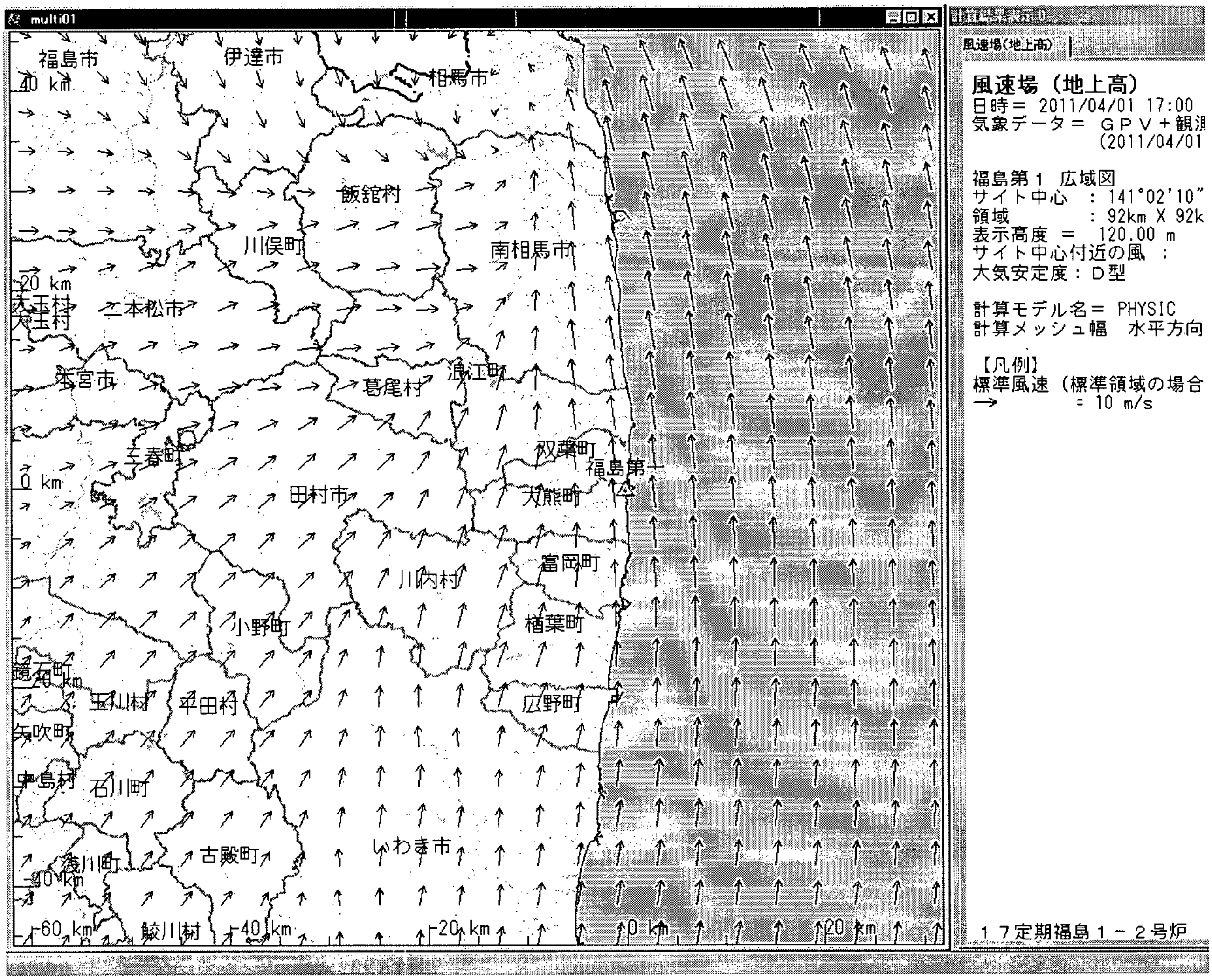
関係者各位

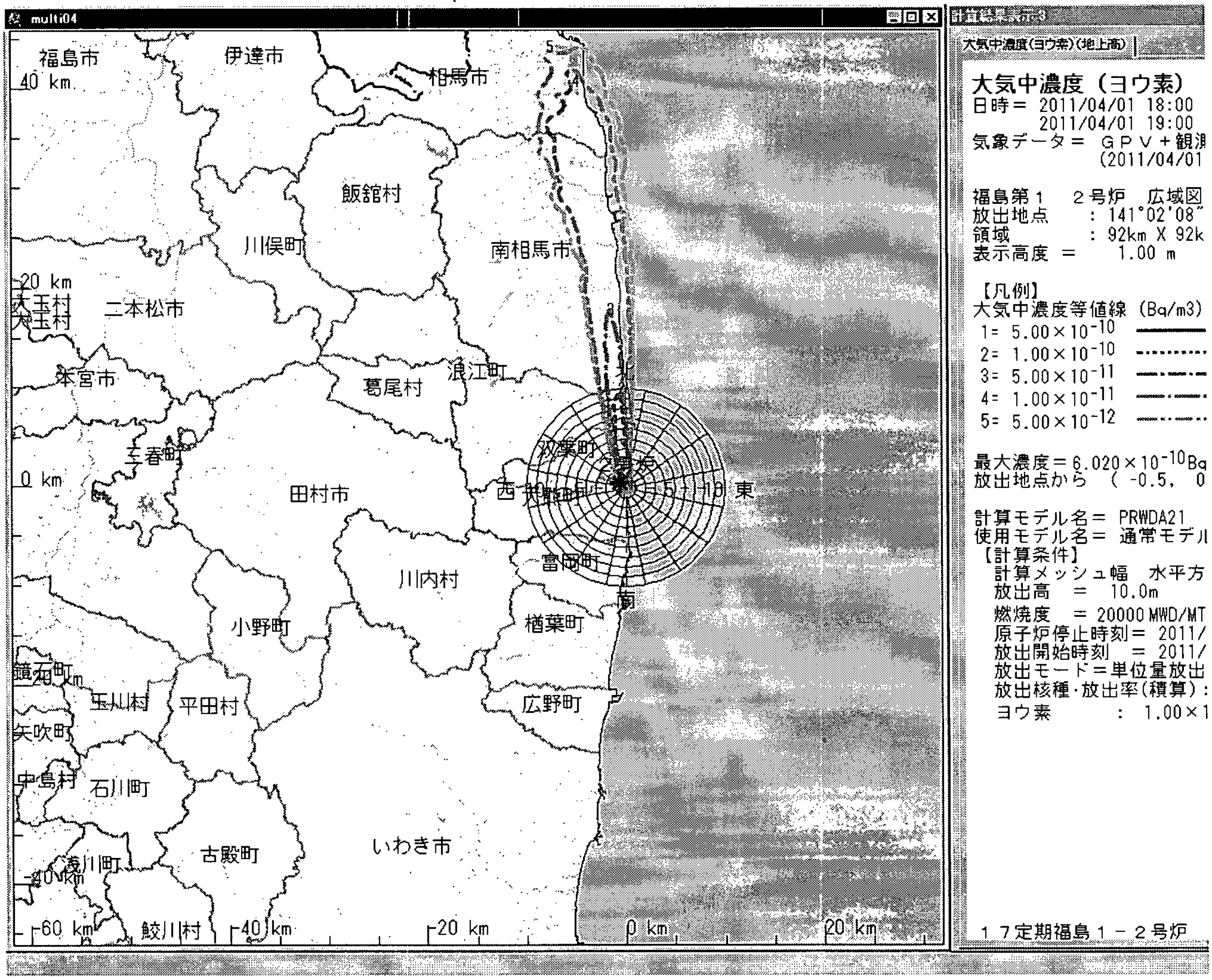
お世話になっております。
原子力安全技術センター　SPEEDI担当です。
4/1　17時のSPEEDI単位量放出図形のイメージデータを送付致します。
ご確認のほど、よろしくお願い致します。

Please find attached 17:00[01-Apr] SPEEDI Data
NUSTEC

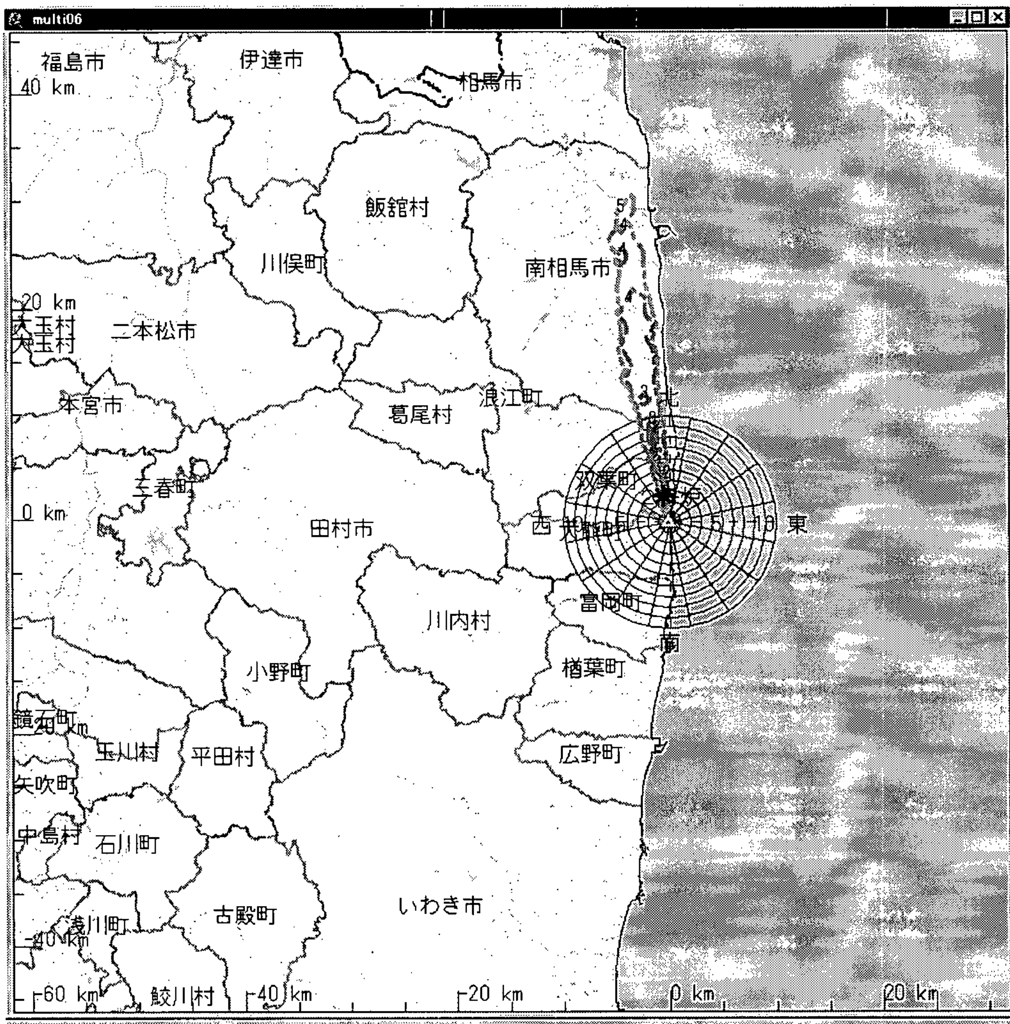

multi03
福島市
伊達市
相馬市
40 km
飯舘村
川俣町
南相馬市
20 km
大玉村
二本松市
本宮市
葛尾村
浪江町
北
三春町
0 km
田村市
双葉町
西
東
富岡町
川内村
南
小野町
楢葉町
鏡石町
玉川村
平田村
広野町
矢吹町
中島村
石川町
いわき市
古殿町
浅川町
-40 km
-60 km
鮫川村
-40 km
-20 km
0 km
20 km
大気中濃度(ヨウ素)(地上高)
大気中濃度（ヨウ素）
日時＝ 2011/04/01 17:00
2011/04/01 18:00
気象データ＝ ＧＰＶ＋観測
(2011/04/01
福島第１ ２号炉 広域図
放出地点 : 141°02'08"
領域 : 92km X 92k
表示高度 ＝ 1.00 m
【凡例】
大気中濃度等値線 (Bq/m3)
1= 5.00×10-10
2= 1.00×10-10
3= 5.00×10-11
4= 1.00×10-11
5= 5.00×10-12
最大濃度＝6.139×10-10Bq
放出地点から （ -0.5, 0
計算モデル名＝ PRWDA21
使用モデル名＝ 通常モデル
【計算条件】
計算メッシュ幅 水平方
放出高 ＝ 10.0m
燃焼度 ＝ 20000 MWD/MT
原子炉停止時刻＝ 2011/
放出開始時刻 ＝ 2011/
放出モード＝単位量放出
放出核種･放出率(積算)：
ヨウ素 ： 1.00×1
１７定期福島１－２号炉


multi02
福島市
伊達市
相馬市
飯舘村
川俣町
南相馬市
二本松市
本宮市
葛尾村
浪江町
三春町
田村市
双葉町
富岡町
川内村
楢葉町
小野町
玉川村
平田村
広野町
石川町
古殿町
いわき市
鮫川村
40 km
20 km
0 km
-40 km
-60 km
-40 km
-20 km
0 km
20 km
東
南
大気中濃度(ヨウ素)(地上高)
大気中濃度（ヨウ素）
日時＝ 2011/04/01 19:00
2011/04/01 20:00
気象データ＝ ＧＰＶ＋観測
(2011/04/01
福島第１ ２号炉 広域図
放出地点 : 141°02'08"
領域 : 92km X 92k
表示高度 ＝ 1.00 m
【凡例】
大気中濃度等値線 (Bq/m3)
1= 5.00×10-10
2= 1.00×10-10
3= 5.00×10-11
4= 1.00×10-11
5= 5.00×10-12
最大濃度＝6.612×10-10Bq
放出地点から (-0.5, 0
計算モデル名＝ PRWDA21
使用モデル名＝ 通常モデル
【計算条件】
計算メッシュ幅 水平方
放出高 ＝ 10.0m
燃焼度 ＝ 20000 MWD/MT
原子炉停止時刻＝ 2011/
放出開始時刻 ＝ 2011/
放出モード＝単位量放出
放出核種・放出率(積算)：
ヨウ素 : 1.00×1
１７定期福島１－２号炉


multi01
福島市
伊達市
相馬市
飯舘村
川俣町
南相馬市
二本松市
大玉村
本宮市
葛尾村
浪江町
三春町
双葉町
福島第一
田村市
大熊町
富岡町
川内村
小野町
楢葉町
鏡石町
玉川村
平田村
広野町
矢吹町
中島村
石川町
古殿町
いわき市
浅川町
鮫川村
40 km
20 km
0 km
-20 km
-40 km
-60 km
20 km
風速場(地上高)
風速場（地上高）
日時＝ 2011/04/01 17:00
気象データ＝ ＧＰＶ＋観測
(2011/04/01
福島第１ 広域図
サイト中心 ： 141°02'10"
領域 ： 92km X 92k
表示高度 ＝ 120.00 m
サイト中心付近の風 ：
大気安定度：Ｄ型
計算モデル名＝ PHYSIC
計算メッシュ幅 水平方向
【凡例】
標準風速（標準領域の場合
→ ＝ 10 m/s
１７定期福島１－２号炉


multi04
福島市
伊達市
相馬市
飯舘村
川俣町
南相馬市
二本松市
大玉村
本宮市
葛尾村
浪江町
三春町
双葉町
田村市
大熊町
西
東
南
北
富岡町
川内村
小野町
楢葉町
鏡石町
玉川村
平田村
広野町
矢吹町
中島村
石川町
いわき市
古殿町
浅川町
鮫川村
40 km
20 km
0 km
-20 km
-40 km
-60 km
20 km
計算結果表示3
大気中濃度(ヨウ素)(地上高)
大気中濃度（ヨウ素）
日時＝ 2011/04/01 18:00
2011/04/01 19:00
気象データ＝ ＧＰＶ＋観測
(2011/04/01
福島第１　２号炉　広域図
放出地点　　：141°02'08"
領域　　　　：92km X 92k
表示高度　＝　　1.00 m
【凡例】
大気中濃度等値線 (Bq/m3)
1= 5.00×10-10
2= 1.00×10-10
3= 5.00×10-11
4= 1.00×10-11
5= 5.00×10-12
最大濃度＝6.020×10-10Bq
放出地点から　（ -0.5,　0
計算モデル名＝ PRWDA21
使用モデル名＝ 通常モデル
【計算条件】
計算メッシュ幅　水平方
放出高　＝　10.0m
燃焼度　＝ 20000 MWD/MT
原子炉停止時刻＝ 2011/
放出開始時刻　＝ 2011/
放出モード＝単位量放出
放出核種・放出率(積算)：
ヨウ素　　：　1.00×1
１７定期福島１－２号炉

multi06



空気吸収線量率

空気吸収線量率

日時＝ 2011/04/01 17:00
2011/04/01 18:00
気象データ＝ ＧＰＶ＋観測
(2011/04/01

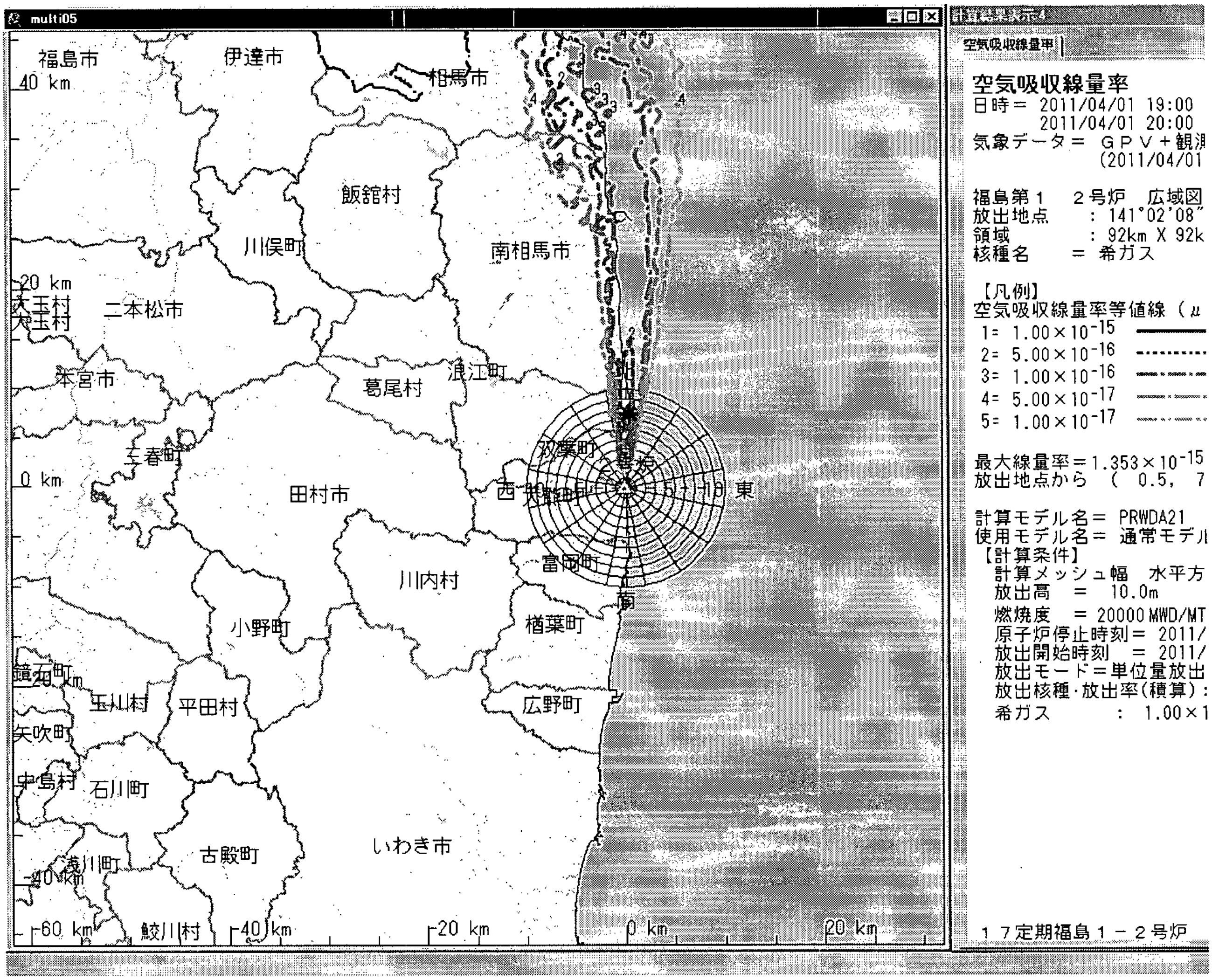
福島第１　２号炉　広域図
放出地点　　: 141°02'08"
領域　　　　: 92km X 92k
核種名　　＝ 希ガス

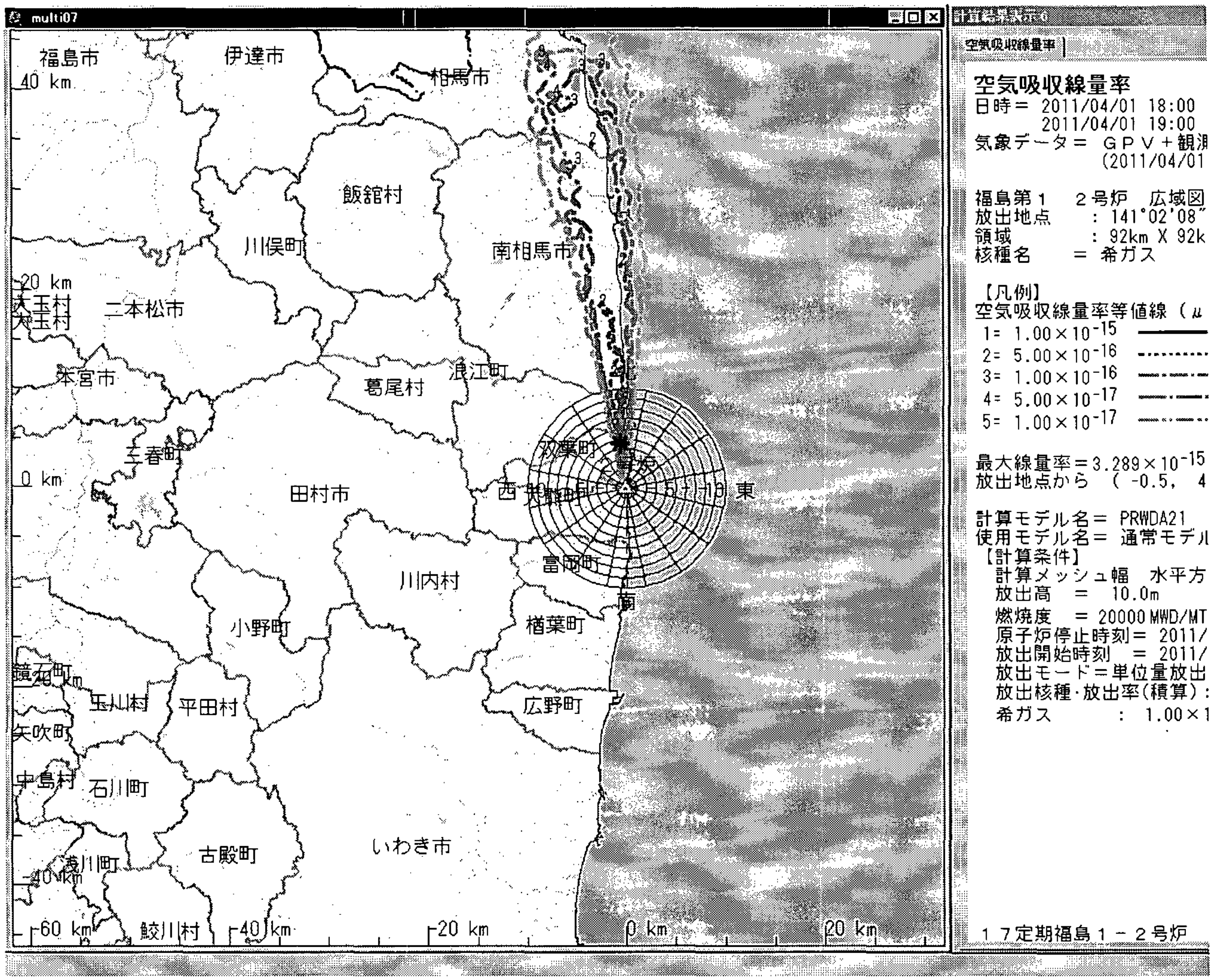
【凡例】
空気吸収線量率等値線（μ
1= 5.00×10^{-15}
2= 1.00×10^{-15}
3= 5.00×10^{-16}
4= 1.00×10^{-16}
5= 5.00×10^{-17}

最大線量率＝5.944×10^{-15}
放出地点から　(-0.5,　2

計算モデル名＝ PRWDA21
使用モデル名＝ 通常モデル
【計算条件】
計算メッシュ幅　水平方
放出高　＝　10.0m
燃焼度　＝ 20000 MWD/MT
原子炉停止時刻＝ 2011/
放出開始時刻　＝ 2011/
放出モード＝単位量放出
放出核種・放出率(積算)：
希ガス　　　：　1.00×1

１７定期福島１－２号炉


multi05
福島市
伊達市
相馬市
40 km
飯舘村
川俣町
南相馬市
20 km
大玉村
二本松市
本宮市
葛尾村
浪江町
三春町
双葉町
0 km
田村市
西
東
富岡町
川内村
南
小野町
楢葉町
鏡石町
玉川村
平田村
広野町
矢吹町
中島村
石川町
古殿町
いわき市
浅川町
-40 km
-60 km
鮫川村
-40 km
-20 km
0 km
20 km
空気吸収線量率
空気吸収線量率
日時＝ 2011/04/01 19:00
2011/04/01 20:00
気象データ＝ ＧＰＶ＋観測
(2011/04/01
福島第１ ２号炉 広域図
放出地点 : 141°02'08"
領域 : 92km X 92k
核種名 ＝ 希ガス
【凡例】
空気吸収線量率等値線（μ
1= 1.00×10-15
2= 5.00×10-16
3= 1.00×10-16
4= 5.00×10-17
5= 1.00×10-17
最大線量率＝1.353×10-15
放出地点から （ 0.5, 7
計算モデル名＝ PRWDA21
使用モデル名＝ 通常モデル
【計算条件】
計算メッシュ幅 水平方
放出高 ＝ 10.0m
燃焼度 ＝ 20000 MWD/MT
原子炉停止時刻＝ 2011/
放出開始時刻 ＝ 2011/
放出モード＝単位量放出
放出核種·放出率(積算)：
希ガス : 1.00×1
１７定期福島１－２号炉


multi07
福島市
伊達市
相馬市
40 km
飯舘村
川俣町
南相馬市
20 km
大玉村
二本松市
本宮市
葛尾村
浪江町
三春町
双葉町
0 km
田村市
大熊町
東
川内村
富岡町
小野町
楢葉町
鏡石町
玉川村
平田村
広野町
矢吹町
中島村
石川町
古殿町
いわき市
浅川町
鮫川村
60 km
40 km
20 km
0 km
20 km
空気吸収線量率
空気吸収線量率
日時＝ 2011/04/01 18:00
2011/04/01 19:00
気象データ＝ ＧＰＶ＋観測
(2011/04/01
福島第１　２号炉　広域図
放出地点　： 141°02'08"
領域　： 92km X 92k
核種名　＝ 希ガス
【凡例】
空気吸収線量率等値線（μ
1= 1.00×10-15
2= 5.00×10-16
3= 1.00×10-16
4= 5.00×10-17
5= 1.00×10-17
最大線量率＝3.289×10-15
放出地点から　(-0.5,　4
計算モデル名＝ PRWDA21
使用モデル名＝ 通常モデル
【計算条件】
計算メッシュ幅　水平方
放出高　＝　10.0m
燃焼度　＝ 20000 MWD/MT
原子炉停止時刻＝ 2011/
放出開始時刻　＝ 2011/
放出モード＝単位量放出
放出核種・放出率(積算)：
希ガス　： 1.00×1
１７定期福島１－２号炉

From: OST01 HOC
Sent: Friday, April 01, 2011 2:03 AM
To: PMT02 Hoc; PMT11 Hoc; Hoc, PMT12
Cc: FOIA Response.hoc Resource
Subject: FW: 4/1, 14:00 SPEEDI Data
Attachments: FUKUSHIMA1 air concentrationüi14-15hüj.gif; FUKUSHIMA1 air concentrationüi15-16hüj.gif; FUKUSHIMA1 air concentrationüi16-17hüj.gif; FUKUSHIMA1 air doseüi14-15hüj.gif; FUKUSHIMA1 air doseüi15-16hüj.gif; FUKUSHIMA1 air doseüi16-17hüj.gif; FUKUSHIMA1 wind(14hüj.gif

-----Original Message-----
From: HOO Hoc [mailto:HOO.Hoc@nrc.gov]
Sent: Friday, April 01, 2011 2:03 AM
To: LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: 4/1, 14:00 SPEEDI Data

From: JapanEmbassy, TaskForce[SMTP:JAPANEMBASSYTASKFORCE@STATE.GOV]
Sent: Friday, April 01, 2011 2:01:02 AM
(b)(6)
Subject: 4/1, 14:00 SPEEDI Data
Auto forwarded by a Rule

Attached please find 4/1, 14:00 SPEEDI Data

SBU
This email is UNCLASSIFIED

000/491

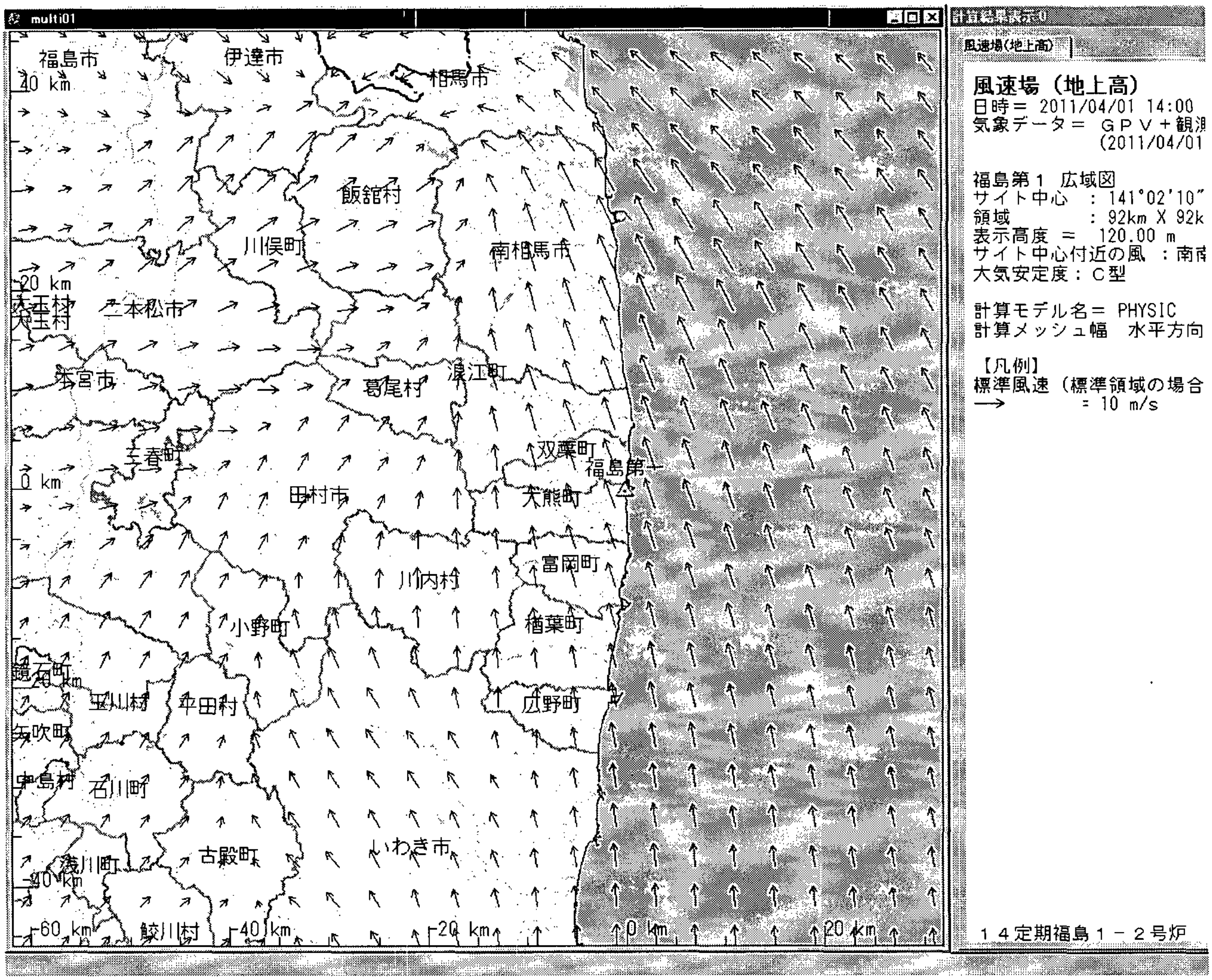
Naomi Walcott
Emergency Action Officer
Japan Emergency Command Center
U.S. Embassy Tokyo

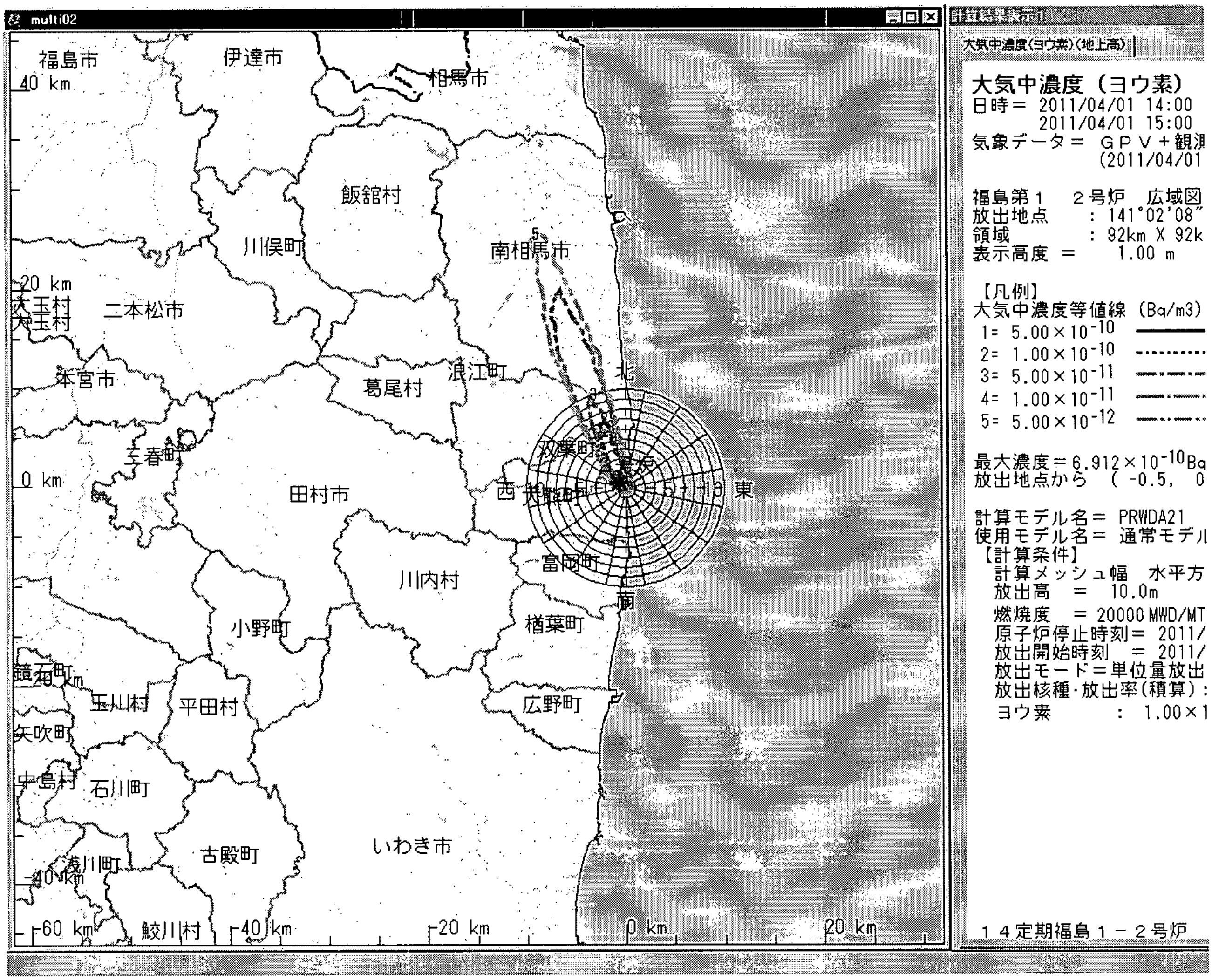
-----Original Message-----
From: nustec [mailto:spd01@nustec.or.jp]
Sent: Friday, April 01, 2011 2:35 PM
(b)(6)
Subject: 4/1　14時SPEEDI単位量放出図形イメージの送付

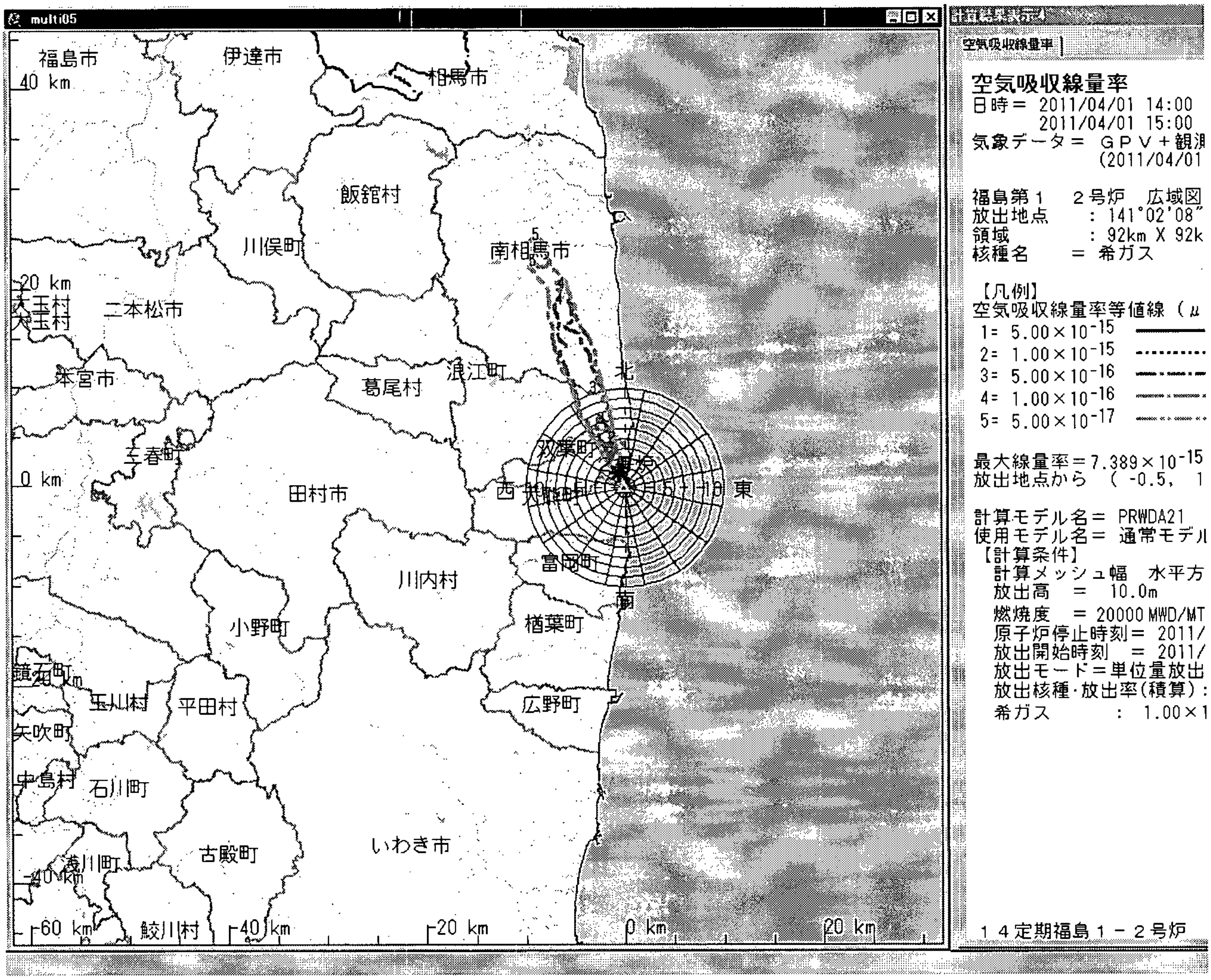
関係者各位

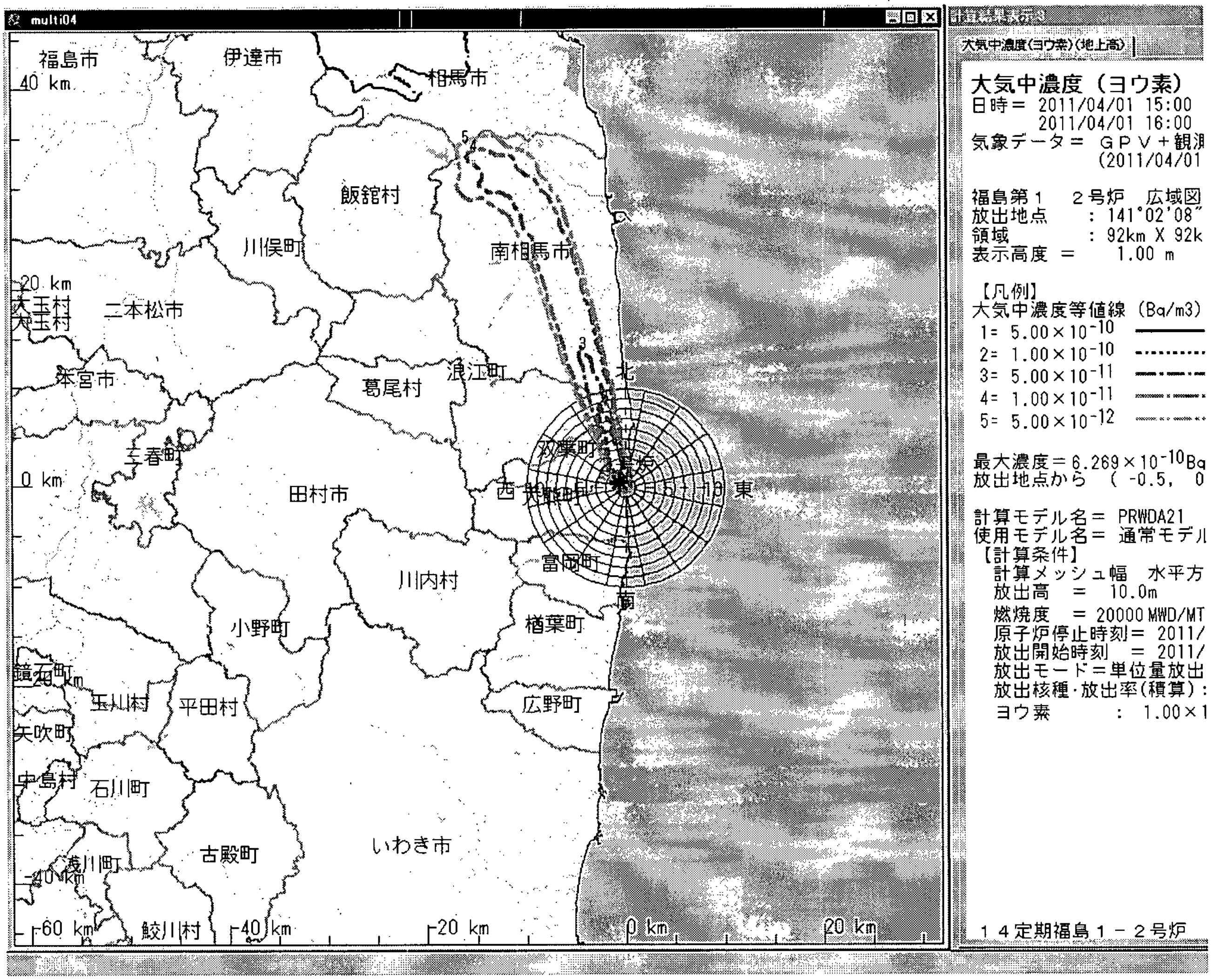
お世話になっております。
原子力安全技術センター　SPEEDI担当です。
4/1　14時のSPEEDI単位量放出図形のイメージデータを送付致します。
ご確認のほど、よろしくお願い致します。

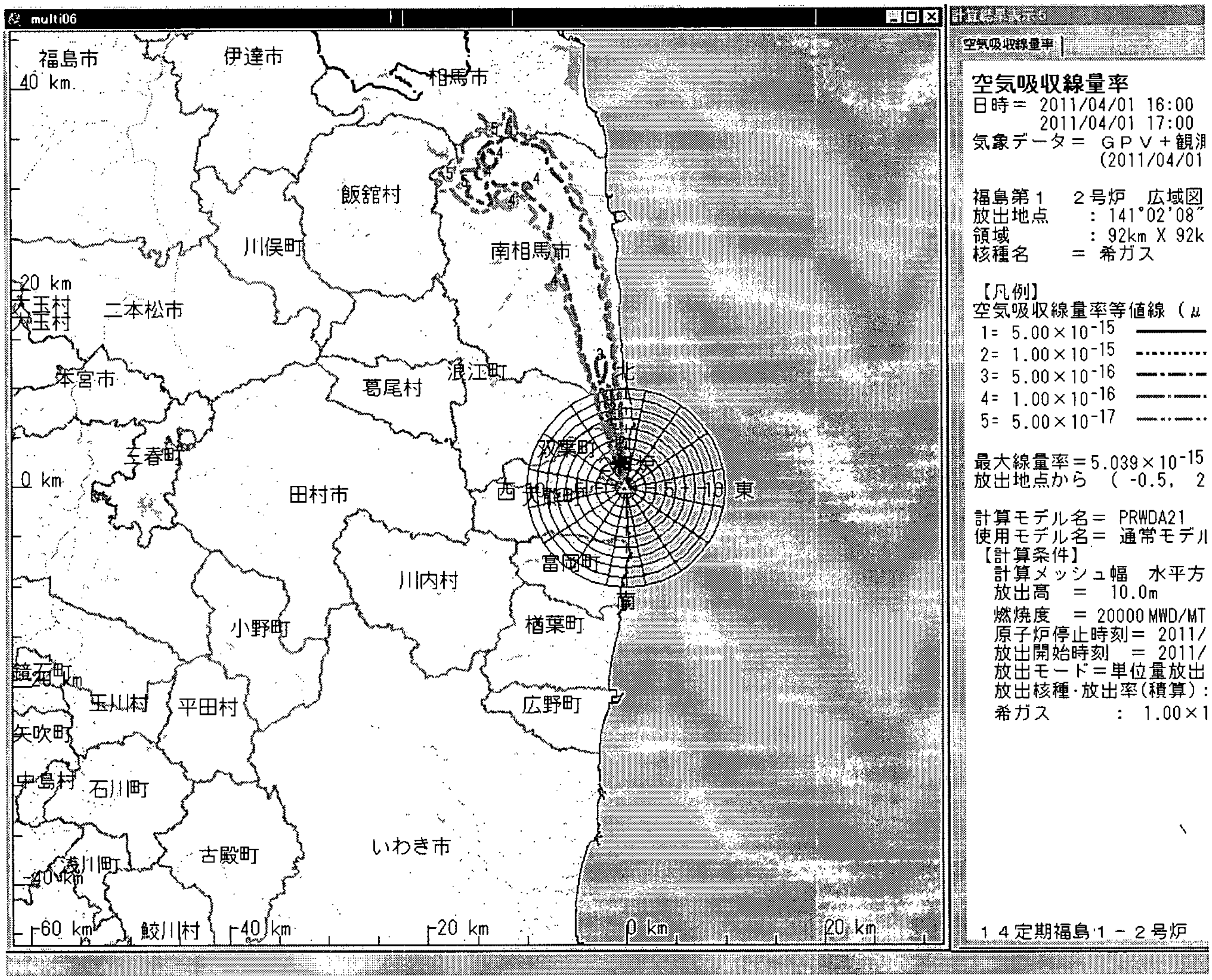
Please find attached 14:00[01-Apr] SPEEDI Data
NUSTEC

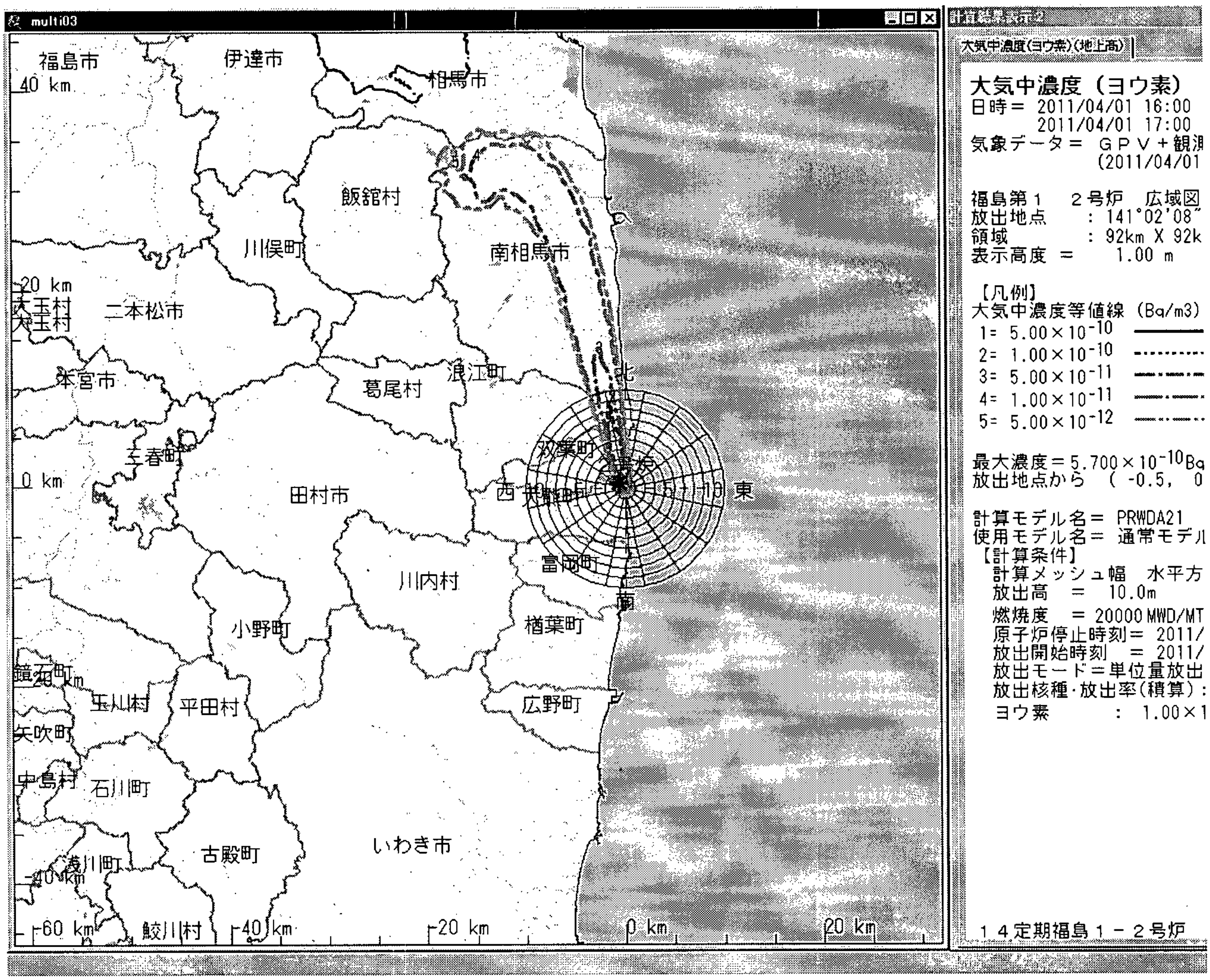

multi01
福島市
伊達市
相馬市
飯舘村
川俣町
南相馬市
二本松市
大玉村
本宮市
葛尾村
浪江町
三春町
双葉町
福島第一
田村市
大熊町
富岡町
川内村
小野町
楢葉町
玉川村
平田村
広野町
石川町
古殿町
いわき市
浅川町
鮫川村
計算結果表示0
風速場(地上高)
風速場（地上高）
日時＝ 2011/04/01 14:00
気象データ＝ ＧＰＶ＋観測
(2011/04/01
福島第１ 広域図
サイト中心 ： 141°02'10"
領域 ： 92km X 92k
表示高度 ＝ 120.00 m
サイト中心付近の風 ：南南
大気安定度：Ｃ型
計算モデル名＝ PHYSIC
計算メッシュ幅 水平方向
【凡例】
標準風速（標準領域の場合
→ ＝ 10 m/s
１４定期福島１－２号炉

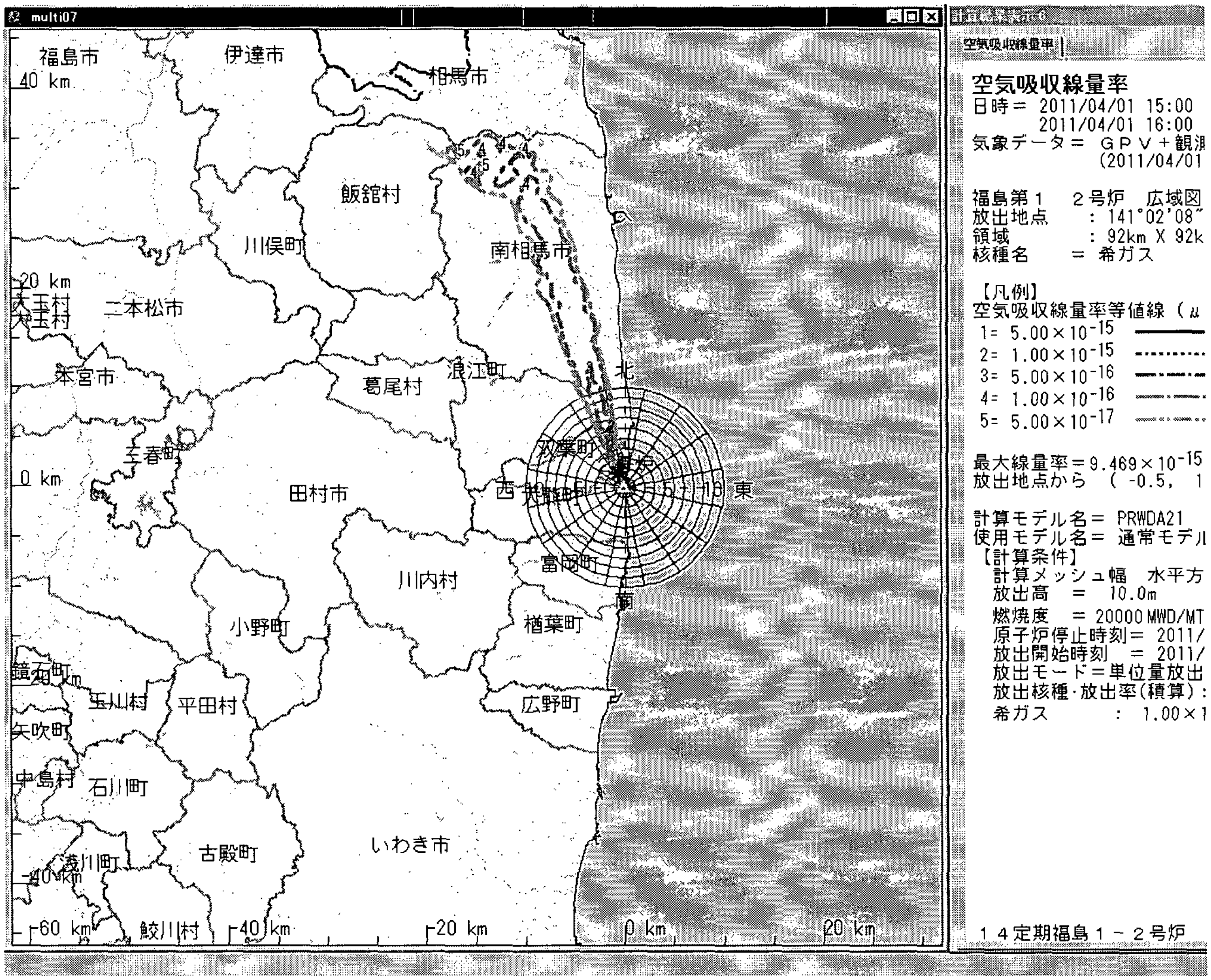

multi02
福島市
伊達市
相馬市
40 km
飯舘村
川俣町
南相馬市
20 km
大玉村
二本松市
本宮市
葛尾村
浪江町
北
三春町
双葉町
0 km
田村市
西
大熊町
東
富岡町
川内村
南
小野町
楢葉町
鏡石町
玉川村
平田村
広野町
矢吹町
中島村
石川町
古殿町
いわき市
浅川町
-40 km
-60 km
鮫川村
-40 km
-20 km
0 km
20 km
大気中濃度(ヨウ素)(地上高)
大気中濃度（ヨウ素）
日時＝ 2011/04/01 14:00
2011/04/01 15:00
気象データ＝ ＧＰＶ＋観測
(2011/04/01
福島第１　２号炉　広域図
放出地点　　: 141°02'08"
領域　　　　: 92km X 92k
表示高度 ＝　1.00 m
【凡例】
大気中濃度等値線 (Bq/m3)
1= 5.00×10-10
2= 1.00×10-10
3= 5.00×10-11
4= 1.00×10-11
5= 5.00×10-12
最大濃度＝6.912×10-10Bq
放出地点から　(-0.5,　0
計算モデル名＝ PRWDA21
使用モデル名＝ 通常モデル
【計算条件】
計算メッシュ幅　水平方
放出高　＝　10.0m
燃焼度　＝ 20000 MWD/MT
原子炉停止時刻＝ 2011/
放出開始時刻　＝ 2011/
放出モード＝単位量放出
放出核種･放出率(積算)：
ヨウ素　　　：1.00×1
１４定期福島１－２号炉


multi05
福島市
伊達市
相馬市
飯舘村
川俣町
南相馬市
二本松市
本宮市
葛尾村
浪江町
北
三春町
田村市
双葉町
西
大熊町
東
富岡町
川内村
南
小野町
楢葉町
平田村
広野町
石川町
古殿町
いわき市
鮫川村
40 km
20 km
0 km
-20 km
-40 km
-60 km
計算結果表示
空気吸収線量率
空気吸収線量率
日時＝ 2011/04/01 14:00
2011/04/01 15:00
気象データ＝ ＧＰＶ＋観測
(2011/04/01
福島第１ ２号炉 広域図
放出地点 : 141°02'08"
領域 : 92km X 92k
核種名 ＝ 希ガス
【凡例】
空気吸収線量率等値線（μ
1= 5.00×10-15
2= 1.00×10-15
3= 5.00×10-16
4= 1.00×10-16
5= 5.00×10-17
最大線量率＝7.389×10-15
放出地点から （ -0.5, 1
計算モデル名＝ PRWDA21
使用モデル名＝ 通常モデル
【計算条件】
計算メッシュ幅 水平方
放出高 ＝ 10.0m
燃焼度 ＝ 20000 MWD/MT
原子炉停止時刻＝ 2011/
放出開始時刻 ＝ 2011/
放出モード＝単位量放出
放出核種・放出率(積算)：
希ガス : 1.00×1
１４定期福島１－２号炉


multi04
福島市
伊達市
相馬市
40 km
飯舘村
川俣町
南相馬市
20 km
大玉村
二本松市
本宮市
葛尾村
浪江町
北
三春町
双葉町
0 km
田村市
西
東
富岡町
川内村
南
小野町
楢葉町
玉川村
平田村
広野町
矢吹町
中島村
石川町
古殿町
いわき市
浅川町
-40 km
-60 km
鮫川村
-40 km
-20 km
0 km
20 km
大気中濃度(ヨウ素)(地上高)
大気中濃度（ヨウ素）
日時＝ 2011/04/01 15:00
2011/04/01 16:00
気象データ＝ ＧＰＶ＋観測
(2011/04/01
福島第１　２号炉　広域図
放出地点　: 141°02'08"
領域　: 92km X 92k
表示高度 ＝ 1.00 m
【凡例】
大気中濃度等値線 (Bq/m3)
1= 5.00×10-10
2= 1.00×10-10
3= 5.00×10-11
4= 1.00×10-11
5= 5.00×10-12
最大濃度＝6.269×10-10Bq
放出地点から (-0.5, 0
計算モデル名＝ PRWDA21
使用モデル名＝ 通常モデル
【計算条件】
計算メッシュ幅　水平方
放出高 ＝ 10.0m
燃焼度 ＝ 20000 MWD/MT
原子炉停止時刻＝ 2011/
放出開始時刻 ＝ 2011/
放出モード＝単位量放出
放出核種・放出率(積算)：
ヨウ素 : 1.00×1
１４定期福島１－２号炉


multi06
福島市
伊達市
相馬市
飯舘村
川俣町
南相馬市
二本松市
大玉村
本宮市
葛尾村
浪江町
三春町
田村市
双葉町
大熊町
富岡町
川内村
楢葉町
小野町
平田村
玉川村
広野町
石川町
古殿町
いわき市
鮫川村
北
南
西
東
40 km
20 km
0 km
-20 km
-40 km
-60 km
空気吸収線量率
空気吸収線量率
日時＝ 2011/04/01 16:00
2011/04/01 17:00
気象データ＝ ＧＰＶ＋観測
(2011/04/01
福島第１　２号炉　広域図
放出地点　　：141°02'08"
領域　　　　：92km X 92k
核種名　　＝ 希ガス
【凡例】
空気吸収線量率等値線（μ
1= 5.00×10^{-15}
2= 1.00×10^{-15}
3= 5.00×10^{-16}
4= 1.00×10^{-16}
5= 5.00×10^{-17}
最大線量率＝5.039×10^{-15}
放出地点から　(-0.5, 2
計算モデル名＝ PRWDA21
使用モデル名＝ 通常モデル
【計算条件】
計算メッシュ幅　水平方
放出高　＝　10.0m
燃焼度　＝ 20000 MWD/MT
原子炉停止時刻＝ 2011/
放出開始時刻　＝ 2011/
放出モード＝単位量放出
放出核種・放出率(積算)：
希ガス　　　：1.00×1
１４定期福島１－２号炉


multi03
福島市
伊達市
相馬市
40 km
飯舘村
川俣町
南相馬市
20 km
大玉村
二本松市
本宮市
葛尾村
浪江町
北
三春町
双葉町
0 km
田村市
西
東
富岡町
南
川内村
小野町
楢葉町
鏡石町
玉川村
平田村
広野町
矢吹町
中島村
石川町
浅川町
古殿町
いわき市
-40 km
-60 km
鮫川村
-40 km
-20 km
0 km
20 km
大気中濃度(ヨウ素)(地上高)
大気中濃度（ヨウ素）
日時＝ 2011/04/01 16:00
2011/04/01 17:00
気象データ＝ ＧＰＶ＋観測
(2011/04/01
福島第１ ２号炉 広域図
放出地点 : 141°02'08"
領域 : 92km X 92k
表示高度 ＝ 1.00 m
【凡例】
大気中濃度等値線 (Bq/m3)
1= 5.00×10-10
2= 1.00×10-10
3= 5.00×10-11
4= 1.00×10-11
5= 5.00×10-12
最大濃度＝5.700×10-10Bq
放出地点から (-0.5, 0
計算モデル名＝ PRWDA21
使用モデル名＝ 通常モデル
【計算条件】
計算メッシュ幅 水平方
放出高 ＝ 10.0m
燃焼度 ＝ 20000 MWD/MT
原子炉停止時刻＝ 2011/
放出開始時刻 ＝ 2011/
放出モード＝単位量放出
放出核種・放出率(積算):
ヨウ素 : 1.00×1
１４定期福島１－２号炉


multi07
福島市
伊達市
相馬市
40 km
飯舘村
川俣町
南相馬市
20 km
大玉村
二本松市
本宮市
葛尾村
浪江町
北
三春町
双葉町
0 km
田村市
西
大熊町
東
富岡町
川内村
南
小野町
楢葉町
鏡石町
玉川村
平田村
広野町
矢吹町
中島村
石川町
古殿町
いわき市
浅川町
-40 km
-60 km
鮫川村
-40 km
-20 km
0 km
20 km
空気吸収線量率
空気吸収線量率
日時＝ 2011/04/01 15:00
2011/04/01 16:00
気象データ＝ ＧＰＶ＋観測
(2011/04/01
福島第１　２号炉　広域図
放出地点　　: 141°02'08"
領域　　　　: 92km X 92k
核種名　　＝ 希ガス
【凡例】
空気吸収線量率等値線（μ
1= 5.00×10-15
2= 1.00×10-15
3= 5.00×10-16
4= 1.00×10-16
5= 5.00×10-17
最大線量率＝9.469×10-15
放出地点から　(-0.5,　1
計算モデル名＝ PRWDA21
使用モデル名＝ 通常モデル
【計算条件】
計算メッシュ幅　水平方
放出高　＝　10.0m
燃焼度　＝ 20000 MWD/MT
原子炉停止時刻＝ 2011/
放出開始時刻　＝ 2011/
放出モード＝単位量放出
放出核種・放出率(積算):
希ガス　　　：　1.00×1
１４定期福島１－２号炉

From: OST01 HOC
Sent: Friday, April 01, 2011 4:12 AM
To: RST01 Hoc; PMT02 Hoc; PMT11 Hoc; Hoc, PMT12
Cc: FOIA Response.hoc Resource
Subject: FW: Radiation data by MEXT
Attachments: 20110401_09.pdf; 20110401_10.pdf; 20110401_11.pdf; 20110401_12.pdf; 20110401_13.pdf; 20110401_14.pdf

-----Original Message-----
From: HOO Hoc [mailto:HOO.Hoc@nrc.gov]
Sent: Friday, April 01, 2011 3:58 AM
To: LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: Radiation data by MEXT

From: JapanEmbassy, TaskForce[SMTP:JAPANEMBASSYTASKFORCE@STATE.GOV]
Sent: Friday, April 01, 2011 3:56:46 AM
(b)(6)
Subject: FW: Radiation data by MEXT
Auto forwarded by a Rule

fyi

on behalf of the Japan Emergency Command Center, +81-3-3224- 5533

Lynda Hinds
Staff Assistant to Ambassador John V. Roos U.S. Embassy
1-10-5 Akasaka, Minato-ku
Tokyo 107-8420
Tel. (03) 3224- 5370

Twitter.com/AmbassadorRoos

000/492

-----Original Message-----
From: eda@mext.go.jp [mailto:eda@mext.go.jp]
Sent: Friday, April 01, 2011 4:40 PM
To: Cherry, Ronald C
Cc: JapanEmbassy, TaskForce; Carden, (b)(6) cmht@nnsa.doe.gov; Guss, Paul P. CTR; Peeke, Richard S MAJ USA; (b)(6)
Subject: Radiation data by MEXT

Dear Mr. Cherry,

My name is Kei EDA.
I am a new contact point to you.
Please see attached the document.
File "20110401_09" lacks the information of lat/long. I will send you the complete file later.
File "20110401_14" is a new file, regarding the result of plutonium and uranium.
I will send you an English version as I get it later.

Sincerely yours,
Kei EDA

プレス発表資料

福島第一原子力発電所の20km以遠のモニタリング結果について

平成23年4月1日 13時00分現在
文　部　科　学　省

○文部科学省が集計した結果

＊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
＊4　測定時間内における測定値の変動範囲

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
測定エリア 【1】 (約60Km北西)	4月1日8時48分	2.7 *2	降雨無し	日本原子力研究開発機構
測定エリア 【2】 (約55Km北西)	4月1日9時18分	3.8 *2	降雨無し	日本原子力研究開発機構
測定エリア 【3】 (約45Km北西)	4月1日10時14分	3.3 *2	降雨無し	日本原子力研究開発機構
測定エリア 【5】 (約45Km北)	4月1日11時12分	0.8 *2	降雨無し	日本原子力研究開発機構
測定エリア 【6】 (約45Km北)	4月1日11時34分	1.0 *2	降雨無し	日本原子力研究開発機構
測定エリア 【7】 (約45Km北)	4月1日11時43分	1.1 *2	降雨無し	日本原子力研究開発機構
測定エリア【12】 (約40Km西)	4月1日11時39分	0.5 *2	降雨無し	文部科学省
測定エリア【13】 (約40Km西)	4月1日11時53分	0.5 *2	降雨無し	文部科学省
測定エリア【20】 (約45Km北西)	4月1日10時37分	0.6 *2	降雨無し	文部科学省
測定エリア【21】(約30Km西北西)	4月1日11時09分	2.3 *2	降雨無し	文部科学省
測定エリア【22】(約30Km西北西)	4月1日11時00分	0.6 *2	降雨無し	文部科学省
測定エリア【23】(約30Km西北西)	4月1日10時48分	0.6 *2	降雨無し	文部科学省
測定エリア【31】(約30Km西北西)	4月1日10時33分	15.4 *2	降雨無し	日本原子力研究開発機構
測定エリア【32】 (約30Km北西)	4月1日10時56分	36.2 *2	降雨無し	日本原子力研究開発機構

＊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
＊4　測定時間内における測定値の変動範囲

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
測定エリア【33】（約30Km北西）	4月1日11時22分	18.2 *2	降雨無し	日本原子力研究開発機構
測定エリア【36】（約40Km北西）	4月1日10時08分	5.7 *2	降雨無し	日本原子力研究開発機構
測定エリア【37】（約50km北西）	4月1日9時57分	4.6 *2	降雨無し	日本原子力研究開発機構
測定エリア【38】（約35km南）	4月1日11時37分	1.0 *2	降雨無し	文部科学省
測定エリア【74】（約35Km南）	4月1日11時08分	0.2 *2	降雨無し	文部科学省
測定エリア【75】（約45Km南）	4月1日10時30分	0.8 *2	降雨無し	文部科学省
測定エリア【84】（約40km南西）	4月1日9時50分	0.5 *2	降雨無し	文部科学省
測定エリア【85】（約60km北西）	4月1日6時00分	0.3 *2	降雨無し	防衛省
測定エリア【86】（約55km西）	4月1日6時00分	1.3 *2	降雨無し	防衛省
測定エリア【87】（約30km西南西）	4月1日6時00分	1.0 *2	降雨無し	防衛省

環境放射能水準調査結果(上水(蛇口))
(3月31日採取)

H23.4.1　13:00　　(Bq/kg)

	都道府県名	上水(蛇口)				
		I－131		放射性セシウム (Cs－134,Cs－137)		備考
1	北海道(札幌市)	不検出		不検出		
2	青森県(青森市)	不検出		不検出		
3	岩手県(盛岡市)	0.31	(指標を超えていない)	不検出		
4	宮城県	－		－		県が独自に調査・公表している(宮城県原子力安全対策室HPの「水道水及び農畜産物の放射能測定結果」を参照: http://www.pref.miyagi.jp/gentai/Press/PressH230315.html)
5	秋田県(秋田市)	0.42	(指標を超えていない)	不検出		
6	山形県(山形市)	－		－		機器調整中
7	福島県	-		-		県が独自に調査・公表している(福島県災害対策本部HPの「原子力災害情報(県内各地方環境放射能測定値(飲料水)について」を参照: http://www.pref.fukushima.jp/j/index.htm)
8	茨城県(ひたちなか市)	9.5	(指標を超えていない)	不検出		
9	栃木県(宇都宮市)	9.0	(指標を超えていない)	3.9	(指標を超えていない)	
10	群馬県(前橋市)	2.6	(指標を超えていない)	0.46	(指標を超えていない)	
11	埼玉県(さいたま市)	3.7	(指標を超えていない)	0.76	(指標を超えていない)	
12	千葉県(市原市)	1.5	(指標を超えていない)	0.64	(指標を超えていない)	
13	東京都(新宿区)	3.4	(指標を超えていない)	0.88	(指標を超えていない)	
14	神奈川県(茅ヶ崎市)	6.3	(指標を超えていない)	不検出		
15	新潟県(新潟市)	1.8	(指標を超えていない)	不検出		
16	富山県(射水市)	不検出		不検出		
17	石川県(金沢市)	不検出		不検出		
18	福井県(福井市)	不検出		不検出		
19	山梨県(甲府市)	不検出		不検出		
20	長野県(長野市)	不検出		不検出		
21	岐阜県(各務原市)	不検出		不検出		
22	静岡県(静岡市)	不検出		不検出		
23	愛知県(名古屋市)	不検出		不検出		
24	三重県(四日市市)	不検出		不検出		
25	滋賀県(大津市)	不検出		不検出		
26	京都府(京都市)	不検出		不検出		
27	大阪府(大阪市)	不検出		不検出		
28	兵庫県(神戸市)	不検出		不検出		
29	奈良県(奈良市)	不検出		不検出		
30	和歌山県(和歌山市)	不検出		不検出		
31	鳥取県(東伯郡)	不検出		不検出		
32	島根県(松江市)	不検出		不検出		
33	岡山県(岡山市)	不検出		不検出		
34	広島県(広島市)	不検出		不検出		
35	山口県(宇部市)	不検出		不検出		
36	徳島県(徳島市)	不検出		不検出		
37	香川県(高松市)	不検出		不検出		
38	愛媛県(八幡浜市)	不検出		不検出		
39	高知県(高知市)	不検出		不検出		
40	福岡県(太宰府市)	不検出		不検出		
41	佐賀県(佐賀市)	不検出		不検出		
42	長崎県(大村市)	不検出		不検出		
43	熊本県(宇土市)	不検出		不検出		
44	大分県(大分市)	不検出		不検出		
45	宮崎県(宮崎市)	不検出		不検出		
46	鹿児島県(鹿児島市)	不検出		不検出		
47	沖縄県(那覇市)	不検出		不検出		

*本データは、1Bq/Lを1Bq/kgとみなす
*文部科学省が各都道府県等からの報告に基づき作成
*「原子力施設等の防災対策について(原子力安全委員会)」飲食物の摂取制限に関する指標　(飲料水)　放射性ヨウ素－131:300Bq/kg以上、放射性セシウム:200Bq/kg以上

茨城県におけるモニタリング状況（1／1）

文部科学省

H23.4.1 13:00

μSv/h（マイクロシーベルト毎時）

日時	日本原子力研究開発機構 原子力科学研究所 （茨城県東海村）	日本原子力研究開発機構 核燃料サイクル工学研究所 （茨城県東海村）	東京大学弥生 （茨城県東海村）
3月31日			
0:00	1.49	0.89	1.36
1:00	1.49	0.88	1.34
2:00	1.49	0.88	1.26
3:00	1.49	0.89	1.19
4:00	1.48	0.89	1.22
5:00	1.48	0.88	1.32
6:00	1.48	0.88	1.27
7:00	1.47	0.87	1.28
8:00	1.47	0.87	1.22
9:00	1.47	0.86	1.37
10:00	1.46	0.86	1.26
11:00	1.45	0.86	1.33
12:00	1.45	0.86	1.32
13:00	1.46	0.86	1.31
14:00	1.45	0.85	1.29
15:00	1.45	0.85	1.25
16:00	1.45	0.85	1.31
17:00	1.44	0.85	1.24
18:00	1.44	0.85	1.19
19:00	1.44	0.85	1.19
20:00	1.44	0.85	1.19
21:00	1.44	0.85	1.18
22:00	1.44	0.85	1.27
23:00	1.44	0.85	1.33
4月1日			
0:00	1.44	0.84	1.12
1:00	1.43	0.84	1.24
2:00	1.44	0.84	1.19
3:00	1.43	0.84	1.16
4:00	1.43	0.84	1.28
5:00	1.42	0.84	1.19
6:00	1.42	0.84	1.25
7:00	1.42	0.84	1.21
8:00	1.42	0.83	1.21
9:00	1.41	0.83	1.13
10:00	1.40	0.82	
11:00	1.40	0.81	
12:00	1.39	0.81	

※3月24日以降は、1時間毎とした。なお、日本原子力研究開発機構原子力科学研究所及び日本原子力研究開発機構核燃料サイクル工学研究所のデータは、それぞれ以下のホームページでも掲載されている。

日本原子力研究開発機構原子力科学研究所
http://erms.jaea.go.jp/Chart.htm

日本原子力研究開発機構核燃料サイクル工学研究所
http://www.jaea.go.jp/04/ztokai/kankyo/realtime/tbl_10mStPo01.html

平成 23 年 4 月 1 日

福島第一原子力発電所から20-30km圏内の土壌試料のPu、Uの分析結果

1．結果概要

走行サーベイで空間放射線量率の高かった3箇所で、土壌試料を採取し、Pu-238、Pu-239+240濃度及びU-235/U-238を求めた。

その結果、Pu-238及びPu-239+240は検出されておらず、U-235/U-238は自然の存在比であった。

2．測定結果

採取場所	採取日時	空間放射線量率 [μSv/h]	Pu-238	Pu-239+240	U-235/U-238
葛尾村小出谷付近	3月23日 10:20頃	43.5	検出されず (0.1 Bq/kg以下)	検出されず (0.1 Bq/kg以下)	0.00731
浪江町昼曽根トンネル東側	3月23日 10:40頃	46.5	検出されず (0.1 Bq/kg以下)	検出されず (0.1 Bq/kg以下)	0.00726
浪江町赤宇木	3月22日 11:30頃	50.1	検出されず (0.1 Bq/kg以下)	検出されず (0.1 Bq/kg以下)	0.00723

*自然のU-235/U-238　0.00725

以上

環境放射能水準調査結果

H23.4.1 13:00　　（μSv/h（マイクロシーベルト毎時））

	都道府県名	3月31日															
		9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	過去の平常値の範囲
1	北海道(札幌市)	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.02～0.105
2	青森県(青森市)	0.026	0.026	0.026	0.027	0.026	0.026	0.026	0.026	0.026	0.026	0.027	0.027	0.027	0.027	0.027	0.017～0.102
3	岩手県(盛岡市)	0.027	0.026	0.026	0.026	0.026	0.034	0.033	0.028	0.026	0.029	0.027	0.026	0.026	0.026	0.027	0.014～0.084
4	宮城県(仙台市)	0.091	0.092	0.092	0.093	0.094	0.093	0.098	0.093	0.088	0.086	0.086	0.085	0.085	0.084	0.083	0.0176～0.0513
5	秋田県(秋田市)	0.035	0.035	0.035	0.039	0.038	0.036	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.036	0.036	0.022～0.086
6	山形県(山形市)	0.063	0.063	0.063	0.063	0.063	0.063	0.063	0.063	0.063	0.063	0.063	0.063	0.063	0.063	0.063	0.025～0.082
7	福島県(双葉郡)																0.037～0.071
8	茨城県(水戸市)	0.197	0.197	0.197	0.197	0.197	0.196	0.196	0.195	0.195	0.194	0.194	0.194	0.194	0.193	0.193	0.036～0.056
9	栃木県(宇都宮市)	0.093	0.093	0.095	0.097	0.094	0.093	0.092	0.092	0.092	0.092	0.092	0.092	0.092	0.092	0.092	0.030～0.067
10	群馬県(前橋市)	0.056	0.056	0.056	0.056	0.055	0.055	0.055	0.055	0.055	0.055	0.054	0.054	0.054	0.054	0.054	0.017～0.045
11	埼玉県(さいたま市)	0.081	0.081	0.081	0.081	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.080	0.031～0.060
12	千葉県(市原市)	0.072	0.072	0.072	0.071	0.071	0.071	0.079	0.075	0.072	0.071	0.071	0.070	0.071	0.071	0.071	0.022～0.044
13	東京都(新宿区)	0.101	0.102	0.102	0.101	0.101	0.103	0.103	0.101	0.099	0.099	0.099	0.098	0.098	0.098	0.098	0.028～0.079
14	神奈川県(茅ヶ崎市)	0.068	0.068	0.068	0.070	0.070	0.073	0.070	0.068	0.073	0.070	0.069	0.068	0.068	0.068	0.068	0.035～0.069
15	新潟県(新潟市)	0.056	0.051	0.048	0.047	0.047	0.055	0.051	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.047	0.031～0.153
16	富山県(射水市)	0.048	0.048	0.048	0.048	0.049	0.048	0.049	0.049	0.048	0.049	0.048	0.048	0.048	0.048	0.049	0.029～0.147
17	石川県(金沢市)	0.047	0.047	0.047	0.048	0.047	0.047	0.047	0.047	0.047	0.047	0.048	0.048	0.048	0.048	0.048	0.0291～0.1275
18	福井県(福井市)	0.046	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.046	0.046	0.046	0.046	0.046	0.047	0.032～0.097
19	山梨県(甲府市)	0.044	0.043	0.043	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.044	0.040～0.064
20	長野県(長野市)	0.055	0.053	0.054	0.055	0.052	0.056	0.054	0.049	0.047	0.046	0.045	0.045	0.045	0.045	0.046	0.0299～0.0974
21	岐阜県(各務原市)	0.061	0.061	0.063	0.065	0.063	0.061	0.060	0.061	0.060	0.060	0.060	0.060	0.061	0.061	0.061	0.057～0.110
22	静岡県(静岡市)	0.042	0.042	0.042	0.043	0.043	0.043	0.042	0.042	0.042	0.041	0.041	0.041	0.041	0.040	0.040	0.0281～0.0765
23	愛知県(名古屋市)	0.040	0.040	0.040	0.040	0.040	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.040	0.040	0.035～0.074
24	三重県(四日市市)	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.046	0.0416～0.0789
25	滋賀県(大津市)	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.033	0.031～0.061
26	京都府(京都市)	0.039	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.033～0.087
27	大阪府(大阪市)	0.043	0.043	0.043	0.043	0.042	0.042	0.042	0.043	0.043	0.043	0.042	0.042	0.043	0.043	0.042	0.042～0.061
28	兵庫県(神戸市)	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.038	0.035～0.076
29	奈良県(奈良市)	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.047	0.047	0.047	0.048	0.048	0.048	0.048	0.048	0.046～0.08
30	和歌山県(和歌山市)	0.033	0.032	0.032	0.031	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.032	0.033	0.031～0.056
31	鳥取県(東伯郡)	0.063	0.063	0.063	0.063	0.064	0.063	0.063	0.063	0.063	0.063	0.063	0.063	0.064	0.064	0.063	0.036～0.11
32	島根県(松江市)	0.038	0.038	0.037	0.037	0.037	0.036	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.038	0.038	0.033～0.079
33	岡山県(岡山市)	0.050	0.049	0.049	0.049	0.049	0.049	0.048	0.048	0.049	0.048	0.049	0.049	0.049	0.049	0.050	0.043～0.104
34	広島県(広島市)	0.049	0.048	0.048	0.048	0.047	0.047	0.046	0.046	0.046	0.046	0.047	0.047	0.047	0.047	0.048	0.035～0.069
35	山口県(山口市)	0.094	0.092	0.092	0.091	0.091	0.091	0.091	0.091	0.091	0.092	0.092	0.092	0.092	0.092	0.093	0.084～0.128
36	徳島県(徳島市)	0.038	0.038	0.038	0.038	0.037	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.037～0.067
37	香川県(高松市)	0.059	0.056	0.056	0.055	0.055	0.056	0.055	0.056	0.059	0.062	0.063	0.063	0.064	0.066	0.068	0.051～0.077
38	愛媛県(松山市)	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.047	0.048	0.048	0.048	0.049	0.045～0.074
39	高知県(高知市)	0.026	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.026	0.026	0.026	0.023～0.076
40	福岡県(太宰府市)	0.037	0.037	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.037	0.036	0.036	0.034～0.079
41	佐賀県(佐賀市)	0.041	0.041	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.037～0.086
42	長崎県(大村市)	0.029	0.029	0.029	0.029	0.028	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.027～0.069
43	熊本県(宇土市)	0.029	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.028	0.027	0.021～0.067
44	大分県(大分市)	0.051	0.050	0.050	0.050	0.050	0.049	0.049	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.048～0.085
45	宮崎県(宮崎市)	0.026	0.026	0.026	0.027	0.026	0.026	0.026	0.026	0.026	0.027	0.027	0.027	0.027	0.027	0.027	0.0243～0.0664
46	鹿児島県(鹿児島市)	0.035	0.035	0.035	0.034	0.034	0.034	0.034	0.034	0.035	0.034	0.034	0.035	0.035	0.035	0.035	0.0306～0.0943
47	沖縄県(うるま市)	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.0133～0.0575

*宮城県では、可搬型モニタリングポストによる測定。
*福島県では、モニタリングポスト周辺の空間線量が高いことから測定が困難であるが、その分のデータはモニタリングカーを用いて測定。
別資料の「福島第一原子力発電所の20km以遠のモニタリング結果について(4月1日13:00現在)」参照。
*空欄は機器点検等のための欠測等
*本データは、1μGy/h(マイクログレイ毎時)=1μSv/h(マイクロシーベルト毎時)と換算して算出
*文部科学省が各都道府県等からの報告に基づき作成

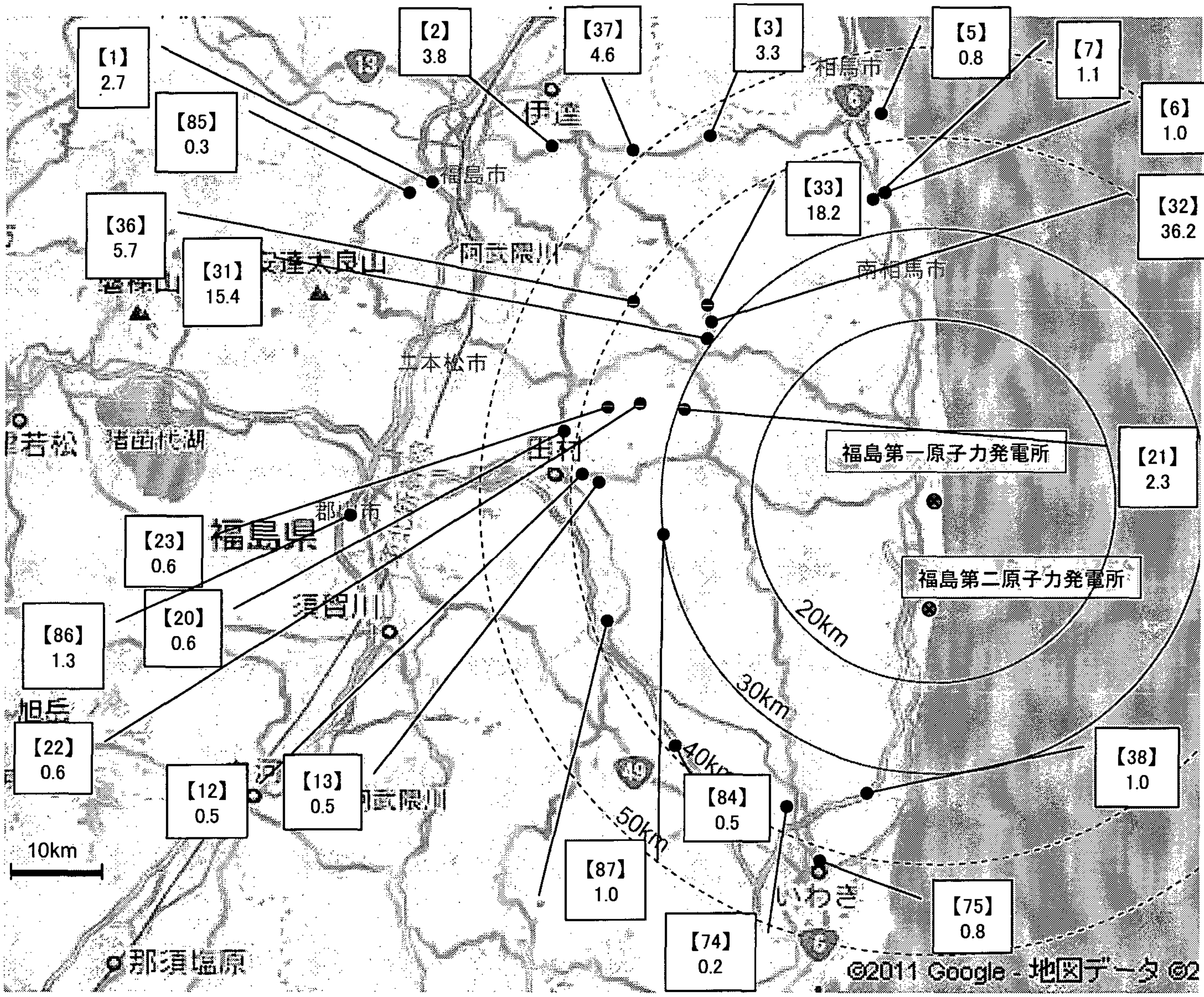
環境放射能水準調査結果

H23.4.1　13:00　　　　　　　　　　　　　　　　　　　　　（μSv/h（マイクロシーベルト毎時））

	都道府県名	4月1日									
		0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	過去の平常値の範囲
1	北海道（札幌市）	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.02～0.105
2	青森県（青森市）	0.027	0.027	0.027	0.027	0.027	0.027	0.028	0.028	0.027	0.017～0.102
3	岩手県（盛岡市）	0.027	0.027	0.027	0.028	0.027	0.027	0.028	0.027	0.027	0.014～0.084
4	宮城県（仙台市）	0.083	0.083	0.082	0.082	0.081	0.080	0.081	0.082	0.087	0.0176～0.0513
5	秋田県（秋田市）	0.036	0.036	0.037	0.037	0.037	0.037	0.037	0.036	0.036	0.022～0.086
6	山形県（山形市）	0.064	0.064	0.064	0.064	0.063	0.064	0.064	0.064	0.063	0.025～0.082
7	福島県（双葉郡）										0.037～0.071
8	茨城県（水戸市）	0.193	0.192	0.193	0.192	0.191	0.192	0.191	0.192	0.191	0.036～0.056
9	栃木県（宇都宮市）	0.092	0.092	0.092	0.092	0.092	0.092	0.092	0.091	0.091	0.030～0.067
10	群馬県（前橋市）	0.054	0.054	0.055	0.055	0.055	0.055	0.055	0.055	0.054	0.017～0.045
11	埼玉県（さいたま市）	0.080	0.079	0.079	0.079	0.080	0.080	0.080	0.080	0.079	0.031～0.060
12	千葉県（市原市）	0.071	0.071	0.071	0.071	0.070	0.071	0.071	0.070	0.070	0.022～0.044
13	東京都（新宿区）	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.098	0.099	0.028～0.079
14	神奈川県（茅ヶ崎市）	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.067	0.035～0.069
15	新潟県（新潟市）	0.047	0.047	0.047	0.047	0.047	0.047	0.048	0.048	0.047	0.031～0.153
16	富山県（射水市）	0.049	0.049	0.050	0.049	0.050	0.049	0.050	0.050	0.049	0.029～0.147
17	石川県（金沢市）	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.0291～0.1275
18	福井県（福井市）	0.046	0.047	0.046	0.047	0.047	0.047	0.047	0.047	0.047	0.032～0.097
19	山梨県（甲府市）	0.044	0.044	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.040～0.064
20	長野県（長野市）	0.046	0.046	0.047	0.047	0.047	0.048	0.048	0.048	0.047	0.0299～0.0974
21	岐阜県（各務原市）	0.061	0.062	0.062	0.062	0.062	0.063	0.063	0.063	0.063	0.057～0.110
22	静岡県（静岡市）	0.040	0.040	0.041	0.041	0.041	0.041	0.040	0.040	0.040	0.0281～0.0765
23	愛知県（名古屋市）	0.040	0.041	0.041	0.041	0.042	0.042	0.042	0.043	0.043	0.035～0.074
24	三重県（四日市市）	0.046	0.046	0.046	0.046	0.046	0.047	0.047	0.047	0.047	0.0416～0.0789
25	滋賀県（大津市）	0.034	0.035	0.035	0.035	0.036	0.036	0.037	0.037	0.036	0.031～0.061
26	京都府（京都市）	0.039	0.039	0.039	0.039	0.039	0.040	0.040	0.040	0.040	0.033～0.087
27	大阪府（大阪市）	0.043	0.043	0.043	0.043	0.043	0.044	0.044	0.044	0.043	0.042～0.061
28	兵庫県（神戸市）	0.038	0.038	0.038	0.037	0.037	0.038	0.038	0.039	0.038	0.035～0.076
29	奈良県（奈良市）	0.049	0.049	0.049	0.049	0.050	0.050	0.050	0.050	0.049	0.046～0.08
30	和歌山県（和歌山市）	0.033	0.033	0.033	0.033	0.033	0.033	0.034	0.033	0.033	0.031～0.056
31	鳥取県（東伯郡）	0.063	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.036～0.11
32	島根県（松江市）	0.039	0.039	0.039	0.040	0.040	0.040	0.040	0.040	0.040	0.033～0.079
33	岡山県（岡山市）	0.050	0.051	0.051	0.051	0.051	0.051	0.052	0.052	0.051	0.043～0.104
34	広島県（広島市）	0.048	0.048	0.049	0.049	0.049	0.049	0.049	0.050	0.050	0.035～0.069
35	山口県（山口市）	0.093	0.094	0.095	0.094	0.094	0.095	0.096	0.096	0.096	0.084～0.128
36	徳島県（徳島市）	0.039	0.039	0.039	0.039	0.039	0.039	0.040	0.039	0.039	0.037～0.067
37	香川県（高松市）	0.069	0.070	0.070	0.071	0.067	0.069	0.071	0.056	0.056	0.051～0.077
38	愛媛県（松山市）	0.049	0.049	0.049	0.050	0.050	0.050	0.050	0.050	0.049	0.045～0.074
39	高知県（高知市）	0.026	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.023～0.076
40	福岡県（太宰府市）	0.037	0.037	0.037	0.037	0.037	0.038	0.038	0.038	0.037	0.034～0.079
41	佐賀県（佐賀市）	0.040	0.040	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.037～0.086
42	長崎県（大村市）	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.027～0.069
43	熊本県（宇土市）	0.027	0.028	0.028	0.029	0.029	0.029	0.029	0.029	0.029	0.021～0.067
44	大分県（大分市）	0.050	0.050	0.051	0.051	0.051	0.051	0.051	0.051	0.051	0.048～0.085
45	宮崎県（宮崎市）	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.0243～0.0664
46	鹿児島県（鹿児島市）	0.035	0.036	0.036	0.035	0.036	0.036	0.036	0.036	0.036	0.0306～0.0943
47	沖縄県（うるま市）	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.0133～0.0575

*宮城県では、可搬型モニタリングポストによる測定。
*福島県では、モニタリングポスト周辺の空間線量が高いことから測定が困難であるが、その分のデータはモニタリングカーを用いて測定。
別資料の「福島第一原子力発電所の20km以遠のモニタリング結果について（4月1日13:00現在）」参照。
*空欄は機器点検等のための欠測等
*本データは、1μGy/h（マイクログレイ毎時）=1μSv/h（マイクロシーベルト毎時）と換算して算出
*文部科学省が各都道府県等からの報告に基づき作成

福島第一原子力発電所周辺のモニタリング結果



測定日時
4月1日
6時00分～12時00分

●測定箇所

単位：マイクロシーベルト毎時

円は範囲の概略を示す

Bozin, Sunny

From: Schmidt, Rebecca
Sent: Friday, April 01, 2011 4:25 PM
To: Nieh, Ho
Subject: Re: EPW possible hearing

Thanks

From: Nieh, Ho
To: Schmidt, Rebecca; Batkin, Joshua; Bubar, Patrice; Sharkey, Jeffry; Sosa, Belkys
Cc: Powell, Amy
Sent: Fri Apr 01 15:35:15 2011
Subject: RE: EPW possible hearing

Commissioner Ostendorff is available that week.

Note that he does have a tentative commitment on the afternoon of the 19th.

Thanks.

Ho

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

From: Schmidt, Rebecca
Sent: Friday, April 01, 2011 2:48 PM
To: Batkin, Joshua; Nieh, Ho; Bubar, Patrice; Sharkey, Jeffry; Sosa, Belkys
Cc: Powell, Amy
Subject: EPW possible hearing

EPW is looking at the week of May 16th now since the Japan Commission meeting moved to May 12th. Will your Commissioner be available the week of May 16th?

000/493

From: Droggitis, Spiros
Sent: Monday, April 04, 2011 10:07 AM
To: Powell, Amy; Decker, David; Riley (OCA), Timothy
Subject: FW: DNDO News 4/4/11
Attachments: DNDO NEWS 4-4-11.htm

From: Bolling, Lloyd [mailto:Lloyd.Bolling@dhs.gov]
Sent: Monday, April 04, 2011 10:06 AM
To: Layton, Michael; Reis, Terrence; Jones, Cynthia; Wastler, Sandra; Jackson, Gerard
Cc: Droggitis, Spiros; Dembek, Stephen; Owens, Janice; Breskovic, Clarence; Casey, Timothy
Subject: DNDO News 4/4/11

Attached is the DNDO News for Monday, April 4, 2011.

Summary of news items:
1. Fukushima fallout circles the globe.
2. Japan Update: To release low-level radioactive water in ocean.
3. Anti-nuclear activist says that Fukushima is 'much bigger than Chernobyl.'
4. U.S. and Poland mark milestone in nuclear security cooperation.
5. The week in Homeland Security: International aviation security, terror threats up for discussion.

Lloyd Bolling, NRC Liaison
Operations Support Directorate
Domestic Nuclear Detection Office
Department of Homeland Security
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Blackberry: (b)(6)
Fax: 202-254-7752
Lloyd.Bolling@dhs.gov

000/494

April 4, 2011 DNDO News Brief

Fukushima Fallout Circles the Globe

Brian Vastag, Washington Post - Modern radiation detection systems are simply astoundingly sensitive and are designed to pick up traces of nuclear explosions anywhere in the world. The detector atop the CTBTO's headquarters in Vienna, Austria, still catches vestiges of the Chernobyl disaster that occurred 25 years ago. http://www.washingtonpost.com/national/as-fukushima-fallout-circles-the-globe-nuclear-sleuths-sift-it-for-clues/2011/03/30/AFfnQBHC_story.html

Japan Update: To Release Low-Level Radioactive Water In Ocean

Automated Trader - The IAEA urged the Japanese government on Wednesday to evacuate residents in the village, but the government has not issued any such order, saying Japan's method of radiation detection in the air, soil and water is more accurate than the IAEA's.
http://www.automatedtrader.net/real-time-news/73506/japan-update-to-release-low_level-radioactive-water-in-ocean

Fukushima 'much bigger than Chernobyl'

Sydney Morning Herald – A Russian anti-nuclear activist, Natalia Mironova, says that the Fukushima nuclear disaster is "much bigger than Chernobyl" and could rewrite the international scale used to measure the severity of atomic accidents.

http://www.smh.com.au/environment/fukushima-much-bigger-than-chernobyl-20110402-1cs73.html

United States and Poland Mark Milestone in Nuclear Security Cooperation

Your Nuclear News (press release) – The Polish Customs Service announced achievement of a significant milestone in their shared effort to combat nuclear terrorism. Since 2007, NNSA has been working with the Polish Customs Service to organize a training program for customs officers and border guards to prevent the smuggling of commodities that could be used by proliferators or terrorists.
http://www.yournuclearnews.com/united+states+and+poland+mark+milestone+in+nuclear+security+cooperation_61457.html

Will Fukushima Force Iran to Reconsider Nuclear Program?

Carnegie Endowment for International Peace - The Iranian government's nuclear program has been marked by poor safety practices and earthquake-prone topography, creating the potential risk for a natural\radioactive disaster like Fukushima, up until now there has been little of the way of a public debate in Iran.
http://www.carnegieendowment.org/publications/index.cfm?fa=view&id=43403

The Week in Homeland Security: International Aviation Security, Terror Threats Up for Discussion
Rob Margetta, Congressional Quarterly Staff

House Homeland Security subcommittees are set this week to discuss a pair of topics that only promise to get bigger this year: expanding international cooperation on aviation security and the homeland security impact of the current unrest in the Middle East and North Africa.

The situations in Egypt, Libya, Tunisia and other regions that have seen recent political upheaval are still in flux, but security experts are already debating whether the United States will ultimately face greater threats from groups such as al Qaeda in the Arabian Peninsula (AQAP) and al Qaeda in the Islamic Maghreb. Rep. Patrick Meehan, R-Pa., chairman of the Subcommittee on Counterterrorism and Intelligence, said he wants to take a holistic view of how the current climate of political instability affects the terrorist threat.

"I have major concerns about Islamist prison breaks in Egypt, reduced cooperation combating AQAP in Yemen, a return to terrorism by [Libyan autocrat Muammar el-Qaddafi], and al Qaeda elements within the Libyan opposition," he said. "Each of these issues alone is a huge challenge; taken together, they raise many questions about our safety here at home."

Meehan went outside of the current slate of government officials for his witness list. Scheduled to testify are a group of think tank experts including Thomas Joscelyn, a senior fellow at the Foundation for Defense of Democracies, Philip Mudd, senior research fellow at the New America Foundation's Counterterrorism Strategy Initiative and Rick 'Ozzie' Nelson, senior fellow and director at the Center for Strategic and International Studies' Homeland Security and Counterterrorism Program.

The hearing is scheduled for Wednesday at 10:30 a.m.

Aviation Security

A spate of thwarted terror incidents over the past two years, including the 2009 Christmas Day bombing attempt and the 2010 printer cartridge plot, have put a premium on expanding aviation security standards beyond U.S. borders and into the foreign nations that fly passengers and cargo to America.

The issue has been on the minds of lawmakers and administration officials as well as the private sector companies that provide shipping and security services. But a central question still remains: how can the United States push for consistent cargo and passenger screening standards in a world where its foreign partners don't share its security concerns? The Subcommittee on Transportation Security is aiming to explore that concern and a host of others.

"Cooperation with our international partners is a vital element to protecting aviation against terrorism," Chairman Mike D.

Rogers, R-Ala., said. "From intelligence and information sharing to passenger screening technology and standards, we must continue to work closely with our international partners to strengthen aviation security."

Rogers said the hearing will examine the Transportation Security Administration's program for assessing foreign security, as well as the role the International Civil Aviation Organization — the body that sets standards for international pilot qualification and airplane equipment safety — can play in harmonizing screening.

The hearing is scheduled for Thursday at 10 a.m., with a witness list that includes John Halinski, assistant administrator for global strategies at TSA, Filip Cornelis, head of the aviation security unit at the European Commission's Directorate General for Mobility and Transport, and Rafi Ron, president of the consulting group New Age Security Solutions.

Other homeland security-related events this week include:

Monday, April 4

• The Immigration Policy Institute will hold a phone discussion titled "Are House Leaders Attacking Legal Immigration?" 2:30 p.m., Washington.

• The Anti-Defamation League will hold a conference on U.S. Middle East policy and anti-defamation issues. 8 a.m. Monday and Tuesday, Washington.

• The Center for Strategic and International Studies will hold an address titled "Public Opinion Update: Yemen Baseline and Afghan Trends." 11 a.m., Washington.

• The Woodrow Wilson International Center for Scholars will hold a discussion titled "Iran: From Civil Society Protest to Political Alternative?" Noon, Washington.

• The Center for American Progress will host a discussion titled "Who is the Libyan Opposition?" Noon, Washington.

• The Jerusalem Fund for Education and Community Development will hold a discussion titled "Right Wing Israeli Policy: Implications for the Arab Minority." 12:30 p.m., Washington.

• The Human Rights First will hold a discussion titled "Seizing the Moment for U.S. Policy in Egypt." 2 p.m., Washington.

• Rep. Howard P. 'Buck' McKeon, R-Calif., will hold a news conference to discuss U.S. military operations in Libya and the process to amend the fiscal 2012 National Defense Authorization Act. 2 p.m., Washington.

• The Alexander Hamilton Society will hold a discussion titled "The Consequences of a Nuclear Iran." 5:30 p.m., Washington.

Tuesday, April 5

• The House Appropriations Homeland Security Subcommittee hold a closed hearing titled "Weapons of Mass Destruction Countermeasures - Threat, Programs and Funding." 2 p.m., Washington.

• House Armed Services Strategic Forces Subcommittee will hold a hearing on the fiscal 2012 budget request for Department of Energy atomic energy defense activities and Department of Defense nuclear forces programs. 11:30 a.m..

• House Appropriations Defense Subcommittee will hold a hearing on the fiscal 2012 budget for the Defense Health Affairs Office. 10 a.m., Washington.

• The House Homeland Security Border and Maritime Security Subcommittee will hold a hearing titled "Using Resources Effectively to Secure Our Border at Ports of Entry — Stopping the Illicit Flow of Money, Guns and Drugs." 10 a.m., Washington

• House Armed Services will hold a hearing on the fiscal 2012 budget for U.S. Transportation Command and U.S. Africa Command.2 p.m., Washington.

• Senate Intelligence will hold a closed hearing on pending intelligence matters. 2:30 p.m., Washington.

• House Intelligence will hold a closed hearing on the fiscal 2012 budget for the CIA. 10 a.m., Washington.

• Senate Armed Services will hold a hearing on the defense authorization request for fiscal 2012 for U.S. Northern Command and U.S. Southern Command. 9:30 a.m., Washington.

• Senate Commerce, Science and Transportation will hold a hearing on "Tourism in America: Removing Barriers and Promoting Growth," with witnesses including John Wagner, executive director for admissibility and passenger programs at the Customs and Border Protection Office of Field Operations. 10 a.m., Washington.

• The Cato Institute will hold a Capitol Hill briefing titled "The War in Libya: What Is the Role of Congress?" Noon, Washington.

• The U.S. Institute of Peace will host a discussion with Yemeni political opposition leaders titled "The Future of Yemen." 9:30 a.m., Washington.

• House Judiciary Crime, Terrorism and Homeland Security Subcommittee will hold a hearing titled "Justice for America: Using Military Commissions to Try the 9/11 Conspirators." 10 a.m., Washington.

• House Armed Services Strategic Forces Subcommittee will hold a hearing on the fiscal 2012 budget request for Department of Energy atomic energy defense activities and Department of Defense nuclear forces programs. 11:30 a.m., Washington.

• House Judiciary Immigration Policy and Enforcement Subcommittee will hold a hearing on the Security and Fairness Enhancement (SAFE) for America Act (HR 704). 1:30 p.m., Washington.

• The House Appropriations Homeland Security Subcommittee will hold a closed hearing titled "Weapons of Mass Destruction Countermeasures - Threat, Programs and Funding." 2 p.m., Washington.

Wednesday, April 6

• The House Appropriations Subcommittee on Commerce, Justice, Science and Related Agencies will hold a hearing on the FBI's fiscal 2012 budget. 9 a.m., Washington.

• The Senate Homeland Security and Governmental Affairs Committee will hold a confirmation hearing on the nomination of Rafael Borras to be undersecretary of Homeland Security for management. 10 a.m., Washington.

• The House Armed Services Committee will hold a hearing on the fiscal 2012 budget for U.S. Pacific Command and U.S. Forces Korea. 10 a.m., Washington.

• The House Science, Space and Technology Committee Subcommittee on Investigations and Oversight will hold a hearing on the Screening of Passengers by Observation Techniques (SPOT) program operated by the Transportation

Security Administration. 10 a.m., Washington.
• The House Appropriations Homeland Security Subcommittee will hold a hearing on the fiscal 2012 budget for the Federal Emergency Management Agency. 10 a.m., Washington.
• The Senate Appropriations Defense Subcommittee will hold a hearing on the fiscal 2012 budget for the Defense Health Program. 10 a.m., Washington.
• The House Judiciary Subcommittee on Intellectual Property, Competition and the Internet will hold a hearing on strengthening intellectual property rights for online commerce, with witnesses including John Morton, head of Immigration and Customs Enforcement. 10:45 a.m., Washington.
• The House Energy and Commerce Subcommittee on Oversight and Investigations will hold a hearing on "The U.S. Government Response to the Nuclear Power Plant Incident in Japan." 9 a.m., Washington.
• The Senate Environment and Public Works Committee will old a hearing on state and local perspectives on transportation. 10 a.m., Washington.
• The House Financial Services Subcommittee on Insurance, Housing and Community Opportunity Subcommittee will mark up legislative proposals that would revise the National Flood Insurance Program. 2 p.m., Washington.
• The House Foreign Affairs Subcommittee Terrorism, Nonproliferation, and Trade Subcommittee will hold a hearing titled "Financial Hardball: Corralling Terrorists and Proliferators." 2 p.m., Washington.

Thursday, April 7

• The House Appropriations Commerce, Justice, Science Subcommittee will hold a hearing on the National Institute of Science and Technology's fiscal 2012 budget. 10 a.m., Washington.
• Senate Intelligence will hold a closed hearing on pending intelligence matters. 2:30 p.m., Washington.
• House Intelligence will hold a closed hearing on the fiscal 2012 budget for the National Reconnaissance Program and National Geospatial Program. 10 a.m., Washington.
• Senate Armed Services will hold a hearing on the defense authorization request for fiscal 2012 for U.S. Transportation Command and U.S. Africa Command. 9:30 a.m., Washington.
• House Appropriations Homeland Security Subcommittee will hold a hearing on the fiscal 2012 budget for the Secret Service. 2 p.m., Washington.
• Senate Homeland Security and Governmental Affairs will hold a hearing on border security efforts at the local level. 2:30 p.m., Washington.
• Senate Finance will hold a nomination hearing for David S. Cohen to be undersecretary of the Treasury for terrorism and financial crimes. 10 a.m., Washington.
• The National Defense University Board of Visitors will hold a two-day meeting to discuss defense transformation, faculty development, facilities, information technology, curriculum development, post-9/11 initiatives, and other operational issues and areas of interest affecting the day-to-day operations of the National Defense University and its components. 11:30 a.m. Thursday, 8:30 a.m. Friday; Washington.
• The Senate Homeland Security and Governmental Affairs Committee will hold its latest in a series of hearings titled "Securing the Border," featuring testimony from border state security officials. 2:30 p.m., Washington.
• House Armed Services Committee will hold a hearing on the challenges associated with the repeal of "Don't Ask, Don't Tell" policies relating to gay and lesbian service members. 1 p.m., Washington.

From: OST01 HOC
Sent: Monday, April 04, 2011 1:03 AM
To: PMT02 Hoc; PMT11 Hoc; Hoc, PMT12
Cc: FOIA Response.hoc Resource
Subject: FW: 4APR 1331 Speedi Data
Attachments: FUKUSHIMA1 air concentrationüi13-14hüj.gif; FUKUSHIMA1 air concentrationüi14-15hüj.gif; FUKUSHIMA1 air concentrationüi15-16hüj.gif; FUKUSHIMA1 air doseüi13-14hüj.gif; FUKUSHIMA1 air doseüi14-15hüj.gif; FUKUSHIMA1 air doseüi15-16hüj.gif; FUKUSHIMA1 wind(13hüj.gif

-----Original Message-----
From: HOO Hoc [mailto:HOO.Hoc@nrc.gov]
Sent: Monday, April 04, 2011 1:03 AM
To: LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: 4APR 1331 Speedi Data

From: JapanEmbassy, TaskForce[SMTP:JAPANEMBASSYTASKFORCE@STATE.GOV]
Sent: Monday, April 04, 2011 12:59:15 AM

(b)(6)

Subject: 4APR 1331 Speedi Data
Auto forwarded by a Rule

000/495

Lynda Hinds
Staff Assistant

(03) 3224- 5370

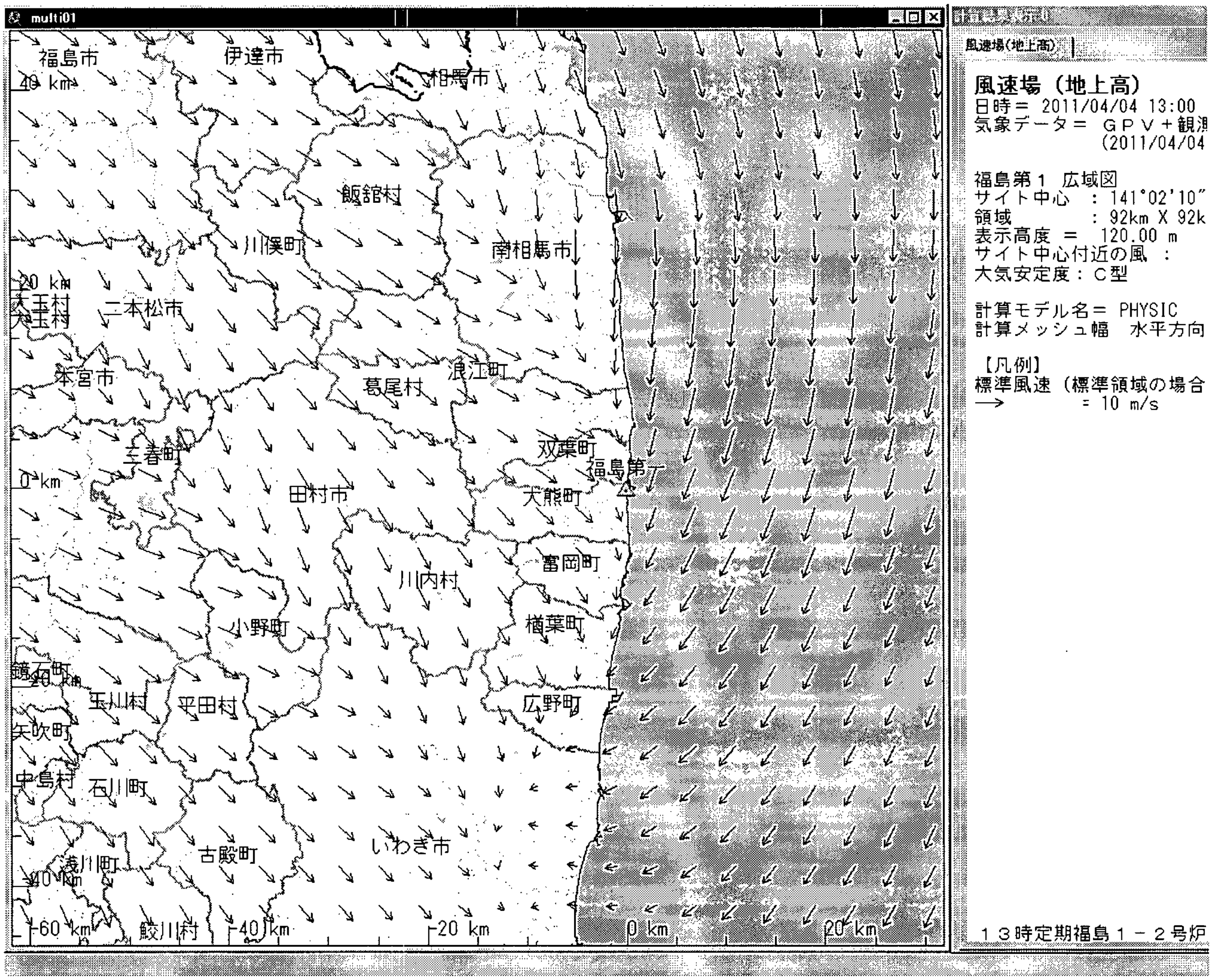
-----Original Message-----
From: nustec [mailto:spd01@nustec.or.jp]
Sent: Monday, April 04, 2011 1:31 PM
(b)(6)

Subject: 4/4　13時SPEEDI単位量放出図形イメージの送付

関係者各位

お世話になっております。
原子力安全技術センター　SPEEDI担当です。
4/4　13時のSPEEDI単位量放出図形のイメージデータを送付致します。
ご確認のほど、よろしくお願い致します。

Please find attached 13:00[04-Apr] SPEEDI Data
NUSTEC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小野町
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風速場（地上高）
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(2011/04/04
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サイト中心 ： 141°02'10"
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表示高度 ＝ 120.00 m
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計算モデル名＝ PHYSIC
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【凡例】
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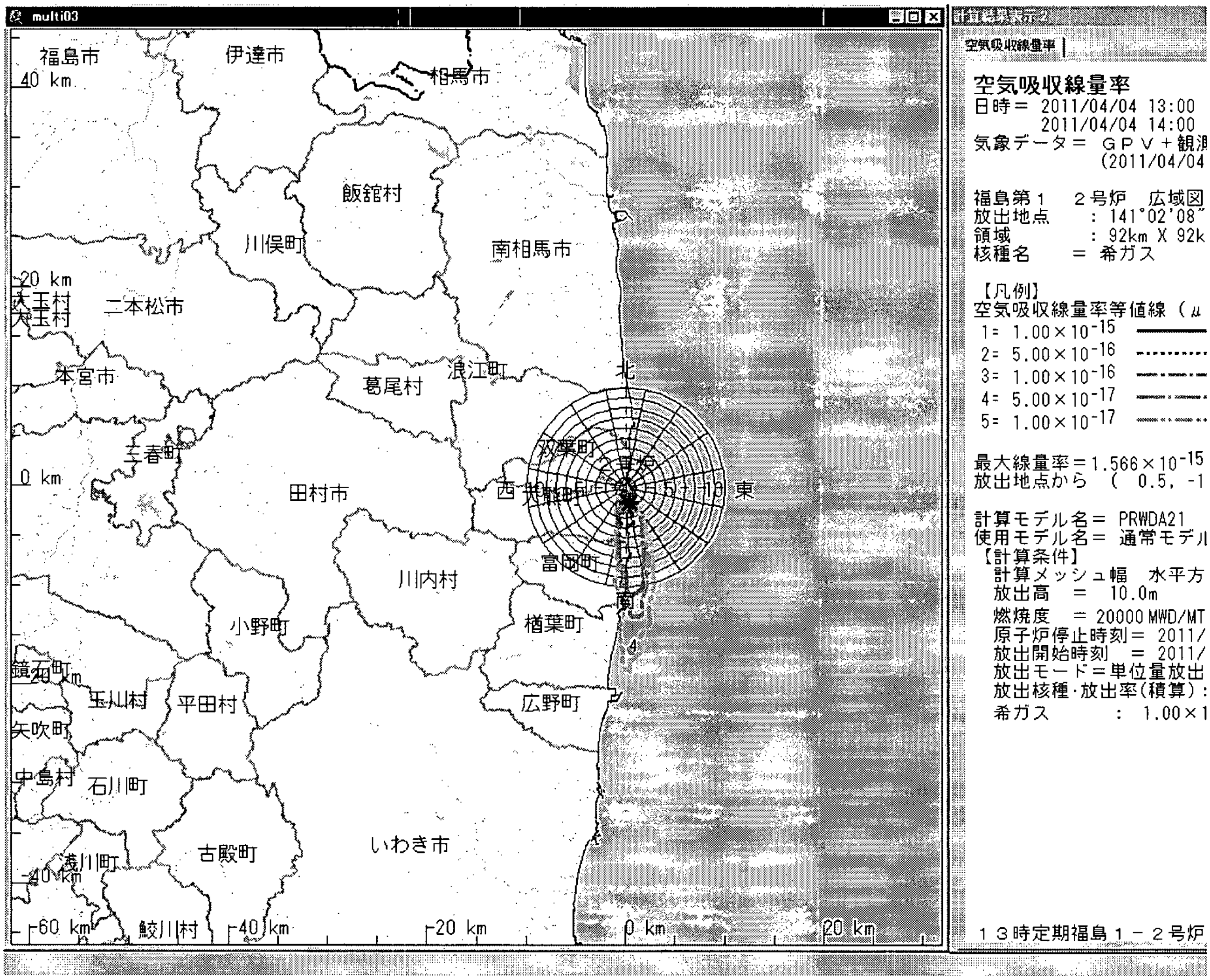
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2011/04/04 14:00
気象データ＝ ＧＰＶ＋観
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放出地点　　: 141°02'08"
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【凡例】
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使用モデル名＝ 通常モデル
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燃焼度　＝ 20000 MWD/MT
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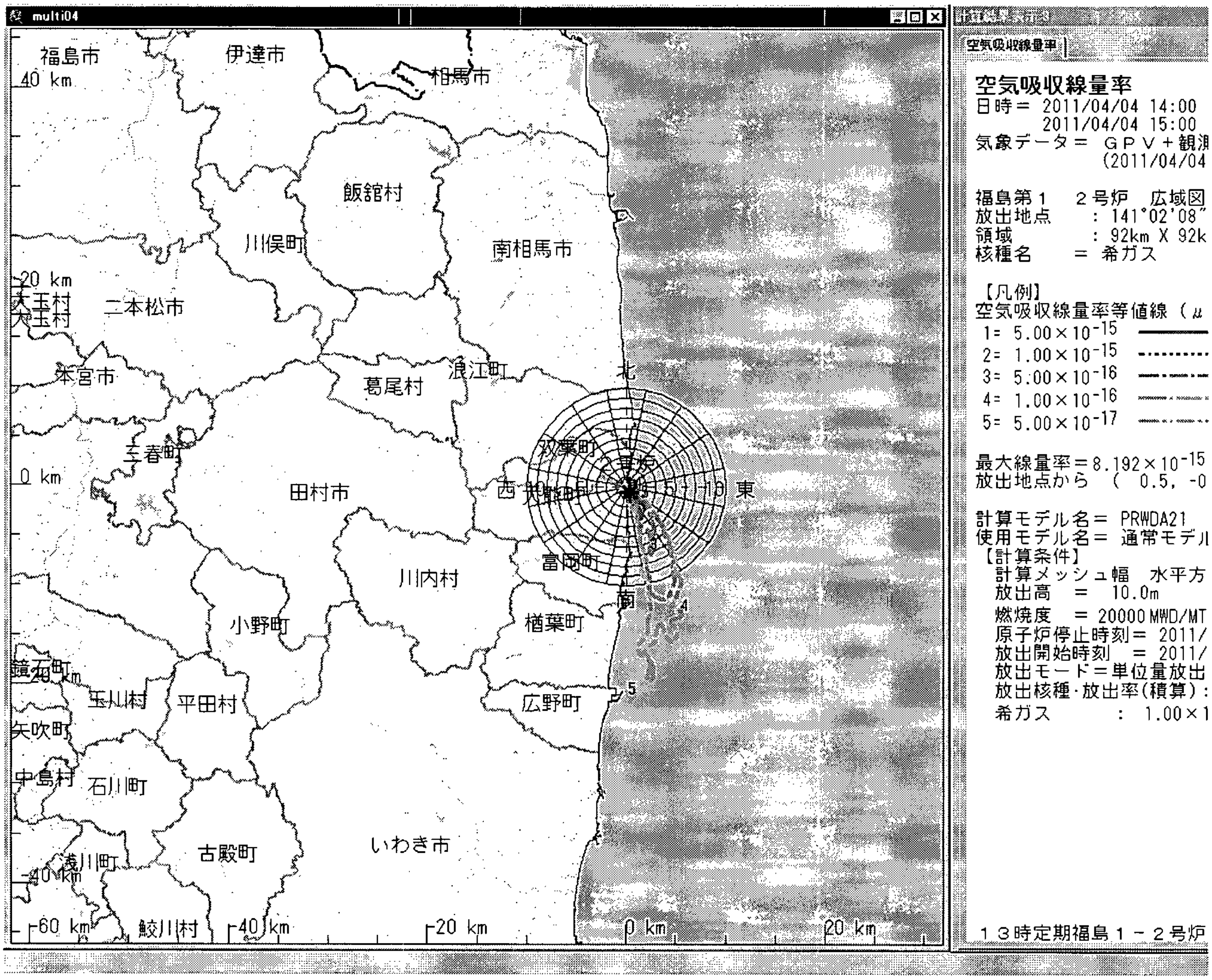
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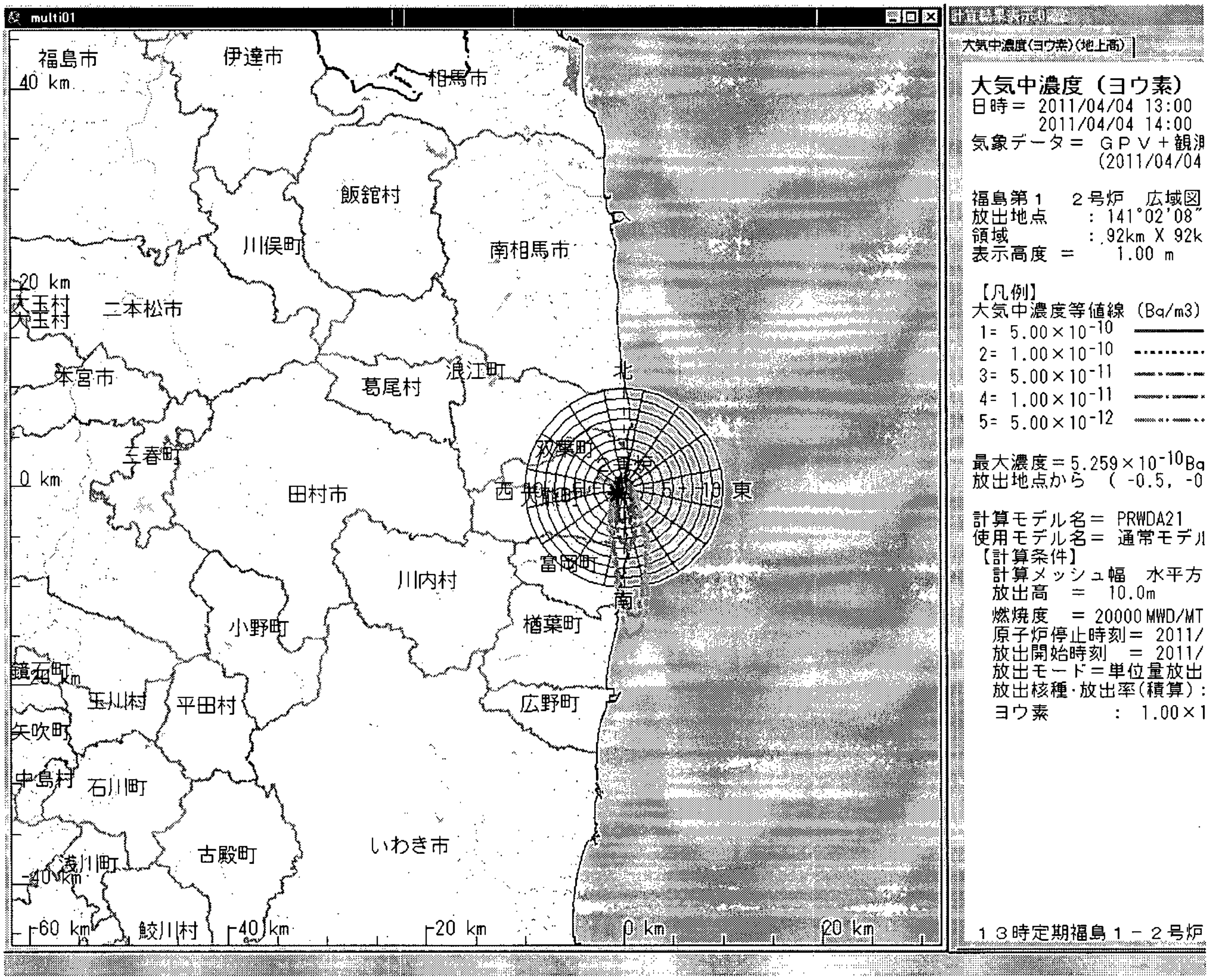
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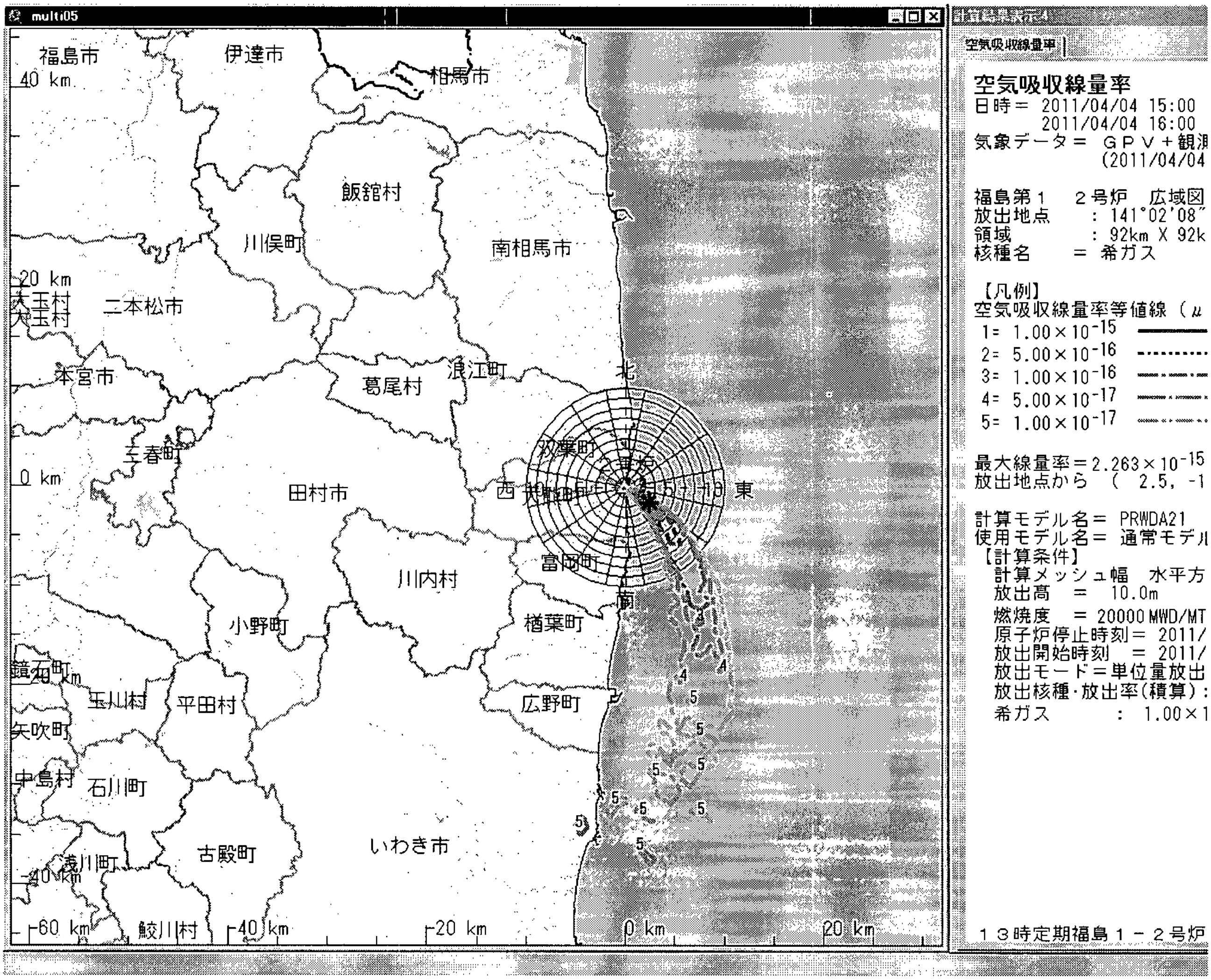
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空気吸収線量率
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2011/04/04 16:00
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(2011/04/04
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領域　　　　: 92km X 92k
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空気吸収線量率等値線（μ
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使用モデル名＝ 通常モデル
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燃焼度　＝ 20000 MWD/MT
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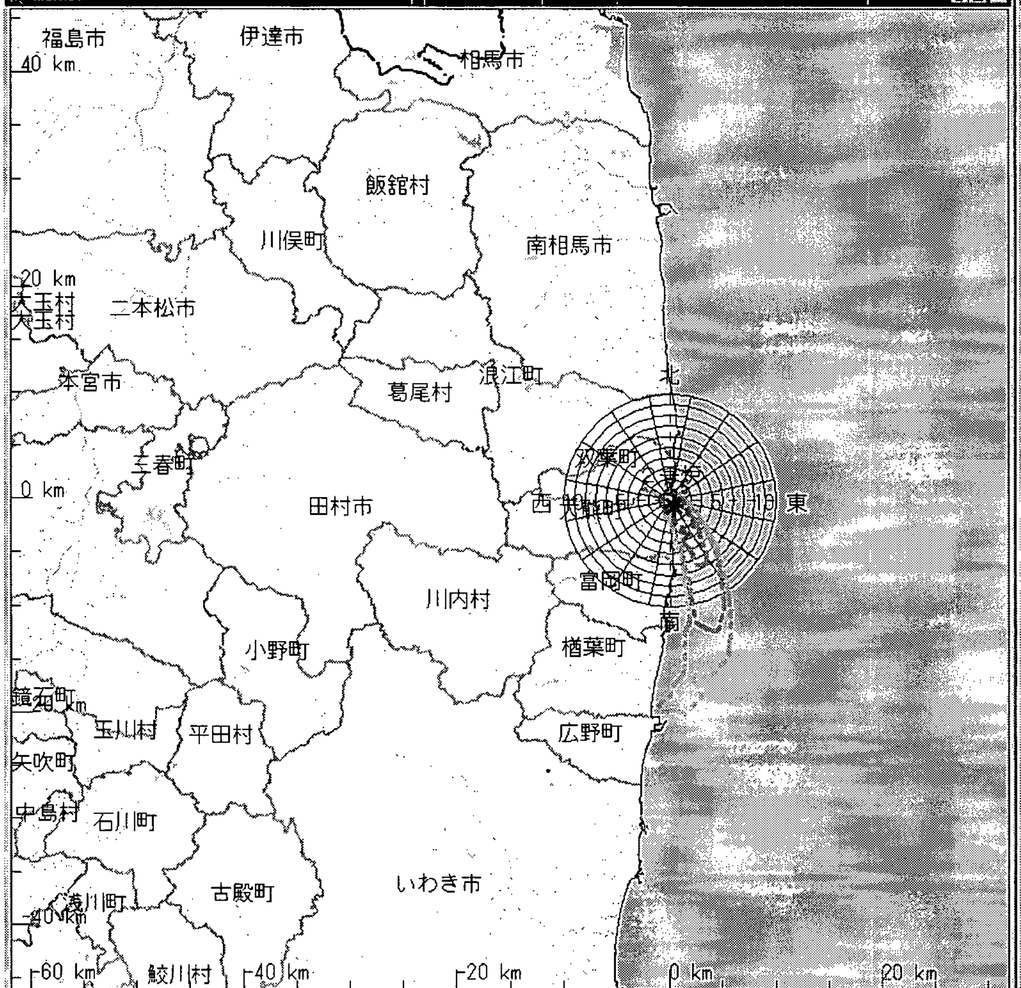
放出開始時刻　＝ 2011/
放出モード＝単位量放出
放出核種・放出率(積算)：
希ガス　　　：　1.00×1
１３時定期福島１－２号炉

multi01



大気中濃度(ヨウ素)(地上高)

大気中濃度（ヨウ素）
日時＝ 2011/04/04 14:00
2011/04/04 15:00
気象データ＝ ＧＰＶ＋観測
(2011/04/04

福島第１　２号炉　広域図
放出地点　: 141°02'08"
領域　: 92km X 92k
表示高度 = 1.00 m

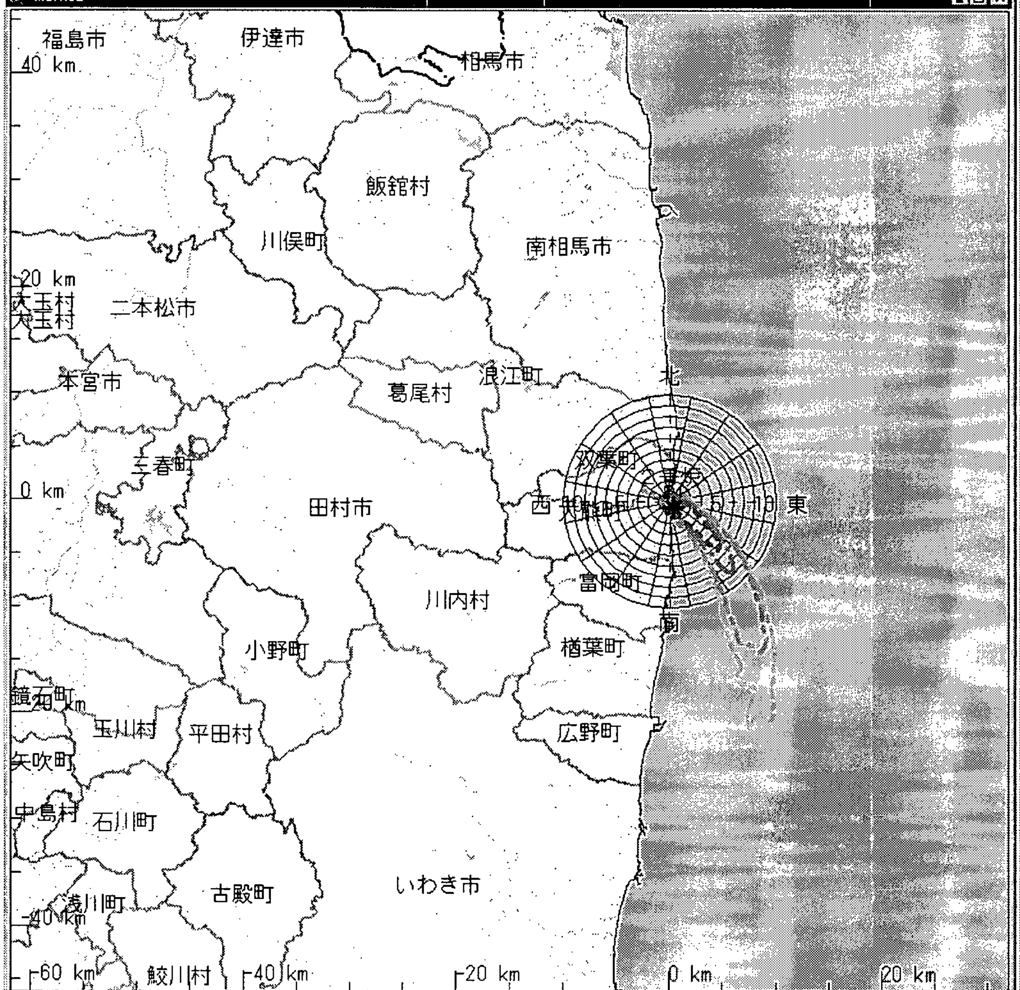
【凡例】
大気中濃度等値線 (Bq/m3)
1= 5.00×10^{-10}
2= 1.00×10^{-10}
3= 5.00×10^{-11}
4= 1.00×10^{-11}
5= 5.00×10^{-12}

最大濃度＝7.526×10^{-10}Bq
放出地点から　(0.5, -0

計算モデル名＝ PRWDA21
使用モデル名＝ 通常モデル
【計算条件】
計算メッシュ幅　水平方
放出高　＝ 10.0m
燃焼度　＝ 20000 MWD/MT
原子炉停止時刻＝ 2011/
放出開始時刻　＝ 2011/
放出モード＝単位量放出
放出核種・放出率(積算)：
ヨウ素　: 1.00×1

１３時定期福島１－２号炉

multi02



大気中濃度(ヨウ素)(地上高)

大気中濃度（ヨウ素）
日時＝ 2011/04/04 15:00
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気象データ＝ ＧＰＶ＋観測
(2011/04/04

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放出地点　　: 141°02'08"
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【凡例】
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3= 5.00×10^{-11}
4= 1.00×10^{-11}
5= 5.00×10^{-12}

最大濃度＝7.990×10^{-10}Bq
放出地点から　(　0.5, -0

計算モデル名＝ PRWDA21
使用モデル名＝ 通常モデル
【計算条件】
計算メッシュ幅　水平方
放出高　＝　10.0m
燃焼度　＝ 20000 MWD/MT
原子炉停止時刻＝ 2011/
放出開始時刻　＝ 2011/
放出モード＝単位量放出
放出核種·放出率(積算)：
ヨウ素　　　：　1.00×1

１３時定期福島１－２号炉

Bozin, Sunny

From: Nieh, Ho
Sent: Monday, April 04, 2011 4:50 PM
To: 'Boffey, Philip'
Subject: RE:

Dear Phil,

Please feel free to give me a ring at your convenience. I would be interested in better understanding the issues you are interested.

Best regards,

Ho

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

From: Boffey, Philip [mailto:phboff@nytimes.com]
Sent: Monday, April 04, 2011 4:10 PM
To: Nieh, Ho
Cc: 'cmrostendorf@nrc.gov'
Subject:

Hi Mr. Ho:

I'm the primary editorial writer at the Times dealing with nuclear issues. In the wake of the Japanese nuclear plant accident, it seems clear that I will need to follow the nuclear safety issue in this country and abroad closely for the forseeable future.

I'm wondering if it would be feasible for me to interview Mr. Ostendorff and you or other appropriate staff members for, say, half an hour on this coming Friday, April 8th. The interview would be on background, would seek your views on the key issues to keep my eye on, and mostly just let you size me up for future reference. I'm hoping to establish enough mutual confidence that I can bounce questions off of Mr. Ostendorff and you and and get background replies as key issues arise. I've done that with mutually satisfactory results on health care reform issues, mostly because key officials recognize that I'm not looking for breaking news or direct quotes but rather for guidance on how to interpret information that is publicly available.

I'll be making a similar request of other commission members and their chiefs of staff.

Philip M. Boffey
Editorial Writer
The New York Times
620 Eighth Avenue
New York, N.Y. 10018
Phone: (212) 556-4485
Fax: 212-556-3815
Email: phboff@nytimes.com

000/496

Bozin, Sunny

From: Nieh, Ho
Sent: Monday, April 04, 2011 4:12 PM
To: Ostendorff, William
Subject: FW:

FYI – will follow up with other EAs.

Ho

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

From: Boffey, Philip [mailto:phboff@nytimes.com]
Sent: Monday, April 04, 2011 4:10 PM
To: Nieh, Ho
Cc: 'cmrostendorf@nrc.gov'
Subject:

Hi Mr. Ho:

I'm the primary editorial writer at the Times dealing with nuclear issues. In the wake of the Japanese nuclear plant accident, it seems clear that I will need to follow the nuclear safety issue in this country and abroad closely for the forseeable future.

I'm wondering if it would be feasible for me to interview Mr. Ostendorff and you or other appropriate staff members for, say, half an hour on this coming Friday, April 8th. The interview would be on background, would seek your views on the key issues to keep my eye on, and mostly just let you size me up for future reference. I'm hoping to establish enough mutual confidence that I can bounce questions off of Mr. Ostendorff and you and and get background replies as key issues arise. I've done that with mutually satisfactory results on health care reform issues, mostly because key officials recognize that I'm not looking for breaking news or direct quotes but rather for guidance on how to interpret information that is publicly available.

I'll be making a similar request of other commission members and their chiefs of staff.

Philip M. Boffey
Editorial Writer
The New York Times
620 Eighth Avenue
New York, N.Y. 10018
Phone: (212) 556-4485
Fax: 212-556-3815
Email: phboff@nytimes.com

Nelson, Robert

From: Nelson, Robert
Sent: Monday, April 04, 2011 9:52 AM
To: Barkley, Richard
Subject: FYI: Review 50-Mile EPZ-related Response
Attachments: Letter to Astorino - March 29 2011 FINAL _ERO.docx; image001.png

Importance: High

I concur on the attached.

R.A. Nelson

Robert A. Nelson
NRR External Communications Coordinator, Japan Event
Deputy Director
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation
U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment
E-mail: robert.nelson@nrc.gov | Office: (301) 415-1453 | Cell: (b)(6) | Fax: (301) 415-2102|

From: Markley, Michael
Sent: Monday, April 04, 2011 8:53 AM
To: Nelson, Robert
Cc: Oesterle, Eric
Subject: FW: Action: Review 50-Mile EPZ-related Response
Importance: High

Nelson,

Trish is good with the letter. Eric and I support your concurrence. Please send an e-mail to Rich Barkley indicating the same if you are okay with it.

Mike

From: Markley, Michael
Sent: Monday, April 04, 2011 8:04 AM
To: Barkley, Richard
Cc: Roberts, Darrell; Nelson, Robert; Oesterle, Eric; Dean, Bill
Subject: FW: Action: Review 50-Mile EPZ-related Response
Importance: High

Rich,

We got OPA buy-in to our suggested enhancements to the letter but had not heard back from Trish Milligan. She has been the primary author of the EPZ Q&As.

My apology. I should have closed the loop with you on Friday.

Mike

000/497

From: Oesterle, Eric
Sent: Monday, April 04, 2011 7:58 AM
To: Milligan, Patricia
Cc: Markley, Michael
Subject: FW: Action: Review 50-Mile EPZ-related Response
Importance: High

Trish,

Have not heard back from you on the proposed changes to this letter. Please have a quick look this AM so we can give our OK to Region I folks. They are anxious to get this letter out. Thanks!

Eric

Eric R. Oesterle
NRR Communications Team
Senior Policy Analyst (NRO/DNRL)
U.S. Nuclear Regulatory Commission
301-415-1365

From: Oesterle, Eric
Sent: Wednesday, March 30, 2011 10:26 AM
To: Harrington, Holly; Milligan, Patricia
Subject: FW: Action: Review 50-Mile EPZ-related Response
Importance: High

Holly & Patricia,

Nelson asked me to coordinate our comments with you before we provide back to Rich Barkley. Please have a look at the attached, my proposed changes are in "track changes". Thanks!

Eric

Eric R. Oesterle
NRR Communications Team
Senior Policy Analyst (NRO/DNRL)
U.S. Nuclear Regulatory Commission
301-415-1365

From: Oesterle, Eri
Sent: Wednesday, March 30, 2011 9:45 AM
To: Nelson, Robert
Cc: Markley, Michael
Subject: Action: Review 50-Mile EPZ-related Response
Importance: High

Nelson,

Mike and I have looked at the draft letter to Mr. Astorino and provided our comments in track changes on the attached. OPA (i.e., Scott Burnell) is out of the office today so we have not coordinated with him on this letter.

Please have a look at our proposed changes for your approval as you are on concurrence for this letter. Thanks!

Eric

Eric R. Oesterle
NRR Communications Team
Senior Policy Analyst (NRO/DNRL)
U.S. Nuclear Regulatory Commission
301-415-1365

From: Barkley, Richard
Sent: Tuesday, March 29, 2011 4:42 PM
To: Markley, Michael; Oesterle, Eric
Cc: Nelson, Robert; Dean, Bill; Milligan, Patricia
Subject: Action: 50-Mile EPZ-related Response
Importance: High

Mike/Eric,

I spoke with Nelson and he indicated that you could do a review of the attached letter using information provided you by Trish Milligan on this subject.

I will forward the incoming letter separately.

The subject is quite sensitive, and the letter is being sent to the County Executive for Westchester County (which hosts Indian Point). Thus I expect this letter to get wide distribution when it is received.

I marked NRR and NSIR down for concurrence given the sensitivity of the subject, but you are welcome to adjust that as you see fit. I want to make sure the letter is well vetted since Indian Point has had a long history of EP concerns and issues, and Indian Point is the first plant brought up in the newspapers and at Congressional hearings on the ability to safely evacuate beyond 10 miles.

Any suggestions you can forward to me would be greatly appreciated. Mr. Dean is eager to try and have a reply out to Mr. Astorino by Friday if possible.

From: ODaniell, Cynthia
Sent: Tuesday, March 29, 2011 4:18 PM
To: Barkley, Richard
Subject: Saved to your g:\ora\barkley\Letter to Astorino - March 29 2011 FINAL.docx

I'll print and place in concurrence, too.

From: OST01 HOC
Sent: Saturday, March 26, 2011 12:41 AM
To: PMT02 Hoc; PMT11 Hoc; Hoc, PMT12
Cc: FOIA Response.hoc Resource
Subject: FW: Radiation level at Fukushima NO.1 NPP as of March 26, 0800
Attachments: TEPCO-Rad Data at Plant-March 26, 0800.xlsx

From: HOO Hoc [mailto:HOO.Hoc@nrc.gov]
Sent: Saturday, March 26, 2011 12:40 AM
To: LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: Radiation level at Fukushima NO.1 NPP as of March 26, 0800

From: JapanEmbassy, TaskForce[SMTP:JAPANEMBASSYTASKFORCE@STATE.GOV]
Sent: Saturday, March 26, 2011 12:38:34 AM
(b)(6)
Subject: FW: Radiation level at Fukushima NO.1 NPP as of March 26, 0800
Auto forwarded by a Rule

Jennifer Clever
Japan Emergency Command Center
U.S. Embassy, Tokyo

SBU
This email is UNCLASSIFIED.

0001498

From: Droggitis, Spiros
Sent: Tuesday, April 05, 2011 9:16 AM
To: Powell, Amy; Decker, David; Riley (OCA), Timothy
Subject: FW: DNDO News 4/5/2011
Attachments: DNDO NEWS 4-5-11.htm

From: Bolling, Lloyd [mailto:Lloyd.Bolling@dhs.gov]
Sent: Tuesday, April 05, 2011 9:12 AM
To: Layton, Michael; Reis, Terrence; Jones, Cynthia; Wastler, Sandra; Jackson, Gerard
Cc: Droggitis, Spiros; Dembek, Stephen; Owens, Janice; Breskovic, Clarence; Casey, Timothy; Mike_Stephens@doh.state.fl.us
Subject: DNDO News 4/5/2011

Attached is the DNDO News for Tuesday, April 05, 2011.

Summary of news items:

1. DNDO Director Warren Stern to testify at congressional hearing on WMD today at 2pm.
2. Tri-State first responders hold dirty bomb drills all week.
3. Japan crisis mapped and documented by nuclear forensics.
4. The Georgian port of Batumi was temporarily closed due to detection of radioactivity in scrap metal.
5. IAEA Chief: No more "Business as Usual" after Fukushima.
6. Poland takes over anti-WMD program from U.S.

Lloyd Bolling, NRC Liaison
Operations Support Directorate
Domestic Nuclear Detection Office
Department of Homeland Security
Phone: 202-254-7123
Blackberry: (b)(6)
Fax: 202-254-7752
Lloyd.Bolling@dhs.gov

000/499

April 5, 2011 DNDO News Brief

Congressional Hearing Today
DNDO Director Warren Stern and Dr. Alexander Garza (OHA) will appear before the House Committee on Appropriations, Subcommittee on Homeland Security at 2:00 pm. The subject of the hearing is "WMD Countermeasures - Threat, Programs, and Funding" – the hearing will be classified/closed to the public. http://appropriations.house.gov/index.cfm?FuseAction=Hearings.Detail&HearingId=64&Month=4&Year=2011

Tri-State First Responders Hold Dirty Bomb Drills All Week
Debra Alfarone, New York's PIX11 / WPIX-TV - As part of the Securing the Cities initiative, hundreds of State and Local Law Enforcement and other first responders will participate in scenario driven drills in NYC. The goal is to make sure that the City can intercept and destroy a nuclear and radioactive device. http://www.wpix.com/wpix-dirty-bomb-drills,0,3418039.story; http://abclocal.go.com/wabc/story?section=news/local/new_york&id=8053617
http://www.recordonline.com/apps/pbcs.dll/article?AID=/20110405/NEWS/110409891/-1/SITEMAP
http://newyork.cbslocal.com/2011/04/05/first-responders-nypd-conduct-dirty-bomb-drill-in-nyc/

From Afar, a Vivid Picture of Japan Crisis
William J. Broad, New York Times - Thanks to the unfamiliar but sophisticated art of atomic forensics, experts around the world have been able to document the situation vividly. Over decades, they have become very good at illuminating the hidden workings of nuclear power plants, turning scraps of information into detailed analyses. http://www.nytimes.com/2011/04/03/science/03meltdown.html

Georgian Port of Batumi Suspends Operation Due to Radiation Detection
Trend News Agency - The Georgian port of Batumi temporarily ceased operation due to detection of radioactivity in scrap metal, the Port Authority on Tuesday. The Port Authority did not say where the scrap metal was to be exported. Several radiation safety teams are on the scene. http://en.trend.az/capital/business/1856102.html

IAEA Chief: No More "Business as Usual" After Fukushima
Trend News Agency - The conference was convened before the Fukushima 1 nuclear power plant was crippled by a massive earthquake and tsunami last month, and participants did not expect it to bring about significant changes in the international nuclear security framework. http://en.trend.az/regions/world/ocountries/1855457.html

Poland Takes Over Anti-WMD Program from US
Global Security Newswire - The U.S. has transferred management of a WMD anti-proliferation program to Poland, following the 200th graduation from the training initiative, the NNSA announced on Friday. http://www.globalsecuritynewswire.org/gsn/nw_20110404_7335.php

Nelson, Robert

From: Nelson, Robert
Sent: Tuesday, April 05, 2011 7:53 AM
To: Rihm, Roger; Meighan, Sean; Pickett, Douglas; Guzman, Richard; Kim, James; Watson, Bruce
Cc: Wertz, Trent; Nguyen, Quynh
Subject: RE: GTs 20110141 and 20110169
Attachments: image001.png

MNSS/FSME is the expert on decommissioning. I recommend that FSME provide the response.

R.A. Nelson

Robert A. Nelson
Deputy Director
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation
U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment
E-mail: robert.nelson@nrc.gov | Office: (301) 415-1453 | (b)(6) | Fax: (301) 415-2102|

From: Rihm, Roger
Sent: Monday, April 04, 2011 4:31 PM
To: Meighan, Sean; Pickett, Douglas; Guzman, Richard; Kim, James; Watson, Bruce
Cc: Nelson, Robert; Wertz, Trent; Nguyen, Quynh
Subject: RE: GTs 20110141 and 20110169

Just to clarify, I don't need a VY-specific discussion, but rather a more general discussion of decommissioning process/rules. Perhaps this should be done by Bruce Watson's Branch in FSME? I guess I initially thought this was an NRR topic, but perhaps not.

From: Meighan, Sean
Sent: Monday, April 04, 2011 3:55 PM
To: Pickett, Douglas; Guzman, Richard; Kim, James
Cc: Rihm, Roger; Nelson, Robert; Wertz, Trent; Nguyen, Quynh
Subject: RE: GTs 20110141 and 20110169

Good Afternoon Region I PMs:

Please see below tasking from OEDO. Please let me know if you cannot answer by requested time.

(FYI,,,, and I am not saying this just because OEDO is on CC,,,, Roger has blocked **A LOT** of work for NRR over the past couple of weeks. Let's do our best to deliver on this one)

s

> **From:** Rihm, Roge
> **Sent:** Monday, April 04, 2011 3:33 PM
> **To:** Meighan, Sean; Nguyen, Quynh
> **Cc:** Landau, Mindy

000/500

Subject: GTs 20110141 and 20110169
Importance: High

These are 2 letters about decommissioning at VY. They were on hold pending a 3/29 meeting between the chairman and the VT congressional delegation. I have been advised by OCA that we now need to send a fairly brief response to these letters that basically lays out the "ground rules" for decommissioning (including the SAFSTOR option) and what the NRC can and cannot control. I gather the point is that this is pretty much out of our hands.

Can I get perhaps a couple of paragraphs from NRR that do the above and I will turn it into letters responsive to the two GTs? Any chance I could get this by Weds/Thursday AM????? (SECY only gave me a short extension.)

Let me know what you can do for me. Thanks!

Nelson, Robert

From: Nelson, Robert
Sent: Tuesday, April 05, 2011 3:14 PM
To: Chernoff, Harold
Subject: FYI: Screening Meeting on Friday

I'll be on (b)(6) beginning at approx 11:30. Options for the 1 PM meeting.

1. Move to before 9:30 & I can chair
2. Defer until Monday
3. Hold the meeting with Joe.

You decide.

NELSON

0001501

Bozin, Sunny

From: Nieh, Ho
Sent: Tuesday, April 05, 2011 9:17 AM
To: 'phboff@nytimes.com'
Cc: Herr, Linda
Subject: Re:

Philip,

Commissioner Ostendorff and I would be glad to meet with you on Friday.

Please contact Linda Herr in our office to schedule the time.

She can be reached at 301-415-1759.

See you Friday.

Regards, Ho

Sent via BlackBerry

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

From: Boffey, Philip <phboff@nytimes.com>
To: Nieh, Ho
Cc: 'cmrostendorf@nrc.gov' <cmrostendorf@nrc.gov>
Sent: Mon Apr 04 16:09:41 2011
Subject:

Hi Mr. Ho:

I'm the primary editorial writer at the Times dealing with nuclear issues. In the wake of the Japanese nuclear plant accident, it seems clear that I will need to follow the nuclear safety issue in this country and abroad closely for the forseeable future.

I'm wondering if it would be feasible for me to interview Mr. Ostendorff and you or other appropriate staff members for, say, half an hour on this coming Friday, April 8th. The interview would be on background, would seek your views on the key issues to keep my eye on, and mostly just let you size me up for future reference. I'm hoping to establish enough mutual confidence that I can bounce questions off of Mr. Ostendorff and you and and get background replies as key issues arise. I've done that with mutually satisfactory results on health care reform issues, mostly because key officials recognize that I'm not looking for breaking news or direct quotes but rather for guidance on how to interpret information that is publicly available.

I'll be making a similar request of other commission members and their chiefs of staff.

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

000/502

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

Bozin, Sunny

From: Nieh, Ho
Sent: Wednesday, April 06, 2011 2:00 PM
To: Ostendorff, William
Subject: FW: NYTimes: U.S. Sees Array of New Threats at Japan's Nuclear Plant

Link to NYT article.

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

-----Original Message-----
From: Sharkey, Jeffry
Sent: Wednesday, April 06, 2011 4:59 AM
To: Nieh, Ho; Bubar, Patrice; Sosa, Belkys
Subject: FW: NYTimes: U.S. Sees Array of New Threats at Japan's Nuclear Plant

The nuclear plant in Japan faces an array of fresh threats that could persist indefinitely or increase as a result of stabilization efforts, according to the Nuclear Regulatory Commission. http://nyti.ms/hdia56

000/503

Nelson, Robert

From: Nelson, Robert
Sent: Wednesday, April 06, 2011 10:51 AM
To: Markley, Michael; Oesterle, Eric
Subject: Action:: OPA Answer to License Renewal Question

Please confirm status and add to database if/when approved by OPA.

NELSON

From: Anderson, Brian
Sent: Wednesday, April 06, 2011 10:47 AM
To: Susco, Jeremy
Cc: Nelson, Robert; Burnell, Scott
Subject: RE: OPA Answer to License Renewal Question

Great. Thanks, Jeremy!

From: Susco, Jeremy
Sent: Wednesday, April 06, 2011 10:45 AM
To: Anderson, Brian
Cc: Nelson, Robert; Burnell, Scott
Subject: Re: OPA Answer to License Renewal Question

Looks good. Go with it.

Jeremy

Sent from my NRC BlackBerry
Jeremy Susco,
(b)(6)

From: Anderson, Brian
To: Susco, Jeremy
Cc: Nelson, Robert; Burnell, Scott
Sent: Tue Apr 05 11:38:28 2011
Subject: OPA Answer to License Renewal Question

Jeremy –

I'm working with OPA to develop a generic answer to the question "How will the events in Japan affect license renewal for U.S. plants?" From DLR's perspective, is this answer okay?

The NRC's recently initiated review of U.S. plants will examine current practice at operating reactors to ensure proper actions will be taken if a severe event occurs – this covers plants regardless of where they are in their license lifetime. The events in Japan, based on what's known at this time, appear to be unrelated to issues examined in license renewal. The NRC's long-term review of its regulations will determine whether any revisions to license renewal reviews are called for.

Thanks for your help,

00\504

Brian

Nelson, Robert

From: Nelson, Rober
Sent: Wednesday, April 06, 2011 11:05 AM
To: Blount, Tom
Subject: RE: Response - Message from Arnie Gundersen

OK. Thanks for clarifying.

NELSON

-----Original Message
From: Blount, Tom
Sent: Wednesday, April 06, 2011 11:03 AM
To: Nelson, Robert; Bahadur, Sher; McGinty, Tim
Cc: Markley, Michael; Oesterle, Eric
Subject: RE: Response - Message from Arnie Gundersen

Nelson - I think your team (Fred Lyons) is working this item (among many others). It is a return letter currently in concurrence (ML#G20110196). I believe this is almost to the F/O....or I could be confusing the issues, and my apologies if I am.

Tom

-----Original Message----
From: Nelson, Robert
Sent: Wednesday, April 06, 2011 10:49 AM
To: Bahadur, Sher; McGinty, Tim; Blount, Tom
Cc: Markley, Michael; Oesterle, Eric
Subject: Response - Message from Arnie Gundersen
Importance: High

From the e-mail string below, Eric Leeds e-mail of 3/20 assigned this to DPR for follow-up. That's why my Comm Team has not acted.

Tim/Tom - If the Comm Team should treat this as normal correspondence, please advise & we'll get it assigned a yellow ticket for appropriate response.

NELSON

-----Original Message-
From: Bahadur, Sher
Sent: Tuesday, April 05, 2011 4:05 PM
To: Nelson, Robert
Subject: FW: Response - Message from Arnie Gundersen
Importance: High

Nelson - Sorry for catching you cold in LT meeting this morning on Gundersen Issue. Please see the enclosed string of e-mail.

000\505

- Sher

SHER BAHADUR; DIRECTOR (ACTING)
NRR/DIVISION OF SAFETY SYSTEMS
301-415-3283
sher.bahadur@nrc.gov

-----Original Message--
From: Dennig, Robert
Sent: Tuesday, March 22, 2011 8:51 AM
To: Nelson, Robert
Cc: McGinty, Tim; Blount, Tom; Lobel, Richard; Bahadur, Sher
Subject: FW: Response - Message from Arnie Gundersen

Please advise how to proceed. I'm not aware of any process for e-mail from the public. Thanks.

-----Original Message-----
From: Ruland, William
Sent: Sunday, March 20, 2011 5:29 PM
To: Leeds, Eric; Grobe, Jack
Cc: Dennig, Robert
Subject: Re: Response - Message from Arnie Gundersen

We will need to discuss. Our response should not be a "business as usual" response.
Bill Ruland, from
USNRC Blackberry

----- Original Message
From: Leeds, Eric
To: Weber, Michael; Wiggins, Jim
Cc: Blount, Tom; Boger, Bruce; Grobe, Jack; Virgilio, Martin; Itzkowitz, Marvin; Ruland, William; McGinty, Tim
Sent: Sun Mar 20 14:02:17 2011
Subject: RE: Response - Message from Arnie Gundersen

Agreed. Could also be an OIG issue. NRR should take the lead - Tim/Tom, please followup.

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

-----Original Message-----
From: Weber, Michael
Sent: Sunday, March 20, 2011 12:06 PM
To: Wiggins, Jim
Cc: Borchardt, Bill; Blount, Tom; Leeds, Eric; Boger, Bruce; Grobe, Jack; Virgilio, Martin; Itzkowitz, Marvin
Subject: Response - Message from Arnie Gundersen

Suggest it receive consideration as a 2.206 petition affecting BWR Mark I's.

----- Original Message -
From: Wiggins, Jim
To: Weber, Michael; Hackett, Edwin
Cc: Borchardt, Bill; Blount, Tom; Leeds, Eric

Sent: Sun Mar 20 09:22:46 2011
Subject: RE: FYI - Message from Arnie Gundersen

Should this go into a system like 2.206 or PRM....?????

-----Original Message----
From: Weber, Michael
Sent: Sunday, March 20, 2011 9:10 AM
To: Hackett, Edwin
Cc: Borchardt, Bill; Wiggins, Jim; Wittick, Brian
Subject: FYI - Message from Arnie Gundersen

Thanks, Ed

----- Original Message -
From: Hackett, Edwir
To: Borchardt, Bill; Virgilio, Martin; Weber, Michael; Leeds, Eric; Ruland, William
Sent: Sun Mar 20 08:49:20 2011
Subject: FW: IMPORTANT-Please read ASAP

FYI - Concerns related to NPSH credit for BWR Mark 1's.

Ed

From: Arnie Gundersen (b)(6) On Behalf Of Arnie Gundersen (b)(6)
Sent: Saturday, March 19, 2011 7:42 AM
To: Hackett, Edwin; Batkin, Joshua
Subject: IMPORTANT-Please read ASAP

Dear Josh and Ed,

There will be many lessons to learn from Fukushima, but one is staring us in the face right now. The Mark 1 has a single point of vulnerability, and any Mark 1 with this vulnerability could become another Fukushima. It is the NPSH credit that the ACRS and NRC staff knowingly allowed BWR's to take when they received Uprates. A leak in containment, not a gross rupture, will render their ECCS inoperable. You both know this to be true without armies of analysts to confirm it. The NRC could easily demand any reactor that has taken the NPSH credit to reduce power to a level where that NPSH credit is no longer necessary. The NRC could do this by Monday morning. There will be more to learn, but let's start with what has been painfully obvious to many of us for too many years already.

Arnie Gundersen
Fairewinds Associates, Inc
arnie@fairewinds.com<mailto:arnie@fairewinds.com>
802-865-9955

"If a Secretary of Agriculture endorsed better meat inspection, you wouldn't have a debate of near religious fervor about whether that person was pro- or anti-meat, whether he had sold out to the vegetarians.

You'd debate whether the stricter regulations made sense. It's somehow unique to nuclear power that, when one refuses to have nuclear power on the industry's terms, one gets chucked into a bin labeled 'anti-nuclear.' "

-Peter A. Bradford, former Commissioner of the Nuclear Regulatory Commission. 3/9/82

From:	HOO Hoc
Sent:	Thursday, April 07, 2011 10:45 PM
To:	LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject:	FW: monitoring data
Attachments:	110408113904(0001).pdf

FYI

-----Original Message-----
From: NAKAGAWA TOMOHIRO [mailto:tomohiro.nakagawa@mofa.go.jp]
Sent: Thursday, April 07, 2011 10:41 PM
(b)(6)

Subject: monitoring data

Huntington-san, Craig-san

Please find here attached the monitoring data.

V/R Tomohiro Nakagawa

****
中川智博(Tomohiro NAKAGAWA)
外務省北米局日米地位協定室
Status of U.S. Forces Agreement Division North American Affairs Bureau Ministry of Foreign Affairs
Tel：5501-8000（x 2478）

000/506

Fax : 5501-8281
****

D81015

幹, 中, 警 ← リエゾン

2011/4/8

4月8日　　福島第一（1F）

測定場所　①事務本館北（2号機より北西約0.8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−8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		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)	59.9	58.0	58.1	58.1	59.2	58.0	58.8	55.7	55.7	55.8	55.5	55.8	55.5	55.8	55.6	55.6	55.5	55.4	55.4	55.4	55.3	55.3	55.3	55.2
	中性子	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
可搬	⑥本館南(μSv/h)	681	-	-	683	-	-	680	-	-	684	-	-	675	-	-	682	-	-	678	-	-	679	-	-
	⑦正門(μSv/h)	98	-	-	97		-	97	-	-	98	-	-	97	-	-	98	-	-	97	-	-	97	-	-
	③西門(μSv/h)	43.3	-	-	43.5	-	-	43.4	-	-	43.1	-	-	43.1	-	-	43.4	-	-	43.2	-	-	43.2	-	-
風向		西北西	南西	南南東	西	西	西	西	西北西	北	北	西北西	西	西	北	南東	南南東	南東	南南東	南南東	南東	南南東	南	西	南東
風速(m/s)		0.4	0.6	0.4	0.8	0.3	0.4	0.8	0.6	0.6	0.5	0.4	0.4	0.3	0.4	0.8	0.8	0.6	0.9	1.0	1.0	0.4	0.5	0.5	0.4

測定場所		③																							
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)	55.1	55.2	55.0	55.3	55.3	55.1	55.2	55.2	55.1	55.1	55.1	55.1	55.1	55.0	55.0	55.1	55.1	55.1	55.0					
	中性子	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
可搬	⑥本館南(μSv/h)	675	-	-	676	-	-	676	-	-	677	-	-	677	-	-	676	-	-	676					
	⑦正門(μSv/h)	95	-	-	97	-	-	97	-	-	98	-	-	97	-	-	97	-	-	98					
	③西門(μSv/h)	43.1	-	-	43.1	-	-	42.8	-	-	43	-	-	42.8	-	-	43	-	-	43					
風向		南	西	西	西	西北西	西	北	南南東	南東	南	南南東	南東	西	南南西	南東	東南東	南東	東南東	東南東					
風速(m/s)		0.3	0.8	0.6	0.8	0.8	0.7	0.7	0.8	1.0	0.8	1.0	0.7	0.5	0.8	0.7	0.9	0.9	1.3	1.5					

測定場所		③																							
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)																								
	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)																									

4月7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裏側)(2号機より西北西約0.9キロ)
③西門付近(MP-6付近)(2号機より西約1.1キロ)　④正門付近前(MP-8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

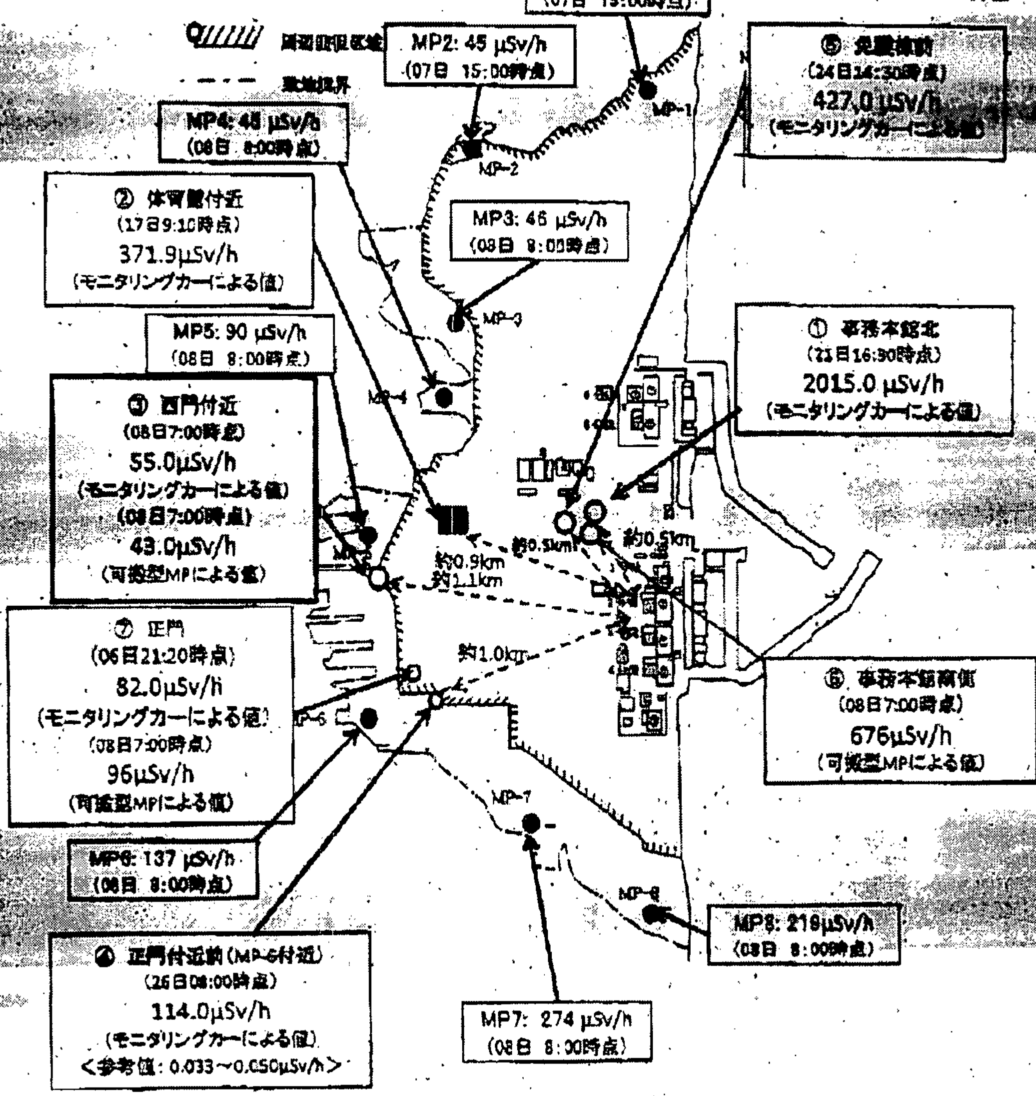
測定場所		①																							
時間		0:00	0:10	0:20	0:30	0:40	0:50	1:00	1:10	1:20	1:30	1:40	1:50	2:00	2:10	2:20	2:30	2:40	2:50	3:00	3:10	3:20	3:30	3:40	3:50
MC	測定値(μSv/h)	59.4	59.4	60.3	59.4	59.9	59.5	61.3	59.9	59.7	59.8	59.3	59.3	59.3	59.2	59.3	59.2	59.2	59.2	59.0	60.0	59.7	59.2	59.2	59.5
	中性子	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
可搬	⑥本館南(μSv/h)	713	-	-	716		-	709	-	-	712	-	-	710	-	-	709	-	-	712	-	-	708	-	-
	⑦正門(μSv/h)	欠測	-	-	欠測	-	-	欠測	-	-	欠測	-	-	欠測	-	-	欠測	-	-	欠測	-	-	欠測	-	-
	③西門(μSv/h)	46.0	-	-	44.7	-	-	46.0	-	-	46.8	-	-	46.7	-	-	46.5	-	-	46.9	-	-	46.0	-	-
風向		北東	西	南東	西北西	東	西	西	西	南東	西北西	西	北西	西南西	西北西	西北西	北	北北西	北西	北東	南西	西	西	北北西	東
風速(m/s)		0.1	0.4	0.2	0.3	0.6	0.3	0.3	0.5	0.4	0.7	0.8	0.6	0.5	0.6	0.4	0.6	0.7	0.8	0.7	0.4	0.5	0.6	0.4	0.7

測定場所		①																							
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)	59.4	59.7	60.1	60.6	59.2	59.5	60.6	60.1	58.6	58.8	58.8	58.6	58.8	58.8	58.5	59.4	58.8	58.8	58.5	58.8	58.4	58.8	58.4	58.4
	中性子	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
可搬	⑥本館南(μSv/h)	704	-	-	712	-	-	711	-	-	708	-	-	709	-	-	708	-	-	706	-	-	709	-	-
	⑦正門(μSv/h)	欠測	-	-	欠測	-	-	欠測	-	-	欠測	-	-	欠測	-	-	欠測	-	-	欠測	-	-	欠測	-	-
	③西門(μSv/h)	47.0	-	-	47.0	-	-	46.0	-	-	46.4	-	-	46.5	-	-	46.7	-	-	46.4	-	-	46.2	-	-
風向		南南東	西北西	西	南東	北東	北	北北東	西	西	西	南西	西	西	南西	西	西	西南西	南西	西	西南西	南西	南西	南東	東南東
風速(m/s)		0.5	0.4	0.2	0.8	0.4	0.4	0.3	0.6	0.5	0.0	0.4	0.7	0.8	0.9	0.5	0.3	0.5	0.2	0.4	0.4	0.4	0.5	0.7	0.8

測定場所		②																							
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)	58.6	58.6	58.4	58.5	58.4	58.4	58.4	58.4	58.3	58.3	58.3	58.2	58.2	58.2	58.2	58.2	58.0	58.7	58.0	58.1	58.0	58.0	57.9	57.9
	中性子	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
可搬	⑥本館南(μSv/h)	710	-	-	706	-	-	700	-	-	698	-	-	692	-	-	689	-	-	685	-	-	684	-	-
	⑦正門(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
	③西門(μSv/h)	46.4	-	-	45.9	-	-	44.8	-	-	45.3	-	-	45.0	-	-	44.8	-	-	44.7	-	-	44.3	-	-
風向		南	南東	東南東	東南東	東	東	南東	南東	南南東	東	南東	南東	東南東	南東	東	南東	東	東	東	南東	南東	東	東	東
風速(m/s)		1.0	1.0	0.7	1.2	1.4	1.1	0.8	1.0	1.1	1.1	1.1	1.6	2.1	1.6	1.3	1.3	1.2	1.7	1.4	1.6	1.4	1.9	1.9	2.0

福島第一原子力発電所

2011/4/8
10:00現在



From:	OST02 HOC
Sent:	Thursday, April 07, 2011 5:08 PM
To:	OST01 HOC
Subject:	FW: 0430 EDT (April 7, 2011) USNRC Earthquake/Tsunami Status Update
Importance:	High

-----Original Message-----
From: LIA07 Hoc
Sent: Thursday, April 07, 2011 5:07 PM
To: OST02 HOC; Hoc, PMT12; RST01 Hoc
Subject: FW: 0430 EDT (April 7, 2011) USNRC Earthquake/Tsunami Status Update
Importance: High

Not sure whether you have received this request.

-----Original Message-----
From: JAPAN-CMT CBRNE OPS JCS (b)(6) [redacted]
Sent: Thursday, April 07, 2011 10:[redacted]
To: LIA07 Hoc
Subject: RE: 0430 EDT (April 7, 2011) USNRC Earthquake/Tsunami Status Update
Importance: High

To NRC EOC,

RE: "Bounding Scenarios"

We are looking for any documents or briefings concerning the term "Bounding Scenarios" with regards to the reactors we are all following.
We have also queried DOE.

If you have any documents or briefings, our CMT CBRNE OPS NIPR and SIPR email accounts are below.

My NIPR and SIPR accounts respectively are, (b)(6) [redacted]

Thank you in advance for your support.

Stephen Malone

Joint Staff Japan CMT CBRNE OPS
(703) 614-6702
NIPR: (b)(6) [redacted]
SIPR: (b)(6) [redacted]

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

000/507

From: LIA07 Hoc [mailto:LIA07.Hoc@nrc.gov]
Sent: Thursday, April 07, 2011 4:54 AM
To: LIA07 Hoc
Subject: RE: 0430 EDT (April 7, 2011) USNRC Earthquake/Tsunami Status Update

Attached, please find a 0430 EDT, April 7, 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

Executive Briefing Team Coordinator

Office of Nuclear Security and Incident Response

US Nuclear Regulatory Commission

LIA07.HOC@nrc.gov (Operations Center)

james.anderson@nrc.gov

Wittick, Brian

From: Wittick, Brian
Sent: Thursday, April 07, 2011 3:29 PM
To: LIA02 Hoc
Subject: Fw: Your Trip 2953831 is pending approval from DCHA-OFDA-TRAVEL SPECIALIST

Please put me on the travelers list for 9-30 April. Please also submit me to OIS for a bump up in account size.

Sent from NRC BlackBerry
Brian Wittick
(b)(6)

From: etravelservices@carlson.com <etravelservices@carlson.com>
To: Wittick, Brian
Sent: Thu Apr 07 14:22:54 2011
Subject: Your Trip 2953831 is pending approval from DCHA-OFDA-TRAVEL SPECIALIST

Dear BRIAN WITTICK,

Your travel was approved by BUCKLEY, SARAH D and is now awaiting approval from DCHA-OFDA-TRAVEL SPECIALIST.

Trip ID : 2953831
Traveler : WITTICK, BRIAN
Destination: TOKYO CITY, JPN
TDY Type : Temporary Duty
Purpose : Invitational Travel: Serve on Pacific Tsunami DART
Trip Dates : 2011-04-09 To 2011-04-23
Status : Pending Authorization Approval

Thank you for using E2 Solutions. Help and support is available online by selecting the 'Find Answers' link.
Please note: Replies to this mailbox are not monitored.

Click here to log back into the System.

000/508

Bozin, Sunny

From: Nieh, Ho
Sent: Thursday, April 07, 2011 6:54 PM
To: Franovich, Mike
Cc: Ostendorff, William
Subject: FW: Quick turnaround

Mike - fyi for tomorrow's action.

Ho

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

From: Batkin, Joshua
Sent: Thursday, April 07, 2011 6:21 PM
To: Nieh, Ho; Bubar, Patrice; Sharkey, Jeffry; Sosa, Belkys; Rothschild, Trip; Vietti-Cook, Annette; Coggins, Angela; Powell, Amy; Schmidt, Rebecca
Subject: Quick turnaround

Head's up that Senator Boxer has asked (as of today) for a response to her letters about Japan by COB tomorrow in advance of Tuesday's hearing. OCA and EDO and OGC are doing yeoman's work to get them done tonight and we'd appreciate your expedited consideration tomorrow. Thanks Josh

Joshua C. Batkin
Chief of Staff
Chairman Gregory B. Jaczko
(301) 415-1820

000/509

Nelson, Robert

From:	Nelson, Robert
Sent:	Thursday, April 07, 2011 9:54 AM
To:	Barkley, Richard; Oesterle, Eric; Markley, Michael
Subject:	Action: Could I get NRR's Read on This Letter as Well?
Importance:	High

Will do!

NELSON

From: Barkley, Richard
Sent: Thursday, April 07, 2011 9:52 AM
To: Nelson, Robert
Cc: Oesterle, Eric; Markley, Michael
Subject: Could I get NRR's Read on This Letter as Well?
Importance: High

It is due out COB tomorrow. It is Green Ticket 2011-0203. The letter heavily plagiarizes from a letter OEDO is working to send to Markey and others, so there is little creative here.

This state representative asked about a dozen questions related to Indian Point seismic issues and EP. We are deferring answers until we have more information.

Also, the Astorino letter went out this morning. Thanks for your help on that one! It has some good words you can use going forward.

Richard S. Barkley, PE
Nuclear & Environmental Engineer
(610) 337-5065 Work
(b)(6) Cell

000/510

King, Mark

From: (b)(6)
Sent: Thursday, April 07, 2011 1:18 PM
To: King, Mark
Subject: Latest quake - rough translation

[2011/04/801:45 renewals]

From atomic energy safety preservation institute, yesterday 23:32 around, we inform concerning the influence to the nuclear power facility with the earthquake which occurs with the Miyagi prefecture open sea.

Concerning the Nihonbara burning (Inc.) Rokkasho reprocessing office, before the using it is in the midst of inspecting. In addition, each facility of the Tohoku Electric Power Co., Inc. (Inc.) Higashi Dori nuclear power plant, the Onagawa nuclear power plant and the Tokyo Electric Power (Inc.) Fukushima first nuclear power plants and the Fukushima second nuclear power plant have stopped operating after the northeast local Pacific Ocean open sea earthquake.

Concerning the Rokkasho reprocessing office, at present, external power source cuts off, the supply of electricity by the emergency Diesel generator well is done.

Concerning the Tomari power plant, controlling output in 90% according to the Hokkaido Electric Power Co., Inc. (Inc.), at present, 1 the machine and 2 concerning the machine, it is on stream.

Concerning the Higashi Dori nuclear power plant, according to the Tohoku Electric Power Co., Inc. (Inc.), at present, external power source to cut off, by the emergency Diesel generator well the supply of electricity to be done, as for the spent fuel pool, cooling while (all the core fuel in spent fuel pool in the midst of storage) continuing.

Concerning the Onagawa nuclear power plant, according to atomic energy preservation inspector and the Tohoku Electric Power Co., Inc. (Inc.) of the locale, at present, the inside 2 circuits of the external power source 3 circuit cut off. As for abnormality it is not recognized in value of the monitoring post. One time it stopped the cooling system of the spent fuel pool, but that everything it restored, it is thing.

Concerning the Fukushima first nuclear power plant, according to the communication from of Tokyo Electric Power (Inc.), as for abnormality it is not recognized in value of the monitoring post. In addition, filling to the core is pending.

Concerning the Fukushima second nuclear power plant, according to Tokyo Electric Power (Inc.), abnormality is not recognized in value of parameter.

Concerning the Tokai second power plant, according to the Japanese nuclear power generation (Inc.), abnormality is not recognized.

000/511

Table A-1 Clinton

g value	mean f per year	LOOP Probability	EQ g interval	Interval IEV Frequency	Interval Conditional LOOP Probability	Weighted Average
0.05	1.55E-03	4.62E-04	.05-.08	7.39E-04	1.83E-03	1.35E-06
0.08	8.08E-04	7.26E-03	.08-.15	5.63E-04	2.70E-02	1.52E-05
0.15	2.46E-04	1.00E-01	.15-.25	1.51E-04	1.92E-01	2.91E-05
0.25	9.42E-05	3.68E-01	.25-.30	2.88E-05	4.29E-01	1.23E-05
0.30	6.54E-05	5.00E-01	.30-.40	2.97E-05	5.93E-01	1.76E-05
0.40	3.57E-05	7.03E-01	.40-.50	1.40E-05	7.63E-01	1.07E-05
0.50	2.17E-05	8.28E-01	.50-.65	1.01E-05	8.74E-01	8.79E-06
0.65	1.17E-05	9.24E-01	.65-.80	4.76E-06	9.44E-01	4.49E-06
0.80	6.89E-06	9.65E-01	.80-1	3.10E-06	9.76E-01	3.03E-06
1.00	3.79E-06	9.87E-01	>1	3.79E-06	1.00E+00	3.79E-06
			Sum =	**1.55E-03**		**1.06E-04**
SE Initiating Event Frequency =				1.55E-03	CCDP =	6.87E-02
Seismically induced LOOP probability =				6.87E-02		
Seismically induced LOOP frequency =				1.06E-04		

Table A-2 Comanche Peak

g value	mean f per year	LOOP Probability	EQ g interval	Interval IEV Frequency	Interval Conditional LOOP Probability	Weighted Average
0.05	1.41E-04	4.62E-04	.05-.08	7.31E-05	1.83E-03	1.34E-07
0.08	6.79E-05	7.26E-03	.08-.15	4.91E-05	2.70E-02	1.32E-06
0.15	1.88E-05	1.00E-01	.15-.25	1.24E-05	1.92E-01	2.37E-06
0.25	6.42E-06	3.68E-01	.25-.30	2.23E-06	4.29E-01	9.57E-07
0.30	4.19E-06	5.00E-01	.30-.40	2.17E-06	5.93E-01	1.29E-06
0.40	2.02E-06	7.03E-01	.40-.50	9.20E-07	7.63E-01	7.02E-07
0.50	1.10E-06	8.28E-01	.50-.65	5.92E-07	8.74E-01	5.18E-07
0.65	5.08E-07	9.24E-01	.65-.80	2.42E-07	9.44E-01	2.28E-07
0.80	2.66E-07	9.65E-01	.80-1	1.38E-07	9.76E-01	1.35E-07
1.00	1.28E-07	9.87E-01	>1	1.28E-07	1.00E+00	1.28E-07
			Sum =	**1.41E-04**		**7.78E-06**
SE Initiating Event Frequency =			1.41E-04		CCDP =	5.52E-02
Seismically induced LOOP probability =			5.52E-02			
Seismically induced LOOP frequency =			7.78E-06			

Table A-3 Duane Arnold

g value	mean f per year	LOOP Probability	EQ g interval	Interval IEV Frequency	Interval Conditional LOOP Probability	Weighted Average
0.05	1.55E-04	4.62E-04	.05-.08	7.38E-05	1.83E-03	1.35E-07
0.08	8.11E-05	7.26E-03	.08-.15	5.73E-05	2.70E-02	1.54E-06
0.15	2.38E-05	1.00E-01	.15-.25	1.56E-05	1.92E-01	2.99E-06
0.25	8.21E-06	3.68E-01	.25-.30	2.85E-06	4.29E-01	1.22E-06
0.30	5.36E-06	5.00E-01	.30-.40	2.78E-06	5.93E-01	1.64E-06
0.40	2.58E-06	7.03E-01	.40-.50	1.19E-06	7.63E-01	9.05E-07
0.50	1.40E-06	8.28E-01	.50-.65	7.55E-07	8.74E-01	6.60E-07
0.65	6.42E-07	9.24E-01	.65-.80	3.08E-07	9.44E-01	2.91E-07
0.80	3.34E-07	9.65E-01	.80-1	1.74E-07	9.76E-01	1.70E-07
1.00	1.59E-07	9.87E-01	>1	1.59E-07	1.00E+00	1.59E-07
			Sum =	**1.55E-04**		**9.72E-06**
SE Initiating Event Frequency =			1.55E-04		CCDP =	6.28E-02
Seismically induced LOOP probability =			6.28E-02			
Seismically induced LOOP frequency =			9.72E-06			

Table A-4 Limerick

g value	mean f per year	LOOP Probability	EQ g interval	Interval IEV Frequency	Interval Conditional LOOP Probability	Weighted Average
0.05	1.22E-03	4.62E-04	.05-.08	5.21E-04	1.83E-03	9.54E-07
0.08	6.99E-04	7.26E-03	.08-.15	4.70E-04	2.70E-02	1.27E-05
0.15	2.29E-04	1.00E-01	.15-.25	1.46E-04	1.92E-01	2.79E-05
0.25	8.35E-05	3.68E-01	.25-.30	2.80E-05	4.29E-01	1.20E-05
0.30	5.55E-05	5.00E-01	.30-.40	2.80E-05	5.93E-01	1.66E-05
0.40	2.75E-05	7.03E-01	.40-.50	1.23E-05	7.63E-01	9.38E-06
0.50	1.52E-05	8.28E-01	.50-.65	8.10E-06	8.74E-01	7.08E-06
0.65	7.10E-06	9.24E-01	.65-.80	3.37E-06	9.44E-01	3.18E-06
0.80	3.73E-06	9.65E-01	.80-1	1.94E-06	9.76E-01	1.89E-06
1.00	1.79E-06	9.87E-01	>1	1.79E-06	1.00E+00	1.79E-06
			Sum =	**1.22E-03**		**9.35E-05**
SE Initiating Event Frequency =			1.22E-03		CCDP =	7.66E-02
Seismically induced LOOP probability =			7.66E-02			
Seismically induced LOOP frequency =			9.35E-05			

Table A-5 Pilgrim

g value	mean f per year	LOOP Probability	EQ g interval	Interval IEV Frequency	Interval Conditional LOOP Probability	Weighted Average
0.05	2.81E-03	4.62E-04	.05-.08	1.04E-03	1.83E-03	1.90E-06
0.08	1.78E-03	7.26E-03	.08-.15	1.06E-03	2.70E-02	2.86E-05
0.15	7.15E-04	1.00E-01	.15-.25	3.88E-04	1.92E-01	7.45E-05
0.25	3.27E-04	3.68E-01	.25-.30	8.62E-05	4.29E-01	3.70E-05
0.30	2.41E-04	5.00E-01	.30-.40	9.69E-05	5.93E-01	5.74E-05
0.40	1.44E-04	7.03E-01	.40-.50	5.03E-05	7.63E-01	3.84E-05
0.50	9.38E-05	8.28E-01	.50-.65	3.93E-05	8.74E-01	3.44E-05
0.65	5.45E-05	9.24E-01	.65-.80	2.02E-05	9.44E-01	1.90E-05
0.80	3.43E-05	9.65E-01	.80-1	1.41E-05	9.76E-01	1.38E-05
1.00	2.02E-05	9.87E-01	>1	2.02E-05	1.00E+00	2.02E-05
			Sum =	**2.81E-03**		**3.25E-04**
SE Initiating Event Frequency =			2.81E-03		CCDP=	1.16E-01
Seismically induced LOOP probability =			1.16E-01			
Seismically induced LOOP frequency =			3.25E-04			

Table A-6 Robinson

g value	mean f per year	LOOP Probability	EQ g interval	Interval IEV Frequency	Interval Conditional LOOP Probability	Weighted Average
0.05	2.72E-03	4.62E-04	.05-.08	1.15E-03	1.83E-03	2.11E-06
0.08	1.57E-03	7.26E-03	.08-.15	1.02E-03	2.70E-02	2.74E-05
0.15	5.47E-04	1.00E-01	.15-.25	3.21E-04	1.92E-01	6.16E-05
0.25	2.26E-04	3.68E-01	.25-.30	6.56E-05	4.29E-01	2.81E-05
0.30	1.60E-04	5.00E-01	.30-.40	7.01E-05	5.93E-01	4.15E-05
0.40	8.99E-05	7.03E-01	.40-.50	3.42E-05	7.63E-01	2.60E-05
0.50	5.57E-05	8.28E-01	.50-.65	2.51E-05	8.74E-01	2.20E-05
0.65	3.06E-05	9.24E-01	.65-.80	1.21E-05	9.44E-01	1.15E-05
0.80	1.85E-05	9.65E-01	.80-1	8.06E-06	9.76E-01	7.87E-06
1.00	1.04E-05	9.87E-01	>1	1.04E-05	1.00E+00	1.04E-05
			Sum =	**2.72E-03**		**2.39E-04**
SE Initiating Event Frequency =			2.72E-03		CCDP=	8.78E-02
Seismically induced LOOP probability =			8.78E-02			
Seismically induced LOOP frequency =			2.39E-04			

Table A-7 Vogtle

g value	mean f per year	LOOP Probability	EQ g interval	Interval IEV Frequency	Interval Conditional LOOP Probability	Weighted Average
0.05	2.50E-03	4.62E-04	.05-.08	1.14E-03	1.83E-03	2.09E-06
0.08	1.36E-03	7.26E-03	.08-.15	9.41E-04	2.70E-02	2.54E-05
0.15	4.15E-04	1.00E-01	.15-.25	2.61E-04	1.92E-01	5.00E-05
0.25	1.55E-04	3.68E-01	.25-.30	4.86E-05	4.29E-01	2.08E-05
0.30	1.06E-04	5.00E-01	.30-.40	4.92E-05	5.93E-01	2.92E-05
0.40	5.68E-05	7.03E-01	.40-.50	2.26E-05	7.63E-01	1.72E-05
0.50	3.42E-05	8.28E-01	.50-.65	1.59E-05	8.74E-01	1.39E-05
0.65	1.83E-05	9.24E-01	.65-.80	7.36E-06	9.44E-01	6.95E-06
0.80	1.09E-05	9.65E-01	.80-1	4.76E-06	9.76E-01	4.64E-06
1.00	6.18E-06	9.87E-01	>1	6.18E-06	1.00E+00	6.18E-06
			Sum =	**2.50E-03**		**1.76E-04**
SE Initiating Event Frequency =				2.50E-03	CCDP =	7.05E-02
Seismically induced LOOP probability =				7.05E-02		
Seismically induced LOOP frequency =				1.76E-04		

From: Droggitis, Spiros
Sent: Friday, April 08, 2011 11:26 AM
To: Powell, Amy; Decker, David; Riley (OCA), Timothy
Subject: FW: DNDO News 4/8/2011
Attachments: DNDO NEWS 4-8-11.htm

From: Bolling, Lloyd [mailto:Lloyd.Bolling@dhs.gov]
Sent: Friday, April 08, 2011 9:35 AM
To: Layton, Michael; Reis, Terrence; Jones, Cynthia; Wastler, Sandra; Jackson, Gerard
Cc: Droggitis, Spiros; Dembek, Stephen; Owens, Janice; Breskovic, Clarence; Casey, Timothy
Subject: DNDO News 4/8/2011

Attached is the DNDO News for Friday, April 08, 2011.

Summary of news items:

1. Coping with economic and human consequences of Fukushima.
2. The European Parliament expresses concern over Taliban infiltration of Pakistan's governmental structures.
3. How would a shutdown affect DHS?

SPECIAL NOTE** - DNDO's Joint Analysis Center is preparing for a possible government-wide shutdown. A limited number of Federal employees were selected to remain on 24/7 watch status to adjudication radiation detection alarms and to respond to other State and Local issues.

Lloyd Bolling, NRC Liaison
Operations Support Directorate
Domestic Nuclear Detection Office
Department of Homeland Security
Phone: 202-254-7123
Blackberry: (b)(6)
Fax: 202-254-7752
Lloyd.Bolling@dhs.gov

000/512

April 8, 2011 DNDO News Brief

Coping with Japan's Nuclear Disaster
The Economist – This article discusses the possible long-term impact of Fukushima on the fishing and farming economy of the city of Minamisoma.
http://www.economist.com/node/18530743

The Danger of Taliban Presence in Pakistan
PR Newswire (press release) – Members of the European Parliament expressed their growing concern over "Taliban infiltration into Pakistani governmental structures, particularly the military, intelligence and security establishments. The Finish member urged that all EU operations and missions in the region are undertaken by personnel trained and equipped for the possibility of CBRN terrorism (chemical, biological, radiological, nuclear terrorism). http://www.prnewswire.com/news-releases/the-danger-of-taliban-presence-in-pakistan-119386439.html

How Would a Shutdown Affect DHS?
Rob Margetta, Congressional Quarterly Staff
The Department of Homeland Security is hoping Congress will avoid a shutdown of the federal government kicking in when the current continuing resolution expires Friday, but that hasn't stopped it from developing plans for the worst-case scenario.

"Agency operational plans are still being finalized, but our current understanding is that DHS' frontline security and law enforcement personnel, including Coast Guard military personnel, would continue with their duties during a shutdown," an administration official said Thursday. "We still believe there is an opportunity to avoid a government shutdown, but are working to ensure that we are prepared for all possible scenarios."

The department would retain about 80 percent of its workforce in the case of a shutdown. It would also be able to maintain some of its operations that are funded through means other than annual appropriations. Those include Federal Emergency Management Agency disaster-relief operations, which are mostly funded through supplemental appropriations, and the processing of green cards and other citizenship documents at the U.S. Citizenship and Immigration Service, which is fee-based.

Other operations at the department that would remain open include:
• TSA airline screening operations, including baggage and passenger checkpoints.
• Border Patrol counter-trafficking operations between checkpoints.
• Customs and Border Protection checkpoint border checkpoint operations.
• Immigration and Customs Enforcement investigations and removal operations for illegal immigration.
• Cargo security and customs operations at ICE and CBP.
• Coast Guard maritime security operations.
• Coast Guard drug interdiction operations.
• Secret Service protection operations.
• Secret Service financial crime operations.

The following capabilities would be suspended during a shutdown:
• FEMA's processing of DHS grants for states and localities.
• Operation of the federal Internet-based employee eligibility checking system known as E-Verify.
• Research and development at the Science and Technology directorate.
• Certain FEMA flood mitigation and flood insurance operations

Additionally, DHS is still finalizing plans for the Federal Law Enforcement Training Center, but it currently intends to suspend training activities and classes in the event of a government shutdown. Students would remain at the facility for a minimum of two to three days. If it DHS determines the shutdown will last for an extended period of time, the center will send its students home.

Bozin, Sunny

From: Ostendorff, William
Sent: Friday, April 08, 2011 4:22 PM
To: Franovich, Mike
Cc: Nieh, Ho; Kock, Andrea; Zorn, Jason
Subject: FW: Mitsubishi Statement on Northeastern Earthquake and Tsunami in Japan
Attachments: MNES Statement on North Eastern Earthquake and Tsunami in Japan.pdf

FYI. WCO

From: kiyoshi_yamauchi@mnes-us.com [mailto:kiyoshi_yamauchi@mnes-us.com]
Sent: Friday, April 08, 2011 4:11 PM
To: Ostendorff, William
Cc: frank_gillespie@mnes-us.com; masayuki_fujisawa@mnes-us.com; shinji_kawanago@mnes-us.com
Subject: Mitsubishi Statement on Northeastern Earthquake and Tsunami in Japan

U.S. Nuclear Regulatory Commision
Commisioner
Dear Mr. William C.Ostendorff

I highly appreciate the efforts taken by the strong leadership of the NRC to support current nuclear energy fleet with high safety and reliability following the Fukushima Daiichi event caused by the northeastern Japan earthquake and resulting tsunami.

We at Mitsubishi Nuclear Energy Systems(MNES),subsidiary to Mitsubishi Heavy Industries(MHI), posted our statement on our home page attached below (http://www.mnes-us.com/) expressing our sympathies to all victims affected by the desaster and also describing Mitsubishi contribution our technology and experience wherever possible to help resolve the situation at the Fukushima Daiichi site. It is noted that Mitsubishi is also continuing to give complete technical support to the clients of the 24 PWR units in Japan, which Mitsubishi supplied, in order to immediately implement the new highest safety measures required by the Japanese government.

We also emphasize that we have formed the "MNES Response & Support Team for Fukushima Event", collecting and sharing related information, investigating US-APWR design considering the NRC instructions, supporting US customers and enhancing public relations.

We think co-operation with the same direction between US and Japan to overcome this event is quite important not onlt in the area of government but also in the area of industries. Lessones learned should be shared timely and good results should be obtained as the best practice by the co-operated activities.

Our responsibility is quite large in continuing to provide the highest level of safety and reliable nuclear plants here in the USA.

We will be pleased to be advised if you have any comments or you need any support.

Best Regards, Kiyoshi Yamauchi
President and CEO

000/513

Mitsubishi Nuclear Energy Systems, INC.
1001 19th Street North, Suite 2000
Arlington, VA 22209
Tel:703.908.4340
(b)(6)
Fax:703.908.4399

cc:Frank Gillespie, MNES
Shinji Kawanago, MNES
Masayuki Fujisawa, MNES

Nelson, Robert

From:	Nelson, Robert
Sent:	Friday, April 08, 2011 8:35 AM
To:	Ennis, Rick
Subject:	Action: OBE, SSE, maximum flooding level, and protection level for each operating reactor site
Attachments:	Plant OBEnSSEnFlood Levels.pdf; image001.png

Please ensure that Harold is aware of this request on Monday. Alan Howe is on CWS so no need to "crash & burn" on this today.

NELSON

From: Howe, Allen
Sent: Thursday, April 07, 2011 5:23 PM
To: Chernoff, Harold
Cc: Campbell, Stephen; Nelson, Robert; Giitter, Joseph
Subject: FW: FYI: OBE, SSE, maximum flooding level, and protection level for each operating reactor site

Harold – when this data was tabulated, what level of evaluation was done on protecting safety related equipment in the design basis flood? I saw that some plants listed comp measures in place. Watts Bar 1 was among them. The comp measures that staff have related to me include extensive operator actions to shut down the unit and cool down and depressurize <u>when a flood is anticipated</u>. Several systems including the CCW and AFW pumps will be submerged for floods above plant grade. Numerous manual valve alignments and spoolpieces to crosstie systems that are not flooded are needed. Needles to say we are looking further into Watts Bar 1.

I want to take a further look at other plants to see the extent of condition.

Thanks - Allen

From: Nelson, Robert
Sent: Tuesday, March 22, 2011 12:17 PM
To: Roberts, Darrell; Lara, Julio; Kennedy, Kriss; Croteau, Rick; LIA06 Hoc; Dickson, Billy; Wilson, George; Westreich, Barry; Thomas, Eric; Bahadur, Sher; Blount, Tom; Brown, Frederick; Cheok, Michael; Evans, Michele; Ferrell, Kimberly; Galloway, Melanie; Giitter, Joseph; Givvines, Mary; Hiland, Patrick; Holian, Brian; Howe, Allen; Lee, Samson; Lubinski, John; McGinty, Tim; Quay, Theodore; Ruland, William; Skeen, David; Thomas, Brian; Broaddus, Doug; Campbell, Stephen; Carlson, Robert; Chernoff, Harold; Kulesa, Gloria; Markley, Michael; Pascarelli, Robert; Salgado, Nancy; Simms, Sophonia; Wall, Scott
Cc: West, Steven; Shear, Gary; Hay, Michael; Meighan, Sean; Nguyen, Quynh; Oesterle, Eric; Thomas, Eric; Chernoff, Harold; Miller, Ed
Subject: FYI: OBE, SSE, maximum flooding level, and protection level for each operating reactor site

All:

The attached pdf file provides a table of OBE, SSE, maximum flooding level, and protection level for each operating reactor site. This table consolidates information from the plant FSARs. This table is primarily intended for internal use by NRC staff. This information is deemed reliable, but has not been independently validated by the licensees.

000514

The values for maximum flooding level represent the highest level for the site without regard to the source (e.g., riverine, hurricane, or tsunami). Where tidal and wave run-up influences are described in the FSAR these values have been combined with other projections to derive a maximum flood level. It should also be noted that this table only reflects external flooding sources.

In a similar fashion the protection level reflects FSAR descriptions of the lowest level at which safety-related equipment is protected. The margin column provides the simple arithmetic difference between the maximum flooding level and the protection level columns. The comments column provides important information such as instances where watertight doors are significantly relied on for safety-related equipment protection.

Please direct any questions or corrections to:

Harold.Chernoff@nrc.gov

R.A. Nelson

Robert A. Nelson
Deputy Director
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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

E-mail: robert.nelson@nrc.gov | Office: (301) 415-1453 | (b)(6) | Fax: (301) 415-2102|

From: HOO Hoc
Sent: Saturday, April 09, 2011 6:36 AM
To: LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: official notice (09/04/2011) Documents of the briefing-Japan
Attachments: document 1-5.tif; document 6.pdf; document7-11.tif; image001.jpg

Headquarters Operations Officer
U.S. Nuclear Regulatory Commission
Phone: 301-816-5100
Fax: 301-816-5151
email: hoo.hoc@nrc.gov
secure e-mail: hoo1@nrc.sgov.gov
U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

From: Hinds, Lynda J [mailto:HindsLJ@state.gov] **On Behalf Of** Tokyo Staff Assistant
Sent: Saturday, April 09, 2011 6:28 AM
(b)(6)
Subject: FW: official notice (09/04/2011) Documents of the briefing

Lynda Hinds
Staff Assistant
(03) 3224- 5370

From: PROTOCOLOFFICE-EM [mailto:protocoloffice-em@mofa.go.jp]
Sent: Saturday, April 09, 2011 7:20 PM

000/515

To: PROTOCOLOFFICE-EM
Subject: official notice (09/04/2011) Documents of the briefing

—Urgent—

~~Official Notice~~

(9 April 2011)

To All Missions (Embassies, Consular posts and International Organizations in Japan)

The Ministry of Foreign Affairs has the honour to send for the perusal of Missions documents which were distributed at the briefing on 9th April, 2011 at 16:00 for your reference.

List of attachments

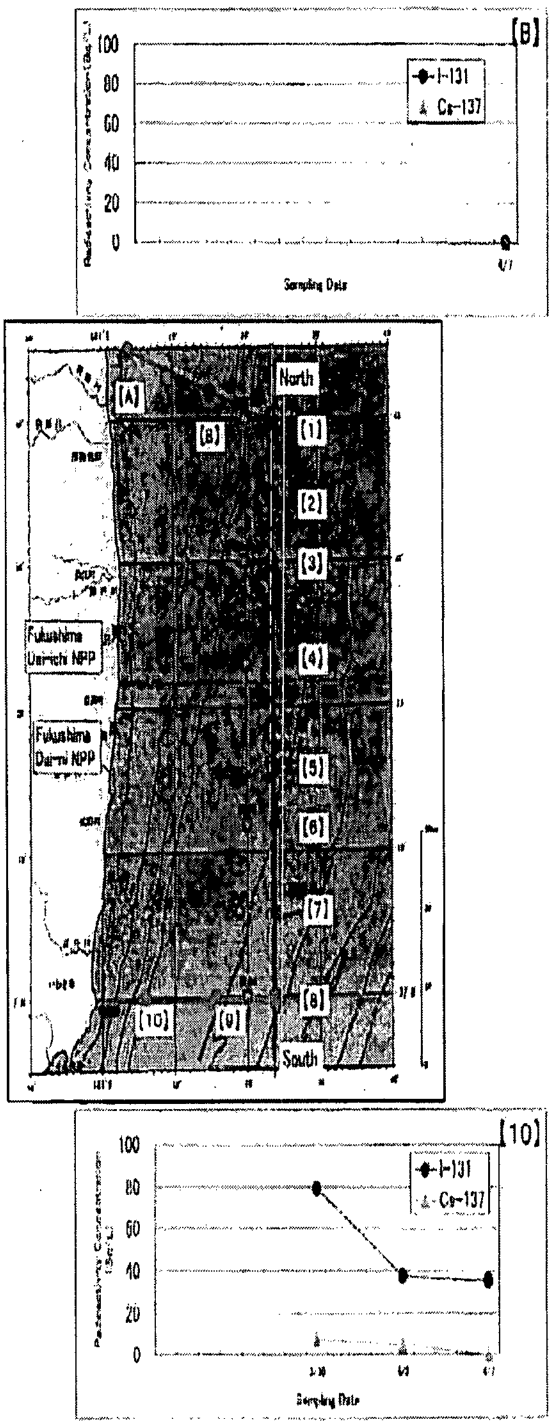
1. List of briefers from Ministries other than the MOFA (9th April)
2. Levels of radi oactive contaminants in foods (data reported on 8 April 2011) (Ministr y of Health, Labour and Welfare)
3. Results of the inspection on radioactive materials in fisheries products (Ministry of Agriculture, Forestry and Fisheries)
4. Readings of Sea Area Monitoring at Post Out of Fukushima Dai-ichi NPP (April 6, 2011) (Ministry of Education, Culture, Sports, Science and Technology)
5. Readings of Sea Area Monitoring at Post Out of Fukushima Dai-ichi NPP (April 8, 2011) (Ministry of Education, Culture, Sports, Science and Technology)
6. Readings of Sea Area Monitoring at Post Out of Fuku shima Dai-ichi NPP Result of Radioactivity Concentration in the sea (o uter layer) (Ministry of Education, Culture, Sports, Science and Technology)
7. Press Release (Evaluation of Environmental Radiation Monitoring Results (16:45 on April 8, 2011) (Nuclear Safety Commission, Cabinet Office)
8. 【Japanese Doc ument】福島第一 物揚場前および2号機、4号機スクリーン海水核種分析結果 (The results of nuclide analyses of seawater of Dai-ichi Nuclear Power Station) (MOFA)
9. News Release (Seismic Damage Information (the 82nd Release)) (Nuclear and Industrial Safety Agency)
10. Conditions of Fukushima Dai-ichi Nuclear Power Station Unit1-6 (Nuclear and Industrial Safety Agency)
11. Questionnaire from EU (Nuclear and Industrial Safety Agency)

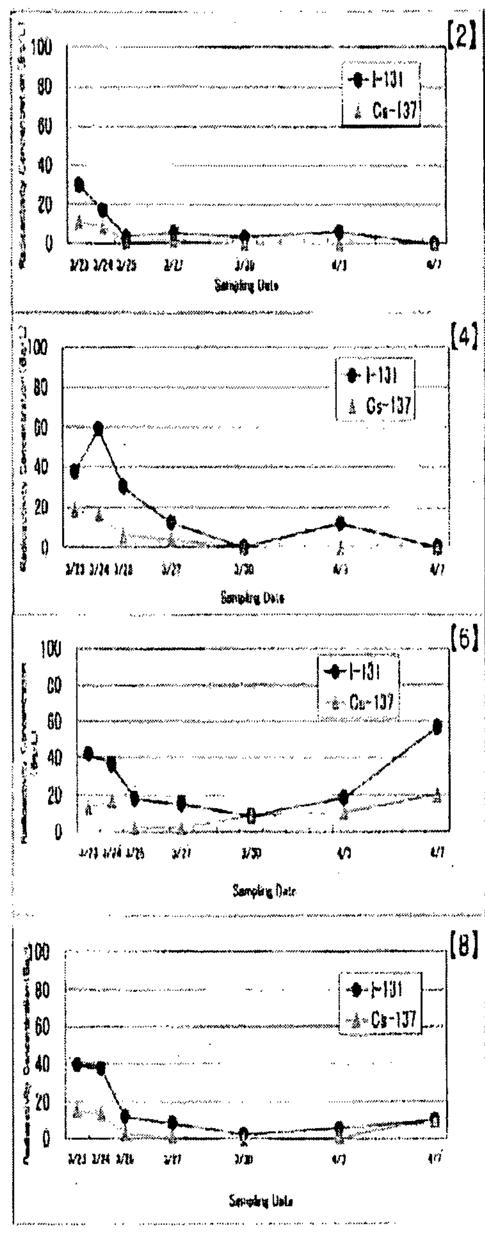
Regarding the planting of rice, please visit the following URL;

http://www.maff.go.jp/j/kanbo/joho/saigai/ine_sakutuke.html (HTML version)
http://www.maff.go.jp/ j/kanbo/joho/saigai/pdf/ine_sakutuke.pdf (PDF version)

(END)

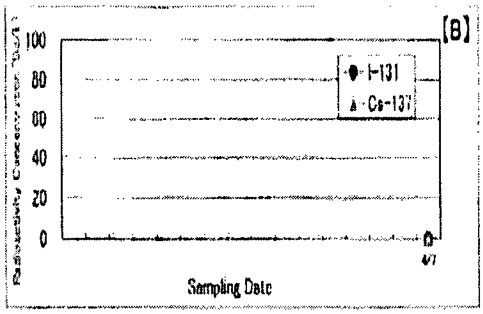
Readings of Sea Area Monitoring at Post Out of Fukushima Dai-ichi NPP
Result of Radioactivity Concentration in the Sea (outer layer)

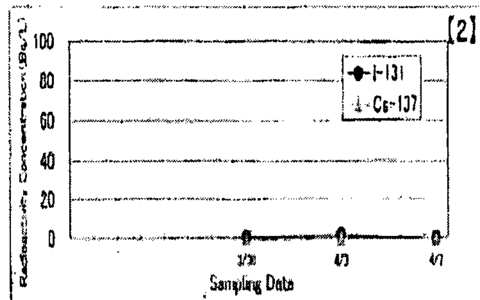


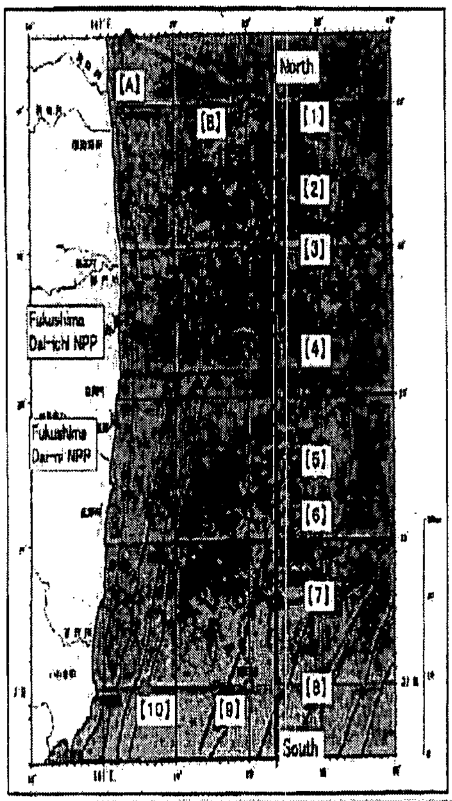


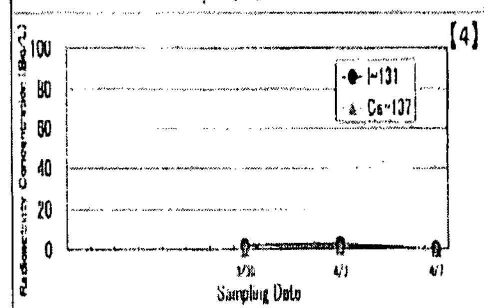
Note: "Not Detectable" is illustrated as 0Bq/L.

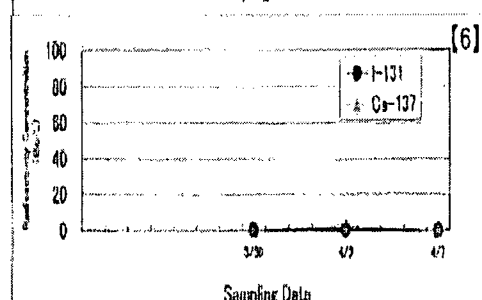
Readings of Sea Area Monitoring at Post Out of Fukushima Dai-ichi NPP
Result of Radioactivity Concentration in the Sea (lower layer)

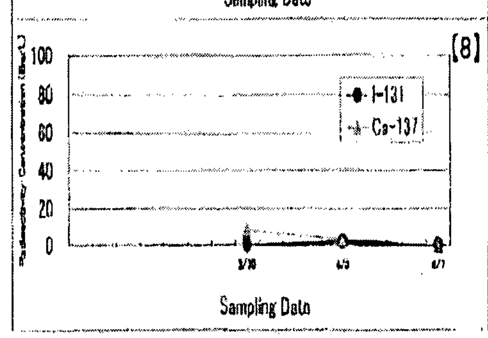


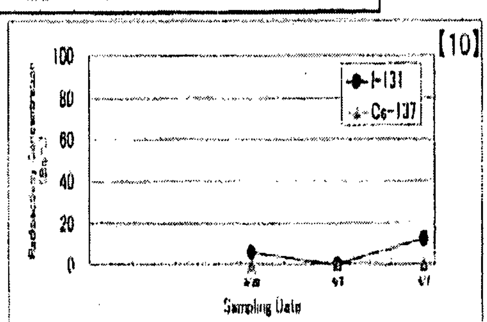












Note; "Not Detectable" is illustrated as 0Bq/L.

From: LIA03 Hoc
Sent: Saturday, April 09, 2011 10:13 AM
To: LIA02 Hoc
Attachments: JAPAN TRAVELER INFORMATION.doc; Japan Team Dosimeter Numbers.doc; Team#3-JAPAN TRAVELER INFORMATION.doc

000/516

Japan Team Dosimeter Numbers

1. John Giessner - #0153674 00341
2. William Cook - 0153672 DRS 00140 and 6921442LN

Last updated: 3/31/2011

Third NRC TRAVELERS IN JAPAN

Name	Phone Number (internal BB or cell)	Email/Other	Flight Arrival (Japan Time)	Return date to U.S.	Emergency contact
Rudy Bernhard, Region II Expertise in severe accident management, B5b and accident recovery, Leaves 4/2	(b)(6)	Rudolph.bernhard@nrc.gov	Sun, Apr 3 4:00 PM	Sat, April 16 2:55 p.m.	(b)(6)
Michel (Mike) Call, NMSS Nuclear Engineer Fluent in Japanese and lived in Japan for two years, Leaves 4/2		Michel.call@nrc.gov	Sun, Apr 3 3:10 PM	Sat, April 16 3:37 p.m.	
Elmo Collins, RIV Executive level – Assistant Team Leader. Will replace Dan Dorman, Leaves 3/29		Elmo.collins@nrc.gov	March 30 1:05 PM		
Mike Hay, RIV Extensive experience in emergency planning and event response experience. Masters in HP, Leaves 4/22		Michael.hay@nrc.gov	Sun, Apr 3 4:00 PM	Sat, April 16 9:20 a.m.	
Mike Salay, RES Severe accident expertise, OECD - leaves 4/2 or 3		Michael.Salay@nrc.gov	Sun, Apr 3 10:00 PM		

(b)(6)

Last updated All pages: 3/31/2011

NRC TRAVELER INFORMATION IN JAPAN

Name	Phone Number	Email	Flight Arrival (Japan Time)	Flight Arrival (EDT)	Return Date to U.S.
Jim Trapp Chief,	(b)(6)		Saturday, 3/12	Arrived	Departed
Tony Ulses Chief, Reactor Systems Branch	(b)(6)	Anthony.ulses@nrc.gov	Saturday, 3/12	Arrived	Departed
Chuck Casto – Will remain in Japan Deputy Regional Administrator, Region II Executive Level – Team Lead Interface with the Ambassador, military, Japan cabinet and regulators	(b)(6)	Chuck.casto@nrc.gov	1:30 PM Wed., 3/16	Arrived	
John Monninger Deputy Chief-of-Staff, Office of the Chairman	(b)(6)	John.monninger@nrc.gov	11:00 AM Wed., 3/16	Arrived	Departs 4/7
Tony Nakanishi Reactor Systems Engineer, Reactor Systems Branch		Tony.nakanishi@nrc.gov	11:00 AM Wed., 3/16	Arrived	Departed 4/1: confirmed USA arrival 6 pm EDT on 4/1 via e-mail
Tim Kolb Senior Reactor Engineer, Operator Licensing and Training Branch		Timothy.kolb@nrc.gov	11:00 AM Wed., 3/16	Arrived	3/19
Jack Foster Chief, Licensing Branch (FSME)	(b)(6)	Jack.foster@nrc.gov	11:00 AM Wed., 3/16	Arrived	Departed
Bill Cook Senior Reactor Analyst		William.cook@nrc.gov	11:00 AM Wed., 3/16	Arrived	Departs 4/1

Richard Devercelly Reactor Technology Instructor, Technical Training Center	(b)(6)	Richard.devercelly@nrc.gov	4:15 PM Wed., 3/16	Arrived	Departed
Kirk Foggie International Relations Officer		Kirk.foggie@nrc.gov	11:00 AM Wed., 3/16	Arrived	Back in U.S.
Brooke Smith International Policy Analyst		Brooke.smith@nrc.gov	11:00 AM Wed., 3/16	Arrived	Departed 3/31

Second NRC TEAM in Japan - Left last week in March and will return by April 7th -- NRC TRAVELERS IN JAPAN

Name	Phone Number (internal BB or cell)	Email/Other	Flight Arrival (Japan Time)	Return date to U.S.	Emergency contact
Dan Dorman Deputy Director, NMSS - leaves 3/19	(b)(6)	Daniel.Dorman@nrc.gov	March 20 2:30pm	April 3	(b)(6)
Mike Scott (Acting) Deputy Director, Division of Systems Analysis, RES Leaves 3/22		Michael.Scott@nrc.gov Picked up dosimeter at OPS Center	March 23 2:30 PM,	3:30 PM, April 6 2011	
Alan Blamey, RII Chief of Construction Project Branch Leaves 3/22		Alan.Blamey@nrc.gov Picked up KI in Region II	March 23 3:30 PM,	April 6	
Jack Giessner, RIII Branch Chief Division of Reactor Projects Leaves 3/24		John.Giessner@nrc.gov	March 25 2:15 PM	April 7th, 4:05 PM Chicago	
Rob Taylor SG Tube Integrity and Chemical Engineering Branch, NRR Leaves 3/24		Robert.Taylor@nrc.gov Picked up dosimeter and KI at OPS Center	March 25 4:35 PM	April 7th, 3:37 PM Dulles	
Todd Jackson Commercial and R&D Branch, DNMS, RI Leaves 3/24		Todd.Jackson@nrc.gov Had dosimeter from the region.	March 25 2:15 PM	April 6, 2011	

Marie Miller Chief, Material Security and Industrial Branch, RI Leaves 3/24	(b)(6)	Marie.Miller@nrc.gov Had dosimeter from the region.	March 25 2:15 PM	April 7, 9:15 PM in Phily	(b)(6)
Syed Ali Senior Level Advisor, Div of Engineering, RES Leaves 3/24		Syed.Ali@nrc.gov Picked up dosimeter 03/22	March 25 4:35 PM	April 4, 3:37 PM Dulles	
Abdul Sheikh, NRR Leaves 3/24		Abdul.Sheikh@nrc.gov Picked up dosimeter 03/22	March 25 4:35 PM	April 4, 3:37 PM Dulles	
Ralph Way, Sr Level Advisor, Division of Security Operations, NSIR Leaves 3/24		Ralph.Way@nrc.gov Picked up dosimeter 03/22	March 25 4:35 PM	April 4, 3:37 PM Dulles	
Danielle Emche, International Relations Specialist, OIP Leaves 3/26		Danielle.Emche@nrc.gov	March 27	April 12	
Eric Stahl, International Relations Specialist, OIP Leaves 3/28		Eric.Stahl@nrc.gov	March 29	April 11	

Third NRC TEAM in Japan - Leaving April 2/3 and Return on April 16, 2011 - NRC TRAVELERS IN JAPAN

Name	Phone Number (internal BB or cell)	Email/Other	Flight Arrival (Japan Time)	Return date to U.S.	Emergency contact
Rudy Bernhard, Region II Expertise in severe accident management, B5b and accident recovery, Leaves 4/2		Rudolph.Bernhard@nrc.gov	Sun, Apr 3 4:00 p.m.	Sat, April 16 2:55 p.m.	(b)(6)
Michel (Mike) Call, NMSS Nuclear Engineer Fluent in Japanese and lived in Japan for two years, Leaves 4/2		Michel.Call@nrc.gov	Sun, Apr 3 3:10 p.m.	Sat, April 16 3:37 p.m.	
Elmo Collins, RIV Executive level – Assistant Team Leader. Will replace Dan Dorman, Leaves 3/29			March 30 1:05 p.m.	Tue, April 12 10:47 DFW	
Mike Hay, RIV Extensive experience in emergency planning and event response experience. Masters in HP, Leaves 4/22	(b)(6)	Michael.Hay@nrc.gov	Sun, Apr 3 4:00 p.m.	Sat, April 16 9:20 a.m.	
Mike Salay, RES Severe accident expertise, OECD - leaves 4/2 or 3					
Vince Holahan, FSME Sr. level Advisor **Departure with Navy Honolulu, HI**			March 28 9:35 p.m.		

(b)(6)

From: LIA10 Hoc
Sent: Sunday, April 10, 2011 9:54 PM
To: LIA08 Hoc; LIA02 Hoc; LIA03 Hoc
Subject: FW: Departure Date Change for Elmo Collins

-----Original Message-----
From: LIA02 Hoc
Sent: Sunday, April 10, 2011 9:54 PM
To: LIA08 Hoc; LIA03 Hoc; LIA10 Hoc
Subject: FW: Departure Date Change for Elmo Collins

-----Original Message-----
From: McKenna, Surin (DCHA/OFDA) [mailto:smckenna@ofda.gov]
Sent: Sunday, April 10, 2011 9:53 PM
To: Wittick, Brian; Stahl, Eric
Cc: Collins, Elmo; Emche, Danielle; LIA02 Hoc; BylandYX@state.gov; Brown, Courtney; Nakatsuma, Alfred
Subject: RE: Departure Date Change for Elmo Collins

Brian - Welcome to Japan.

There are conflicting dates on your departure. Your country clearance indicated Apr 23 as your departure date while your travel order has Apr 30 as the departure date. I am copying the RMT AC and our travel team in this email to verify your departure date.

For your information, USAID/DART takes the lead in coordinating all administrative support with the Embassy, including hotel reservation. As NRC's lodging cost is funded under the USAID/DART admin support, it is important that you funnel your request through the DART and not make the changes/requests directly with the vendor. In addition, there is a reconciling process on support workload count and accounting between USAID/DART and the various Embassy service providers, and hence it is important that any admin-related requests be made through the DART, with the exception of interpreter services which we have prior arrangement that the DART be copied on email request.

Your understanding and cooperation on the above is deeply appreciated.

Surin McKenna
Administrative Officer
Pacific Tsunami and Japan Earthquake DART USAID/DCHA/OFDA
Office: (81) (3) 3224 5016
BB: (b)(6)
Email: smckenna@ofda.gov

-----Original Message-----
From: Wittick, Brian [mailto:Brian.Wittick@nrc.gov]
Sent: Monday, April 11, 2011 9:59 AM

000517

To: Stahl, Eric; McKenna, Surin (DCHA/OFDA)
Cc: Collins, Elmo; Emche, Danielle; LIA02 Hoc
Subject: RE: Departure Date Change for Elmo Collins

Surin,

When I checked in to the Okura last night they had me only booked thru 23 April. I had them change it to 30 April in accordance with my orders.

Thanks
Brian

-----Original Message-----
From: Stahl, Eric
Sent: Sunday, April 10, 2011 8:23 PM
To: 'smckenna@ofda.gov'
Cc: Wittick, Brian; Collins, Elmo; Emche, Danielle; LIA02 Hoc
Subject: Departure Date Change for Elmo Collins

Surin -

Elmo Collins would like to change his departure date to 14 April and add two nights at the Okura. He was originally scheduled to depart tomorrow (12 April). Do you need any information from any of us to facilitate this?

In addition, can you please re-send Elmo his eTravel login information?

Thanks for all of your help,
Eric

-----Original Message-----
From: Collins, Elmo
Sent: Sunday, April 10, 2011 5:14 PM
To: Stahl, Eric; Emche, Danielle
Cc: Casto, Chuck; Evans, Michele
Subject: My return

Danielle
Pls help me contact USAid- I need to change my return flight to 4/14 and extend my stay at Okura 2 addl nights

Also, I need help with remembering my USAid E-travel Logon info

Thanks

Elmo

From:	LIA10 Hoc
Sent:	Sunday, April 10, 2011 11:18 PM
To:	LIA08 Hoc; LIA02 Hoc; LIA03 Hoc
Subject:	FW: Published article - The Japan Times: Sunday, April 10, 2011 "U.S. mulls rethink of 80-km evac zone"
Importance:	High

From: LIA02 Hoc
Sent: Sunday, April 10, 2011 11:18 PM
To: LIA08 Hoc; LIA03 Hoc; LIA10 Hoc
Subject: FW: Published article - The Japan Times: Sunday, April 10, 2011 "U.S. mulls rethink of 80-km evac zone"
Importance: High

From: El-Jaby, Ali [mailto:Ali.El-Jaby@cnsc-ccsn.gc.ca]
Sent: Sunday, April 10, 2011 11:18 PM
To: LIA02 Hoc
Cc: EOC18, CNSC Duty Officer
Subject: Published article - The Japan Times: Sunday, April 10, 2011 "U.S. mulls rethink of 80-km evac zone"
Importance: High

USNRC Colleagues,

It has been reported in a published article - **The Japan Times: Sunday, April 10, 2011** - that USNRC is planning on scaling back the 50 mile (80 km) evacuation zone (please see article below). Is it possible to get clarification by the daily 0930 EDT RST/PMT telecon (or before if possible). Please send any info you can provide to this email and the cc'd above.

Many thanks,

ALI

Ali El-Jaby, PhD
Specialist | Spécialiste
Physics and Fuel Division | Division de la physique et du combustible
Directorate of Assessment and Analysis | Direction de l'évaluation et de l'analyse
Technical Support Branch | Direction générale du soutien technique
Canadian Nuclear Safety Commission | Commission canadienne de sûreté nucléaire
Ottawa, Canada K1P 5S9
ali.el-jaby@cnsc-ccsn.gc.ca
Telephone | Téléphone: 613-943-4918
Blackberry (b)(6)
Facsimile | Télécopieur: 613-995-8086
Government of Canada | Gouvernement du Canada

/START ARTICLE

000518

U.S. mulls rethink of 80-km evac zone

WASHINGTON (Kyodo) U.S. nuclear regulators may revise the evacuation advisory for Americans living within an 80-km radius of the Fukushima No. 1 nuclear plant as radioactive substances in areas beyond 40 km of the stricken facility have subsided to levels that require no flight, officials said Friday.

The U.S. Energy Department compiled the evaluation report based on radiation data jointly observed by Japan and the United States near the plant in the quake-hit northeast.

The U.S. Nuclear Regulatory Commission issued an evacuation advisory for Americans living within an 80-km radius of the troubled plant on March 16. The decision was based on the assumption that fuel at the No. 2 reactor at the plant was completely damaged, not on observational data.

Based on the limited data it had at the time, the NRC may have overestimated the levels of radioactive substances that would leak from the nuclear plant.

NRC officials also attributed the review of the evacuation advisory to improvements in the situation surrounding the crippled nuclear plant.

The Japanese government set up a 20-km evacuation zone while at the same time asking people living between 20-30 km from the plant to stay indoors.

The NRC has said the Japanese evacuation advisory is also appropriate.

The Japan Times: Sunday, April 10, 2011

/END ARTICLE

From: LIA03 Hoc
Sent: Monday, April 11, 2011 9:03 AM
To: LIA08 Hoc; LIA02 Hoc; LIA10 Hoc
Subject: FW: USAID and NRC travel

From: Evans, Michele
Sent: Monday, April 11, 2011 9:03 AM
To: Kozal, Jason; LIA03 Hoc; LIA02 Hoc
Subject: RE: USAID and NRC travel

Jason,

Tim Lupold from NRR will be travelling to Japan. Target travel date is Thursday 4/14. He is one of the remaining three staff for this week.

Michele

From: Kozal, Jason
Sent: Sunday, April 10, 2011 5:56 PM
To: Evans, Michele
Subject: Re: USAID and NRC travel

Yes the sooner the better. We need their relevant info (on the Liaison team checklist) ASAP.

Sent from an NRC BlackBerry
Jason W Kozal
(b)(6)

From: Evans, Michele
To: Kozal, Jason
Sent: Sun Apr 10 17:34:45 2011
Subject: Re: USAID and NRC travel

Thanks. I may have 2 of the names by noon tomorrow and the 3rd later. Should we move the first 2 as soon as I have them instead of waiting for the 3rd?

Sent from an NRC Blackberry
Michele Evans

From: Kozal, Jason
To: Evans, Michele; Virgilio, Martin; Dyer, Jim
Cc: Marshall, Jane
Sent: Sun Apr 10 17:02:16 2011
Subject: Re: USAID and NRC travel

000519

Michele,

Sorry I missed this conversation. I was on the night shift last night and was asleep.

I have forwarded this request to USAID. I will call the Response Manager first thing in the morning to discuss our requirements.

Sent from an NRC BlackBerry
Jason W Kozal
(b)(6)

From: Evans, Michele
To: Virgilio, Martin; Dyer, Jim
Cc: Kozal, Jason; Marshall, Jane
Sent: Sun Apr 10 13:03:16 2011
Subject: Re: USAID and NRC travel

Jason,

They are all emergent.

Sent from an NRC Blackberry
Michele Evans

From: Virgilio, Martin
To: Evans, Michele; Dyer, Jim
Cc: Kozal, Jason; Marshall, Jane
Sent: Sun Apr 10 12:18:26 2011
Subject: RE: USAID and NRC travel

Michele

My preference would be to classify the 6 we know as "emergent" and have them all travel on Tuesday. The additional 3 (yet to be named) would travel on Friday.

We can talk if you would like today or tomorrow morning. I am in the process of closing down here in OWF and moving to the ops center.

Marty

From: Evans, Michele
Sent: Sunday, April 10, 2011 11:04 AM
To: Virgilio, Martin; Dyer, Jim
Cc: Kozal, Jason; Marshall, Jane
Subject: FW: USAID and NRC travel

Marty,
We will need to discuss the implications of the information in this email. Chuck's team dips to about 7 people on Wednesday and 4 of those are supposed to leave on about April 17.

As you know we are planning to send 6 people on Tuesday, 4/12. USAIDs won't receive their names until Monday morning. I've asked Jason to tell me the downside of calling them "emergent" and having them travel on Tuesday. For example, it would not be ideal for them to have to take non direct flights, like what happened to one set of travelers.

Another option is to call 2 of them emergent and send them on Tuesday (Steve Reynolds and Carl Moore, both from RIII) , the other 4 on Thursday or as soon as possible (maybe Wednesday). I still need to identify 3 more people, to get up to the 11 that Chuck requested. I hope to have those names by late Monday. So under this USAIDs scheme below those 3 would travel Friday 4/15.

Jim,

All of these people will be in Japan into the first week of May. So sounds like we will need to transition them to NRC travel mid trip. I assume that is not a problem?

thanks
Michele

From: Kozal, Jason
Sent: Sunday, April 10, 2011 2:25 AM
To: Evans, Michele
Cc: LIA01 Hoc; LIA02 Hoc; LIA03 Hoc; LIA06 Hoc; LIA08 Hoc; LIA11 Hoc; Marshall, Jane; Kowalczik, Jeffrey; Dudek, Michael; ET07 Hoc
Subject: USAID and NRC travel

Resent with a subject line
Jason Kozal
USNRC/NSIR
jason.kozal@nrc.gov
301-448-6627

From: Kozal, Jason
Sent: Sunday, April 10, 2011 2:22 AM
To: Evans, Michele
Cc: LIA01 Hoc; LIA02 Hoc; LIA03 Hoc; LIA06 Hoc; LIA08 Hoc; LIA11 Hoc; Marshall, Jane; Kowalczik, Jeffrey; Dudek, Michael; ET07 Hoc
Subject:

Michele,

USAID called me Friday evening to discuss what their capabilities will be from USAID HQ going forward.

They have drawn down their staffing to a Response Manager (RMTPACTSU_RM@ofda.gov) and an Admin Coordinator (RMTPACTSU_AC@ofda.gov) on dayshift Monday through Friday only. Due to this drawdown, the NRC no longer maintains a imbedded liaison at USAID. I will continue to act as the liaison with USAID in order to address and resolve any issues that come up between us.

Due to the draw down of resources at USAID the ability of the NRC to travel on short notice (1-2 days) will be impacted. In order to ensure our travelers can meet our required travel dates, USAID is requesting that we give them 4 days notice unless the travel is deemed to be emergent. This will allow the USAID Admin Coordinator time to create travel profiles for all of the travelers, submit country clearances, obtain visas (if this becomes necessary), and arrange and get approval for the travel. I saw that we have another wave of NRC travelers slated to travel on Tuesday the 12th. The USAID Admin Coordinator will not have visibility of these travelers until Monday morning. The 14th would probably be a more realistic target date for these travelers. I will send the names of the travelers to USAID tonight, and call Monday morning to discuss this with the USAID Response Manager to discuss this issue. I will need to know if we absolutely need these folks to travel on the 12th or if later in the week is OK.

The second question they had was about staffing in Japan. At what levels are we planning to maintain our staffing in Japan through the end of the month? This is when USAID is planning on ending their mission, and they are trying to plan

out what the remainder of their HQ support is going to look like. I know this is a very flexible situation and they realize it as well. They just would like to know conceptually what the plan or vision is. From what I can tell the situation going forward is as follows:

1) We will maintain approximately 11 staff in Japan to support Ambassador Roos.

2) This will require a 4th wave of travelers next week (week of 4/11). based on this rotation we will need a 5th wave of travelers to go the last week of April (week of 4/25).

3)We will be maintaining this staffing level through the end of the USAID mission. At that time all personnel traveling into or to Japan will transition to NRC travel authority. When this time is identified the NRC and USAID will need a couple of days to ensure all travelers are transitioned to the NRC system.

I would like to communicate a plan to USAID so they have some visibility of what our intentions are. This communication would be provided with the caveat that it could change at any time. Additionally, if the situation were to degrade significantly USAID would ramp up their resources to support any additional efforts required.

Thank you for your time and your thoughts.

V/r,

Jason Kozal
Federal Interagency Coordinator
USNRC/NSIR
jason.kozal@nrc.gov
(b)(6)

From: LIA10 Hoc
Sent: Monday, April 11, 2011 11:43 AM
To: LIA08 Hoc; LIA02 Hoc; LIA03 Hoc
Subject: FW: Need e-mail and phone contact info for six travelers

From: LIA02 Hoc
Sent: Monday, April 11, 2011 11:43 AM
To: LIA08 Hoc; LIA03 Hoc; LIA10 Hoc
Subject: FW: Need e-mail and phone contact info for six travelers

From: Kozal, Jason
Sent: Monday, April 11, 2011 11:43 AM
To: LIA02 Hoc
Subject: Fw: Need e-mail and phone contact info for six travelers

Sent from an NRC BlackBerry
Jason W Kozal
(b)(6)

From: RMTPACTSU_AC <RMTPACTSU_AC@ofda.gov>
To: Kozal, Jason
Sent: Mon Apr 11 11:41:18 2011
Subject: Need e-mail and phone contact info for six travelers

Hi Jason,

Can you provide me with the e-mail addresses and a contact phone number for each of the six travelers as soon as possible.

Thanks.

Ron

From: Kozal, Jason [mailto:Jason.Kozal@nrc.gov]
Sent: Monday, April 11, 2011 10:24 AM
To: RMTPACTSU_AC
Subject: Re: URGENT: Information Required

Working on it. We have been trying to contact Carl this morning.

Sent from an NRC BlackBerry

000520

From: LIA10 Hoc
Sent: Monday, April 11, 2011 12:41 PM
To: LIA08 Hoc; LIA02 Hoc; LIA03 Hoc
Subject: FW: URGENT: Information Required

From: LIA02 Hoc
Sent: Monday, April 11, 2011 12:41 PM
To: LIA08 Hoc; LIA03 Hoc; LIA10 Hoc
Subject: FW: URGENT: Information Required

From: Kozal, Jason
Sent: Monday, April 11, 2011 12:41 PM
To: LIA02 Hoc
Subject: Fw: URGENT: Information Required

These were all personal passports correct.

Sent from an NRC BlackBerry
Jason W Kozal
(b)(6)

From: RMTPACTSU_AC <RMTPACTSU_AC@ofda.gov>
To: Kozal, Jason
Sent: Mon Apr 11 12:40:06 2011
Subject: RE: URGENT: Information Required

Hi Jason,

I have the passport numbers for each persona but not the type (tourist, official, diplomatic). Can someone get that information to me so I can complete the ECC.

Thanks.

Ron

From: Kozal, Jason [mailto:Jason.Kozal@nrc.gov]
Sent: Monday, April 11, 2011 10:28 AM
To: RMTPACTSU_AC
Subject: Re: URGENT: Information Required

(b)(6)

000521

Sent from an NRC BlackBerry
Jason W Kozal
(b)(6)

From: RMTPACTSU_AC <RMTPACTSU_AC@ofda.gov>
To: Kozal, Jason
Sent: Mon Apr 11 10:20:12 2011
Subject: URGENT: Information Required

Hi Jason,

You aren't going to believe this but the forms that people are filling out don't have the Bank Name on them.

We need the name of the bank for the following:

Steve Garchow
Steve Reynolds
Anthony Huffert

We don't need the entire form redone, just the name of the bank so that can be sent to me by e-mail.

I have not received a form for Carl Moore.

We need this immediately, otherwise the TAs won't be ready for travel tomorrow.

I've attached an updated data collection document that does ask for the bank name for future reference. It includes a copy of the Security clearance verification form as well.

Ron

From: LIA10 Hoc
Sent: Monday, April 11, 2011 3:28 AM
To: LIA08 Hoc; LIA02 Hoc; LIA03 Hoc
Subject: FW: Radiation data by MEXT
Attachments: (English)20110410_01.pdf; (unofficial)(English)20110410_01with lat_long.pdf; (English)20110410_02.pdf; (English)20110410_03.pdf; (English)20110410_04.pdf; (unofficial)(Japanese)20110410_04with lat_long.pdf; (English)20110410_05.pdf; (English)20110410_06.pdf; (English)20110410_07.pdf; (English)20110410_08.pdf; (unofficial)(English)20110410_08with lat_long.pdf; (English)20110410_09.pdf; (English)20110410_10.pdf; (English)20110410_11.pdf; (English)20110410_12.pdf; (English)20110410_13.pdf; (unofficial)(English)20110410_13with lat_long.pdf; (English)20110410_14.pdf

-----Original Message-----
From: LIA02 Hoc
Sent: Monday, April 11, 2011 3:28 AM
To: LIA08 Hoc; LIA03 Hoc; LIA10 Hoc
Subject: FW: Radiation data by MEXT

-----Original Message-----
From: eda@mext.go.jp [mailto:eda@mext.go.jp]
Sent: Monday, April 11, 2011 3:27 AM
(b)(6)

Subject: Radiation data by MEXT

000522

Dear Sir,

Please see attached the document.

Sincerely yours,
Kei EDA
EOC, Ministry of Education,Culture, Sports, Science & Technology (MEXT), Japan

From: LIA03 Hoc
Sent: Monday, April 11, 2011 9:57 AM
To: LIA08 Hoc; LIA02 Hoc; LIA10 Hoc
Subject: FW: Draft read-out 1600 Telecon 04/07/11 Low Level Radioactive Waste Disposition

-----Original Message-----
From: Schultheisz.Daniel@epamail.epa.gov [mailto:Schultheisz.Daniel@epamail.epa.gov] On Behalf Of EOC_Environmental_Unit@epamail.epa.gov
Sent: Monday, April 11, 2011 9:57 AM
To: Idar, Deanne J CIV OSD POLICY
Cc: Eoc.Epahq@epamail.epa.gov; (b)(6) (b RMTPACTSU_ELNRC; RMTPACTSU_HHS; RMTPACTSU_MLO; RMTPACTSU_SRO; DemingRM@state.gov; NITOPS; Connery, Joyce; PMT03 Hoc; David Bowman; Mustin, Tracy; (b)(6) J.; Regan, Sean P.; Bahar, Michael; Komp, Greg R Mr CIV USA HQDA ASO; gornjm@state.gov; (b)(6) (b)(6) (b)(6) Aponte, Manuel COL OSD POLICY; Lane, Aikojean CIV OSD POLICY; Gross, Laura, CIV, OSD-POLICY; Malone, Stephen C CTR JCS J3; Owens, Janice; LIA03 Hoc; LIA02 Hoc; Tilden, Jay; Hoc, PMT12; (b)(6) RMTPACTSU_DMP@ofda.gov; Smith-Kevern, Rebecca; McCaughey, Bill; McGinnis, Edward; Phillip J Finck; Farrand, David E SEA04 04N; Douglas.Tonkay@em.doe.gov; Janet.benini@dot.gov; Curry, Michael R; Roupas, Mark, CIV, OSD-POLICY; Delazaro LtCol Steven J; Terrell, (b)(6) Love, Richard (b)(6) Schultheisz.Daniel@epamail.epa.gov
Subject: Fw: Draft read-out 1600 Telecon 04/07/11 Low Level Radioactive Waste Disposition

I agree that the question of NRC licensing of material resulting from contamination of equipment or conveyances, whether government-owned or commercial, was not cleared up during the call. I think the regulatory status applicable to the radiological contamination is the primary concern that needs to be addressed, whereas my reference to EPA as a "secondary regulator" applied to the potential generation of hazardous waste resulting from decontamination activities (e.g., through the use of solvents). I think this would fall under the normal program for hazardous waste management (at a port or base) (40 CFR part 261), although care should be taken to avoid mixing waste streams to minimize the volume of waste needing special handling. It's likely that the hazardous waste management program is more integrated into daily operations than the radiological waste program, so hopefully this would not create as much concern. It also doesn't seem as though there would be import issues, since (as I understood from the call) waste from decontamination that takes place at sea would not be held on the vessel.

As I see it, if the resulting waste is regulated by NRC as low-level waste, the management options become more clear. If it is not, I think EPA would be more interested in the proposed disposition, whether or not it is regulated as hazardous waste.

I hope this helps. Hopefully this will become more clear as the situation evolves.

Dan Schultheisz
U.S. Environmental Protection Agency
Office of Radiation and Indoor Air
Radiation Protection Division
(202) 343-9349
----- Forwarded by Daniel Schultheisz/DC/USEPA/US on 04/11/2011 09:13 AM

000523

From: Epahq Eoc/DC/USEPA/US

To: OSWER OEM EOC Positions

Date: 04/08/2011 02:08 PM

Subject: Fw: Draft read-out 1600 Telecon 04/07/11 Low Level Radioactive Waste Disposition

U.S. Environmental Protection Agency
Headquarters Emergency Operations Center 1200 Pennsylvania Ave Washington, DC 20004
202-564-3850 202-564-8729 (fax)

mailto:eoc.epahq@epa.gov
----- Forwarded by Epahq Eoc/DC/USEPA/US on 04/08/2011 02:07 PM -----

From: (b)(6)
<

To:
Cc:

(b)(6)

(b)(6)

(b)(6)

Date: 04/08/2011 12:53 PM
Subject:RE: Draft read-out 1600 Telecon 04/07/11 Low Level Radioactive Waste Disposition

Dr. Idar,

Given that much of the call was spent describing the current radiological status on the ground in Japan, I think a short summary of that status would be useful in the telecon summary. Here is a proposed paragraph.

"The nuclear accident in Japan has resulted in widespread deposition of radioactive contamination throughout the northern part of Japan, including the metropolitan Tokyo area. Surface contamination levels in this entire region would be required to be posted as radiological area if they were at a U.S. licensed facility or DOE site. Any materials leaving Japan have the potential for low levels of radioactive contamination. Thus, the discussion about materials in DOD possession is indicative of similar materials that are entering commerce from Japan. In the DC and IPC meetings earlier this week, it was agreed that the limit of 4 Bq/cm2 for commerce was going to be acceptable and posed no health risk."

There was some discussion during the telecon about the DOD's normal procedures for disposal of low-level radioactive waste, and some participants questioned whether waste associated with Japan could simply be handled by the normal DOD program. Mr. Farrand and I noted that the current situation was well outside the scope of the normal DOD program.
Normal DOD processes deal with fairly limited amounts of radioactive material, in specific normal applications, handled by trained and qualified personnel. Japan related radioactivity will likely show up in a large number of different pieces of equipment, in a large number of places that typically don't handle radioactive material, and be handled by people who normally have no involvement with the DOD radioactive waste program. That is why DOD's preference is for such material to be returned to Japan if possible. If this is not possible, it would be necessary to greatly expand the scope and resources of the DOD radioactive waste disposal program.

In addition, I would propose that the summary of the telecon address the following considerations. If some of the other parties to the call can clarify these matters, that would be great. If they can't at this time, then the telecon summary should be clear that these matters are still open questions.

Regarding the question of NRC or Agreement State licensing, either for import or possession of radiologically contaminated material of Japan origin, the telecon and the excerpts forwarded by Ms. Owens do not provide a clear answer. During the call, there was an initial statement that NRC would not be licensing such material. Later on the discussion included reference to potential licensing. The regulatory provisions cited by Ms. Owens discuss the regulatory aspects of normal commerce in radioactive materials. It is not clear that these provisions would apply to

widely scattered accident fallout that has placed low level contaminated material in the hands of many unregulated people and on material that will be entering commerce throughout the world.

In addition to the passages from NRC regulations quoted in the draft telecon summary, I would invite consideration of these provisions of NRC regulation in 10CFR20:

10 C.F.R. § 20.1002 Scope.

The regulations in this part apply to persons licensed by the Commission to receive, possess, use, transfer, or dispose of byproduct, source, or special nuclear material or to operate a production or utilization facility under parts 30 through 36, 39, 40, 50, 52, 60, 61, 63, 70, or
72 of this chapter, and in accordance with 10 CFR 76.60 to persons required to obtain a certificate of compliance or an approved compliance plan under part 76 of this chapter. The limits in this part do not apply to doses due to background radiation, to exposure of patients to radiation for the purpose of medical diagnosis or therapy, to exposure from individuals administered radioactive material and released under § 35.75, or to exposure from voluntary participation in medical research programs.

10 C.F.R. § 20.1003 Definitions:

"Background radiation means radiation from cosmic sources; naturally occurring radioactive material, including radon (except as a decay product of source or special nuclear material); and global fallout as it exists in the environment from the testing of nuclear explosive devices or from past nuclear accidents such as Chernobyl that contribute to background radiation and are not under the control of the licensee.
"Background radiation" does not include radiation from source, byproduct, or special nuclear materials regulated by the Commission."

As NRC considers these licensing questions, it is important to note that the position taken by NRC on these questions related to a license to import or licensing for possession should apply across the board to all entities that import or receive material from the northern half of Japan and not just the Department of Defense.

The EPA representative on the call (Dan Schultheisz?) stated that EPA would be a "secondary regulator" for this material. Could EPA provide further clarification of which EPA regulations might apply to this material, and how such secondary regulation might be implemented? As with the NRC licensing questions, any EPA regulation of potentially contaminated material returning from Japan would have to take into account that low levels of radioactive contamination may be present on and in any materials coming to the U.S. from Japan, including people, commercial aircraft, machinery, parts and other goods in commerce.
Other than food imports, we are not aware of restrictions that have been imposed on other materials from Japan.

We appreciate your efforts to settle the questions of waste disposal in Japan, off-load of affected materials from ships in Japan, and potential return of wastes contaminated with Japan-origin radioactivity to Japan.
We would encourage any action that would assist in a prompt resolution of the first two of these, and an eventual resolution of the third.

Jeff Steele
Naval Reactors
202-781-6192

-----Original Message-----
From: Idar, Deanne J CIV OSD POLICY [mailto (b)(6)
Sent: Thursday, April 07, 2011 6:55 PM

To: 'eoc.epahq@epa.gov'; (b)(6) '; 'Eoc.Epahq@epamail.epa.gov'; 'RMTPACTSU_ELNRC'; 'RMTPACTSU_HHS'; 'RMTPACTSU_MLO'; 'RMTPACTSU_SRO'; 'DemingRM@state.gov'; 'NITOPS'; 'Connery, Joyce'; 'PMT03 Hoc'; 'David Bowman'; 'Mustin, Tracy'; (b)(6) (b)(6) ; 'Regan, Sean P.'; 'Bahar, Michael'; Komp, Greg R Mr CIV USA HQDA ASO; 'gornim@state.gov'; (b)(6) Munning, Gregory A Capt Code 07, 07; (b)(6) Aponte, Manuel COL OSD POLICY; Lane, Aikojean CIV OSD POLICY; Gross, Laura, CIV, OSD-POLICY; Malone, Stephen C CTR JCS J3; 'Owens, Janice'; 'LIA03 Hoc'; 'LIA02 Hoc'; 'Tilden, Jay'; 'Hoc, PMT12' (b)(6) 'RMTPACTSU_DMP@ofda.gov'; 'Smith-Kevern, Rebecca'; 'McCaughey, Bill'; 'McGinnis, Edward'; 'Phillip J Finck'; Farrand, David E SEA04 04N; Steele, Jeffrey M CIV SEA 08 NR; 'Douglas.Tonkay@em.doe.gov'; 'Janet.benini@dot.gov'; 'Curry, Michael R'; Roupas, Mark, CIV, OSD-POLICY; Delazaro LtCol Steven J; Terrell, Patrick COL (USA) OSD POLICY; Love, Richard A CIV OSD POLICY
Subject: Draft read-out 1600 Telecon 04/07/11 Low Level Radioactive Waste Disposition

UNCLASSIFIED// FOR OFFICIAL USE ONLY

ALCON:

The draft read-out from today's 1600 Telecon on the Low Level Radioactive Waste (LLRW) Disposition is attached (and copied below) for
your review. I welcome feedback from the participants on any missing
due-outs or key points.

Thanks again to all that were able to participate in our discussion.

Best,

Deanne

<<...>>

Low Level Radioactive Waste (LLRW) Disposition IA (Sub-set) Telecon:

1600-1700 Thursday, 6 April 2011

Participants:

1. NNSA/DOE: EM HQ Office of Disposal Operations Office, General Counsel, NE

2. EPA

3. NRC

4. NSS

5. DoD: DoD LLRW Disposition Advisory Committee Chair, Naval Reactors, OSD(P)/CWMD

Facilitator: Dr. Deanne J. Idar, OSD Policy/Global Strategic Affairs/ CWMD/ CBRN Defense

Due outs:

* DOE: Verify if DOE AMS assets have had any radioactive levels

above clearance criteria; follow-up with (b)(6)

* NRC: provide DOS POCs information to OSD(P)/CWMD; CWMD will distribute to DoD LLRW Disposition Advisory Committee Chair

* NSS: facilitate connection to DOS contacts for OSD(P)/CWMD

Agenda

1. Roll Call

2. Review of 4 questions posed by DoD LLRW Disposition Advisory Committee

* Will rad waste generated outside the hot, warm or plume zones be returned to Japan or treated as US generated waste?

* Can this waste be declared 91b, "national defense" waste or do we need to treat as commercial low level radwaste?

* If commercial, will we need import permit from NRC?

* Can we access DOE disposal sites?

3. Wrap up

Meeting Summary:

The objective of today's telecon was to assist the DoD in developing the appropriate guidance to address any regulatory requirements for the appropriate disposition of LLWR generated by DoD operations in support of Operation Tomodachi OCONUS and CONUS. The 4 questions identified above were reviewed. Key points follow:

* Locations of concern with respect to accumulated LLRW

o In Japan - outside of hot zone

o Sea platforms

o Retrograde in theatre

o Stateside decon locations

* Recommended areas for disposition

o In Japan – disposition in Japan

o Sea platforms - disposition in Japan

o Retrograde in theatre - disposition in Japan

o Stateside decon locations - disposition in US

* Disposition requirements

o In Japan:

* Need DOS assistance to determine what agreements and any potential legal requirements need to be negotiated with the Government of Japan (GOJ), to ensure that we are following appropriate GOJ disposition requirements.

* Need specifics on GOJ's waste disposition requirements.

o Stateside:

* RCRA regulated waste – need determination on whether or not there will be mixed hazardous waste

* Does DoD and/or commercial vendors need any source special or byproduct material licensing to handle LLRW (or retrograde?)

* NRC import requirements -

* DoD has an exclusion for their own LLRW

* See background NRC regulations information provided by Ms. Janice Owens, NRC, regarding general license for import, and definitions as follows.

§ 110.27 General license for import.

(a) Except as provided in paragraphs (b) and (c) of this section, a general license is issued to any person to import byproduct, source, or special nuclear material if the U.S. consignee is authorized to receive and possess the material under a general or specific NRC or Agreement State license issued by the Commission or a State with which the Commission has entered into an agreement under Section 274b. of the Atomic Energy Act.

(b) The general license in paragraph (a) of this section does not authorize the import of more than 100 kilograms per shipment of source and/or special nuclear material in the form of irradiated fuel.

(c) Paragraph (a) of this section does not authorize the import under a general license of radioactive waste.

(d) A person importing formula quantities of strategic special nuclear material (as defined in § 73.2 of this chapter) under this general license shall provide the notifications required by § 73.27 and § 73.72 of this chapter.

(e) A general license is issued to any person to import the major components of a utilization facility as defined in § 110.2 for end- use at a utilization facility licensed by the Commission.

(f) Importers of radioactive material listed in Appendix P to this part must provide the notifications required by § 110.50.

[51 FR 47208, Dec. 31, 1986, as amended at 56 FR 38336, Aug. 13, 1991;
58 FR 13003, Mar. 9, 1993; 60 FR 37564, July 21, 1995; 61 FR 35602, July 8, 1996; 65 FR 70291, Nov. 22, 2000; 68 FR 31589, May 28, 2003; 70 FR 37991, July 1, 2005; 75 FR 44089, Jul. 28, 2010]

§ 110.2 Definitions.

Radioactive waste, for the purposes of this part, means any material that contains or is contaminated with source, byproduct, or special nuclear material that by its possession would require a specific radioactive material license in accordance with this Chapter and is imported or exported for the purposes of disposal in a land disposal facility as defined in 10 CFR part 61, a disposal area as defined in Appendix A to 10 CFR part 40, or an equivalent facility; or recycling, waste treatment or other waste management process that generates radioactive material for disposal in a land disposal facility as defined in 10 CFR part 61, a disposal area as defined in Appendix A to 10 CFR part 40, or an equivalent facility. Radioactive waste does not include radioactive material that is—

(1) Of U.S. origin and contained in a sealed source, or device containing a sealed source, that is being returned to a manufacturer, distributor or other entity which is authorized to receive and possess the sealed source or the device containing a sealed source;

(2) A contaminant on any non-radioactive material (including service tools and protective clothing) used in a nuclear facility (an NRC- or Agreement State-licensed facility (or equivalent facility) or activity authorized to possess or use radioactive material), if the material is being shipped solely for recovery and beneficial reuse of the non-radioactive material in a nuclear facility and not for waste management purposes or disposal;

(3) Exempted from regulation by the Nuclear Regulatory Commission or equivalent Agreement State regulations;

(4) Generated or used in a U.S. Government waste research and development testing program under international arrangements;

(5) Being returned by or for the U.S. Government or military to a facility that is authorized to possess the material; or

(6) Imported solely for the purposes of recycling and not for waste management or disposal where there is a market for the recycled material and evidence of a contract or business agreement can be produced upon request by the NRC.

Note: The definition of radioactive waste in this part does not include spent or irradiated fuel.

Deanne J. Idar, Ph.D.

Senior Science Advisor

OSD(P)-GSA/CWMD/ CBRN Defense Policy

Office: Rm 5C746 Pentagon

Phone: 703-571-2327

Blackberry: (b)(6)

From: HOO Hoc
Sent: Tuesday, April 12, 2011 2:28 PM
To: LIA07 Hoc; LIA08 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: Documents posted on the French nuclear regulator's website
Attachments: IRSN_Information-note-for-french-citizens-in-japan_N2-08042011.pdf; IRSN_Dispersion-model-radioactive-releases-in-atmosphere-worldwide-EN.pdf; IRSN_Assessment-of-environmental-dosimetric-consequences-radioactive-releases-EN.pdf; IRSN_Fukushima-Accident_Impact-on-marine-environment-EN_20110404.pdf; image001.jpg

FYI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Headquarters Operations Officer
U.S. Nuclear Regulatory Commission
Phone:  301-816-5100
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email:  hoo.hoc@nrc.gov
secure e-mail:  hoo1@nrc.sgov.gov
```

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

From: Kenagy, W David [mailto:KenagyWD@state.gov]
Sent: Tuesday, April 12, 2011 12:31 PM
To: Kenagy, W David; vince.mcclelland@nnsa.doe.gov; Rodriguez, Veronica; ann.heinrich@nnsa.doe.gov; HOO Hoc; HOO2 Hoc; Huffman, William; decair.sara@epamail.epa.gov; timothy.greten@dhs.gov; maria.marinissen@hhs.gov; (b)(6) doehqeoc@oem.doe.gov; hhs.soc@hhs.gov; james.kish@dhs.gov; HOO Hoc; Smith, Brooke; Zubarev, Jill E; Shaffer, Mark R; nitops@nnsa.doe.gov; Skypek, (b)(6) clark.ray@epamail.epa.gov; Stern, Warren; DeLaBarre, Robin; Burkart, Alex R; Metz, Patricia J; Fladeboe, Jan P; Withers, Anne M; Lowe, Thomas J; Lewis, Brian M; SES-O_OS; EAP-J-Office-DL; O'Brien, Thomas P; Lane, Charles D; Conlon, John N; Foughty, Michael A; Mahaffey, Charles T; (b)(6); Jih, Rongsong; (b)(6) Cutler, Kirsten B
Subject: Documents posted on the French nuclear regulator's website

Documents posted on the French nuclear regulator's website

000524

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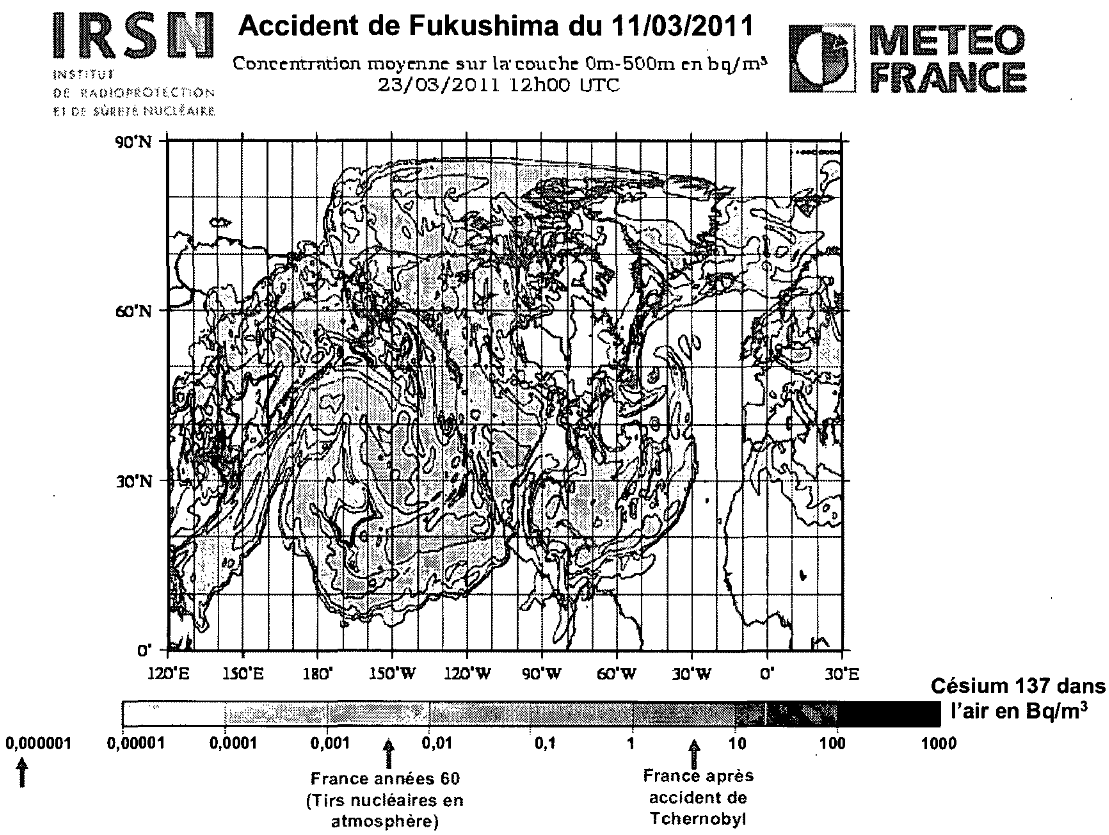
DE RADIOPROTECTION
ET DE SÛRETÉ NUCLÉAIRE

Dispersion model of the radioactive releases in the atmosphere on a worldwide scale

Update of March 22, 2011

Based on radioactive releases estimated by IRSN, Météo France (the national organisation weather forecast France) simulated the radioactive release dispersion on a large scale forecasted till March 26.



>> View the simulation (in french)

According to this simulation, the radioactive plume would have reached the United States as of March the 16 or 17. This forecast is coherent with the observation, of traces of iodine and caesium radioactive measured in the air on March 18 in Sacramento in California, as reported on the web site of the Agency of Environmental protection (US-EPA). The measured values were of 0,165 mBq/m3 for iodine 131, of 0,03 mBq/m3 for iodine 132 and of 0,002 mBq/m3 for caesium 137

The radioactive elements dispersed in the air then reached the French West Indies as from March 21 and Saint-Pierre-and-Miquelon March 23. The concentration levels of radionuclides in the air, estimated lower than 1 mBq/m3, are extremely low and cannot be detected by permanent radioactivity measurements in the environment (Téléray network) implemented at Point-à-Pitre, at Fort-de-France, at Cayenne and at Saint-Pierre-et-Miquelon. Moreover, EPA which is equipped with an alarm network similar to Téléray (Radnet network) currently does not announce any

abnormal radioactivity level on the American territory. The IRSN should soon receive samples of rainwater and plants taken in the French West Indies, in Guyana and Saint-Pierre-and-Miquelon.

Europe would be affected by the radioactive plume from the 22 or 23 March on. In France, it is mainly as from March 24 that traces of radioactive particles would be present in the air, on very low levels which should be around 1 mBq/m3 to the maximum. These very low concentrations, which would last several days even several weeks (in the absence of new significant releases coming from the power station of Fukushima), will not be detected by the Téléray network (163 radiation monitors in Metropolitan France) and will be not easily detectable by the usual means of monitoring. It is probable that only measurements of airborne samples of dusts collected by very high air flowrate stations of IRSN and then analysed with techniques allowing very low radioactive rate detection to quantify the radioactive elements released in the air at the time of the accident of Fukushima.
These samples and these analyzes will require several days before the first results are available. The results will make it possible to check the forecasts expressed by modelling.

As expected, the southern hemisphere is not significantly affected by the radioactive dispersion on a large scale.

The concentration levels in the air expected in America and Europe are too low to present any risk for health and the environment, even if they were to continue over several months.

As comparison, the values measured during the days following the accident of Tchernobyl were exceeded 100 000 Bq/m3 in the first kilometres around the nuclear power plant; they were around 100 to 1000 Bq/m3 in the most affected countries by the radioactive plume (Ukraine, Byelorussia).in France, the values measured in the East were about 1 to 10 Bq/m3 (on May 1, 1986). Today, a very low activity of caesium 137 remains in the air, about 0,000001 Bq/m3.

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Assessment of the environmental and dosimetric consequences in Japan due to the radioactive releases since March 12, 2011 by the nuclear power plant of Fukushima Daiichi

Updated March 23, 2011

1 - What is known about the radioactive releases emitted since 12 March 2011?

IRSN does not have any direct information regarding the composition and scale of the radioactive releases. But has the following information at its diposal:

- technical information on the damaged installations which makes it possible to assess their state of degradation;
- measurement results of the ambient dose rate carried out on the site, which give information on the release periods;
- results of measurement in the environment, allowing to identify the main radioactive elements released.

The interpretation of the information made it possible for IRSN to work out possible degradation scenarios for the 3 reactors since March 12. According to the new information received by the IRSN, the estimate of the radioactive releases is periodically updated. The most recent estimate of these releases is provided on the IRSN website.

> More information:
Assessment of radioactivity released by the Fukushima Daiichi Nuclear Power Plant (Fukushima I) through 22 March 2011

According to IRSN estimates, the main radioactive elements released during various radioactive release periods between the 12 and 23 March would be:

- The noble gases are radioactive elements with a very low chemical reactivity, and they remain in the air without ground deposits. In particular xenon 133 which has a radioactive half-life of 5,3 days;
- Volatile elements, mainly of the radioactive isotopes of iodine, radioactive caesium, radioactive tellurium. These elements form fine suspended particles in the air (aerosols), which due to their weight will gradually end up falling on the ground when released in the air.

The available measurement results in the environment, coming from Japan, confirm the presence of mainly:

- Iodine 131 (8 days of radioactive half-life), iodine 132 (2,3 hours of radioactive half-life) and of iodine 133 (20,8 hours of radioactive half-life);
- Tellurium 132 (3,2 days of radioactive half-life) the radioactive decrease produces iodine 132, as well as tellurium 129m (33,6 days of radioactive half-life) combined with tellurium 129 of a shorter period (1,16 hours);
- Caesium 137 (30 years of radioactive half-life) and of caesium 134 (2,1 years period).

2 - Dispersion of radioactive releases in the atmosphere on a regional scale

According to the meteorological observations available and forecasts provided by Meteo France, the IRSN re-assesses periodically, using its numerical models, dispersion in the air of released radioactive elements since March 12 by the nuclear power plants of Fukushima. These evaluations relate to the area close to the site (50 km around the site) as well as a broader area covering all of Japan and the area close to Japan.

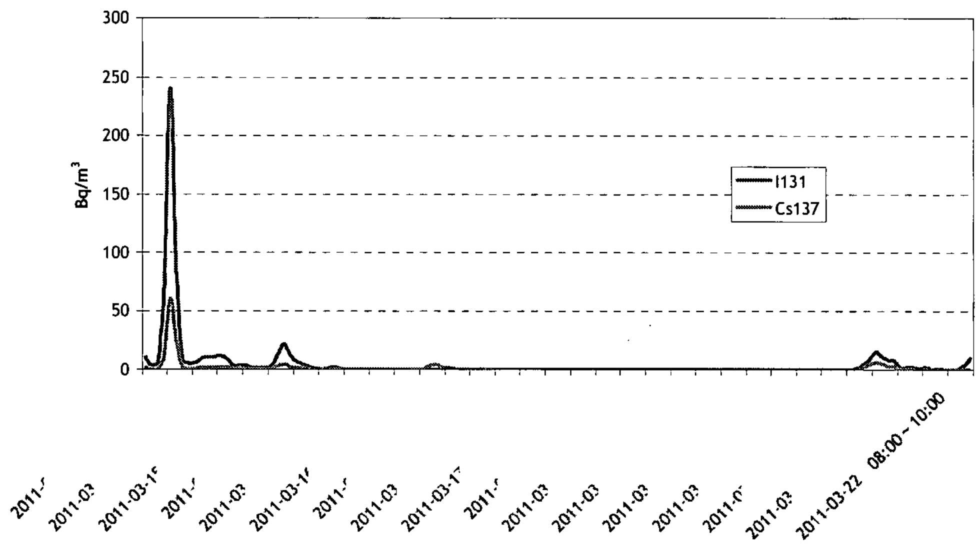
The map below shows the result of the most recent simulation carried out by IRSN, for the radioactive releases estimated between the 12 and March 23. This simulation was applied to caesium 137, selected as a representative element of the radioactive plume dispersion. The results of this modelling are expressed in becquerels of cesium 137 per cubic meter of air (Bq/m3).

> View the simulation updated on March 22, 2011

The modelling carried out on a Japan scale shows that the plume moved in directions which varied in the course of time: initially towards the North-East until March 14, then towards the south and south-west, for Tokyo, March 15, then towards the east, in direction of the Pacific Ocean. From March 20 and during the following days, the radioactive plume tends to move inland in a changing way, in particular towards Tokyo (especially on March 23) but also North-West. The plume should again move towards the east as from March 25.

The IRSN compared the results of this simulation with the measurement results of the air contamination carried out in Tokyo presented in the graph below for cesium 137 and iodine 131. They are of the same order of magnitude as the values measured in this city.

Evolution de l'activité volumique du césium 137 et de l'iode 131 (en Bq/m^3) mesurée dans l'air à Tokyo du 15 au 22 mars 2011 (Heure locale)



3 -Radioactive release consequences for the environment in Japan

According to the weather conditions, the radioactive elements released into the air at the time of the accident disperse on the ground and in the oceans by forming a radioactive plume. The radioactive elements in the form of particles settle gradually on various surfaces on the ground, in particular on the leaves of crop plants, grass of the grazing grounds, stagnant water outside or the water of the rivers, in the urban environments...

Vegetables with leaves (spinach, salads, leeks...) are particularly sensitive to this radioactive fallout and are quickly contaminated after the accident. The results of the measurements taken in Japan, at more than 100 km away from the nuclear power plant of Fukushima, on this product category confirm this:

Sampling date	Area / type of vegetable	Iodine 131	Caesium 137 et 134
18 mars 2011	Tochigi Prefecture - Spinach	2100 to 54100 Bq/kg	121 to 1931 Bq/kg
19 mars 2011	Tochigi Prefecture - Spinach - Leeks	3200 to 5700 Bq/kg 270 Bq/kg	460 to 790 Bq/kg 27 Bq/kg
	Ibaragi Prefecture - Spinach - Leeks	1900 and 11000 Bq/kg 440 Bq/kg	71 to 586 Bq/kg 7 Bq/kg
	Gunma Prefecture - Spinach - Leeks	2080 and 2630 Bq/kg 40 and 81,1 Bq/kg	268 to 310 Bq/kg 11,15 and 11,18 Bq/kg

These results indicate that for iodine 131 in spinach, the acceptable maximum level in Japan for marketing and the consumption of food products (2000 Bq/kg) are systematically exceeded in these territories. It is the same for radioactive caesium, but to a lesser extent (acceptable maximum level in Japan of 500 Bq/kg). The leeks, which offer a smaller leaf area in contact with the ambient air, seem less contaminated.

The contamination of vegetables with leaves is certainly more important while approaching the site of Fukushima, according to the importance of the radioactive fallout.

Generally, the contamination of these vegetables will remain important in the next days. During weeks to come, if new important releases do not occur, a clear reduction in the contamination of vegetables with leaves should be observed, because of the radioactive decrease of the radionuclides with a short life (iodine 131) and of the effect of the vegetable growth which dilutes the initial contamination in the mass of the plant.

4 - Estimating the doses likely to have been received by people exposed to the radioactive plume

IRSN has estimated the doses likely to have been received by a person exposed to the radioactive plume, assuming that this person remained in the same place and with no protection (i.e. outside) throughout the entire release period (from 12 to 20 March). For these dose calculations, IRSN studied the case of a one-year old infant, the most sensitive to iodine-131 (dose to the thyroid). In other words, these are the most cautious hypotheses.

The simulations below show how the doses evolve over time, throughout the simulation period. If there are further releases in the future, these doses may increase further if the most exposed people are unprotected.

Whole body doses likely to be received by a one-year old infant with no protection during the releases

> View the simulation updated on March 22, 2011

In the event of an accident, the recommended minimum dose values used to launch protective actions are 10 mSv for taking shelter and 50 mSv for evacuation. Below 10 mSv, the health risk is deemed to be sufficiently low and therefore such protective actions are considered unnecessary. To compare, the average annual dose received in France due to natural radioactivity and medical exposure is 3.7 mSv.

Doses to the thyroid likely to be received by a one-year old infant with no protection during the releases

> View the simulation updated on March 22, 2011

In the event of an accident, the recommended minimum dose values for prescribing the ingestion of stable iodine are 100 mSv in Japan

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Fukushima-Daiichi Accident

Information note n° 2 of the 8 April 2011

This information note, intended for French citizens in Japan, was drawn up by IRSN, the French Institute for Radiological Protection and Nuclear Safety, which currently has a radiation protection specialist among the response teams at the French Embassy in Tokyo

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1. SUMMARY OF THE SITUATION REGARDING THE ACCIDENT AND ITS CONSEQUENCES

This chapter summarises the main information regarding the operations carried out on the site of the Fukushima plant, the data available on radioactive discharges from the stricken reactors and the environmental consequences of the accident.

1.1. Situation regarding the Fukushima-Daiichi site

The state of the three reactors (1, 2 and 3) is still of great concern. Fresh water is now being used to cool the reactors and pools. Even though it is reported that some progress has been made (for example, the water injection pumps are now supplied by normal external power supply rather than by mobile back-up equipment), the means used to inject water remain nevertheless precarious. Since the 6th of April, TEPCO has been injecting nitrogen at a low rate into the containment vessel of reactor n°1 in order to limit the risk of explosion of the hydrogen present in this building. The same thing will be done afterwards in the containment vessels of reactors 2 and 3. These operations, which will last for several days for each reactor, could lead to new atmospheric discharges.

The presence of contaminated water in the turbine buildings of the three units is a result of the constant water releases onto the reactors to ensure their cooling and from probable water leaks coming from the reactor vessels or containment vessels of reactors 2 and 3. Water pumping operations are currently underway, particularly in the case of reactor 1. These operations are somewhat tricky given the quantity of water that needs to be treated and its high level of contamination.

A crack in the pit adjacent to the turbine building of reactor 2 led to a direct discharge of highly contaminated water into the sea. TEPCO managed to stop this discharge at around 6am local time on the 6th of April by plugging the leak with an injection of sodium silicate.

Since the 4th of April, TEPCO has been carrying out intentional discharges into the sea of water, which it terms as "slightly contaminated". This mainly involves 10,000 tonnes of liquid effluent stored in tanks, which was awaiting treatment and discharge before the accident. TEPCO justifies this operation by the need to free up storage space on the site to collect the highly contaminated water present in the buildings of the three damaged units. This discharge of liquid should be

finished by this weekend. Furthermore, a discharge is planned into the sea of around 1,500 tonnes of water from the buildings of units 5 and 6, probably due to the consequences of the flooding of these buildings during the tsunami.

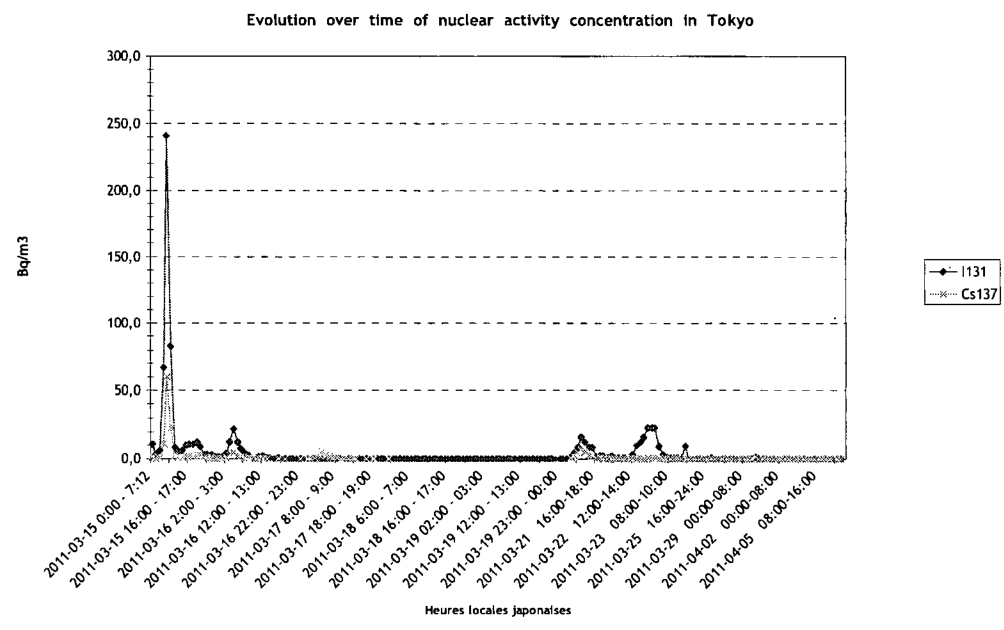
Measurements of sea water near to the plant taken over the last few days show a high level of contamination of the marine environment, a consequence of the discharge into the sea of part of the highly contaminated water present in the damaged units (see §3).

Atmospheric discharges (vapour plumes) will probably continue but will be smaller than those which resulted from the containment vessel depressurisation operations that took place during the first week following the initial accident. These discharges should not modify to any notable extent, over the next few days, the environmental contamination already present.

1.2. History of air radioactivity measured in Tokyo since the 15 March

The results of the measurements of air radioactivity (aerosols) in Tokyo, illustrated in the first graph below, show that:

- A peak in radioactive pollution due to the atmospheric dispersion of discharges from the Fukushima-Daiichi accident occurred on the 15th of March, the day on which the wind direction was towards Tokyo ;
- On the 16th of March, radioactive pollution of the air was still measurable, but at much lower levels ;
- A new episode of atmospheric pollution was observed in Tokyo between the 21 and 24 March. Although the levels reached were lower than on the 15 March, the rain that fell during this period led to a radioactive deposit that resulted in a twofold increase in the ambient dose rate measured by the IRSN Téléray radiation monitors installed in the French Embassy in Tokyo (see second graph below). The rapid rise observed on March the 21st, followed by several peaks between the 21 and 23 March, indicate the influence of the radiation emitted by the deposit formed by the rain and by the radionuclides present in the air during this period; the dose rate then reached was 130-140 nSv/h, a value comparable to that regularly measured in many regions due to natural radioactivity.



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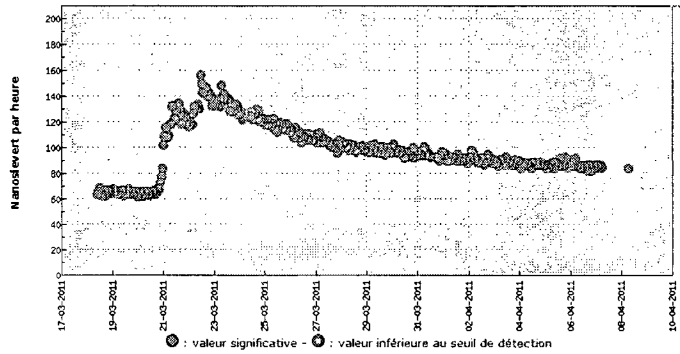
Evolution of ambient dose rates measured at the French Embassy in Tokyo



Since the 23 March, no significant presence of artificial radionuclides has been detected in the air in Tokyo. Only the radiation emitted by radioactive deposits contributes to the dose rate measured by the Téléray radiation monitor. This dose rate drops regularly due to the radioactive decay of the short half-life radionuclides present in the deposits. For instance, on the 8 April, it was 84 nSv/h.

1.3. Earthquake of the 7 April 2011

At 23.23pm JST on the 7 April, there was an earthquake at a depth of a 50 km. The epicentre was located several kilometres from the east coast of Honshu Island, around 20 km from the Onagawa nuclear power plant. There was a Tsunami warning but the alert was later lifted.

The Fukushima Dai-chi plant was not affected.

Three other nuclear facilities were however affected by this earthquake, namely reactors 1 to 3 of the Onagawa plant, reactor 1 of the Higashidoori plant and a fuel storage pool in Rokkasho. Temporary external power supply cuts were reported, but back-up diesel systems ensured the facilities were kept supplied with electricity. These power cuts led to a temporary rise in the temperature of the nuclear storage pools due to loss of cooling. In addition, there were small overflows of slightly contaminated water from the fuel storage pools in the buildings of reactors 1 to 3 in Onagawa. Finally, the operator (Tohoku) of the Onagawa reactors reported that other leaks had taken place in the buildings and that equipment had been damaged.

There have been no discharges recorded to date linked to this earthquake.

2. GENERAL RECOMMENDATIONS FOR FRENCH RESIDENTS IN JAPAN

Radioactive discharges from the site of the damaged plant have led to radiological pollution in some areas of the country, essentially in the four prefectures neighbouring the site. The purpose of the following recommendations is to limit as far as possible exposure to radiation induced by these discharges. Direct exposure to radioactive discharges dispersed in the air (external exposure to the radiation emitted by the radioactive plume and inhalation of radioactive particles) is essentially no longer a risk, since the discharges are now of little significance. Today, the risk of exposure is mainly linked to the consumption of foodstuffs contaminated by atmospheric fallout. The most sensitive foodstuffs to this radioactive pollution are leafy vegetables and milk from animals that consume contaminated grass or fodder. In certain areas of Fukushima prefecture and also outside of the 30 km zone around the nuclear site, important deposits have been identified and may lead to a significant dose through irradiation in the case of prolonged exposure.

Naturally, the following recommendations should not stand in the way of the application of measures decreed by the Japanese authorities.

2.1. Eating and drinking recommendations for all French residents in Japan

IRSN recommends:

- avoiding eating vegetables (spinach, *hana wasaki*, *kakina*, *komatsuna*, lettuce, chrysanthemum, cabbage, white cabbage, celery, broccoli, *bok choy*, parsley) and fresh milk produced since the 11 March in the prefectures of Fukushima, Tochigi, Ibaraki and Miyagi, Gunma.
- ensuring that the fresh foodstuffs listed above from prefectures where levels for these products have been observed higher than the norms authorising consumption (Saitama, Tokyo, Kanagawa, Chiba) comply with the Japanese regulations in force;
- in the absence of information regarding the source and the radiological quality of fresh foodstuffs, varying one's diet and avoiding, as far as possible, the prolonged consumption of leafy vegetables (spinach, *hana wasaki*, *kakina*, *komatsuna*, lettuce, chrysanthemum, cabbage, white cabbage, celery, broccoli, *bok choy*, parsley).

No restrictions regarding the use of tap water for preparing and cooking food need to be envisaged.

Products stored in hermetic packaging (tinned food, dried products, long-life milk or bottled mineral water) may be consumed without any risk.

It is important to note that occasionally eating foodstuffs contaminated at levels slightly above the authorised norms presents no significant risk to health.

2.2. Recommendations for French residents in the areas the most affected by radioactive deposits

Generally speaking, it is recommended to avoid going to the prefectures of Miyagi, Fukushima, Ibaraki and Tochigi unless absolutely necessary, in order to avoid needlessly receiving external radiation doses due to the radioactive deposits, which can be considerable in certain spots, especially in the north west of Fukushima prefecture (see below). French nationals residing in these prefectures are advised to follow the instructions given out by the Japanese authorities. Whatever the case, IRSN recommends:

- preparing the food of babies and young children with bottled mineral water,
- limiting as far as possible the consumption of foodstuffs from vegetable plots or kitchen gardens,
- thoroughly washing fruit and vegetables.

IRSN also recommends basic hygiene practices in the home in order to limit the transfer of contamination inside buildings:

- leaving shoes outside, especially with rainy weather,
- regularly washing floors with a damp cloth,
- cleaning air vents and ventilation systems,
- regularly vacuuming the surfaces of furniture, carpets and rugs (regularly change the vacuum cleaner bags).

It is also recommended to wash one's hands regularly with liquid soap from a dispenser so as to limit the risks of involuntary contamination by hand to mouth contact.

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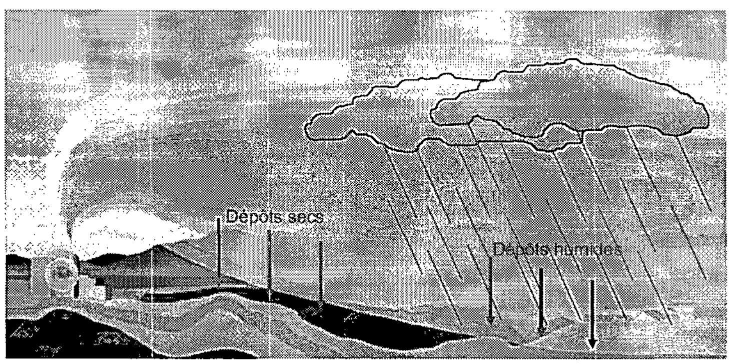
3. GENERAL INFORMATION ON ENVIRONMENTAL RADIOLOGICAL POLLUTION AND ITS CONSEQUENCES

The fate of radionuclides discharged into the environment (atmosphere, soil, water) following an accident obeys complex physical laws that IRSN has been studying for many years, particularly following the Chernobyl accident. The aim of this chapter is to share some of the results of this research, which will make it possible to better understand and predict the risks for ecosystems and for humans resulting from radiological pollution of the environment.

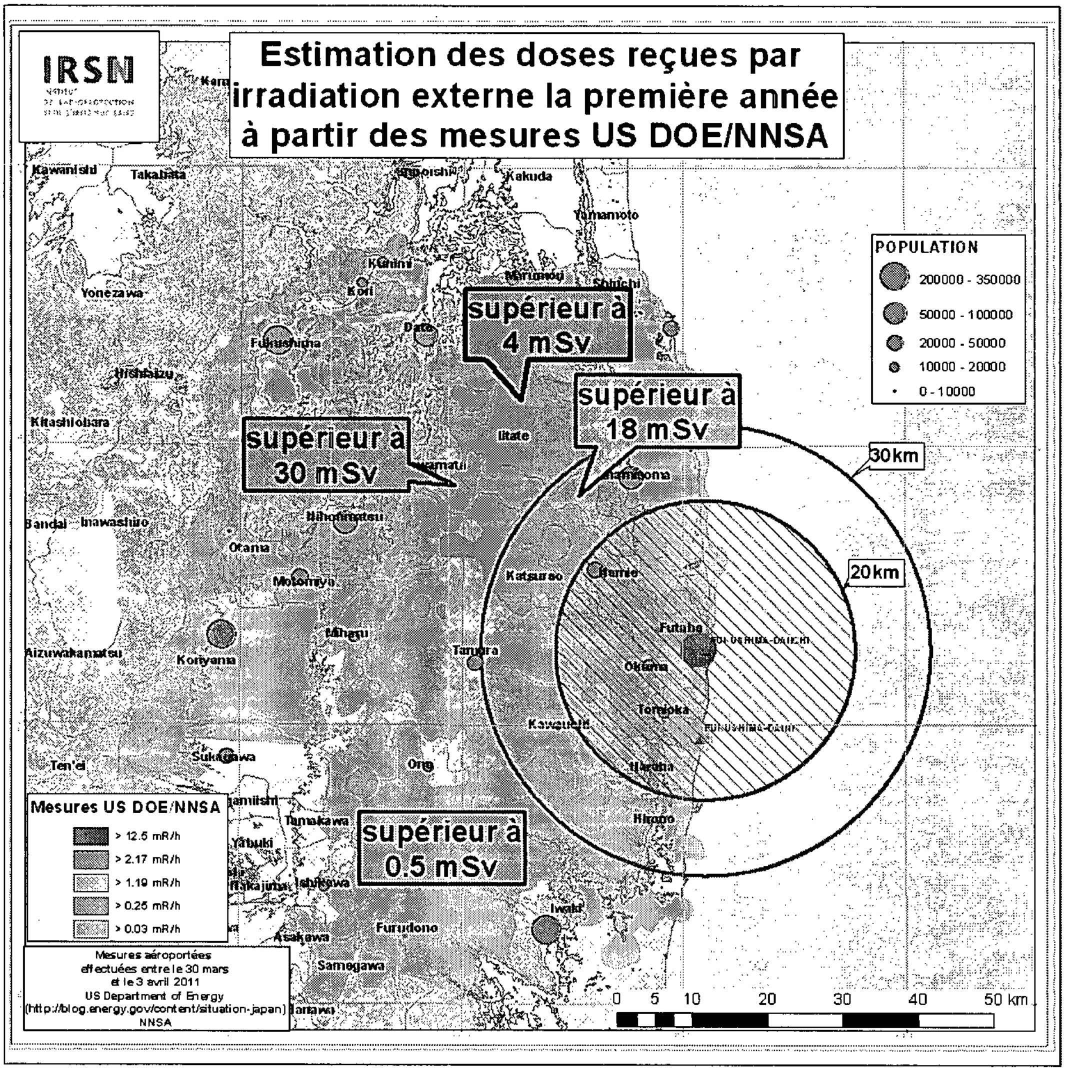
As long as the atmospheric discharge continues and up to the complete dissipation of the radioactive plume caused by the accident, part of the radionuclides (in the form of aerosols or water soluble gases) are deposited on the ground, according to two complementary processes (see figure below):

- Dry deposits, which form on all surfaces of the ground in contact with the radioactive particles in the air. The higher the concentration of radionuclides in the air and the longer the air pollution lasts, the greater the amount of dry deposits ;
- Wet deposits, which only form if it rains or snows. This type of deposit can be much greater than dry deposits formed at the same spot, because the drops of rain or flakes of snow concentrate the radioactive particles in the air and convey them to the ground. Some of these wet deposits remain where they are formed, but some can run off the surface into water courses.



The geographic distribution of deposits around the Fukushima-Daiichi plant is both non-uniform and complex. It depends both on the successive paths of the radioactive plumes formed by discharges from the plant, which took place over several days, and the location and the extent of precipitation over the same period. Consequently, the amount of radioactive materials deposited not only depends on the distance from the nuclear site but also on the terrain and the actual spot where such precipitation occurred during the discharges. "Spots of radioactive deposits" can also form at some distance from the site.

On the basis of the results of dose rate measurements conducted several days ago by an American airplane (DOE/NNSA), IRSN has estimated the dose likely to be received over the first year by the local population on account of external radiation due to exposure to radionuclides already deposited on the ground. The estimated values are shown in the map below. These estimations do not take account of doses likely to be received by internal contamination resulting from the consumption of locally produced foodstuffs, which are over and above the former doses. These initial dose estimations, provided here by way of indication, still need confirmed on the basis of new measurement results as and when they become available.



Estimation of doses received over the first year by external radiation, based on US DOE/NNSE airborne measurements conducted between 30 March and 3 April 2011

This map shows a NW-SE strip of land, several tens of kilometres long, where the deposits seem to have been much more important than elsewhere, doubtless because of the rain or snow that fell in this area when the radioactive plume was being dispersed.

By way of comparison, the whole body dose received annually by people living in France is on average 3.7 mSv, mainly resulting from exposure to natural radioactivity or from medical applications.

4. CONCLUSIONS

Living in Tokyo or in the Tokyo region does not constitute a real risk to health, but particular attention should be paid over the next few weeks to the origin of fresh foodstuffs consumed and to adopting a general attitude of vigilance, for as long as the situation of the damaged nuclear reactors is not totally stabilised.

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Impact on marine environment of radioactive releases resulting from the Fukushima-Daiichi nuclear accident

4th April 2011

Measurements taken over several days in the sea water in the vicinity of the power station have revealed severe contamination of the marine environment by various radionuclides released as a result of the accident at the Fukushima-Daiichi nuclear power station. As a general rule, the radioactive pollution of the sea is caused partly by the direct release of contaminated water from the power station, and partly by conveyance via rivers of the radioactive pollutants deposited on the ground following atmospheric release, and subsequent rainwater run-off, and partly finally by the fallout in the ocean of a proportion of the radionuclides from the atmospheric plume, which the winds carried over the sea during a large fraction of the accident sequence. Some of these radionuclides are soluble; and will be carried over very long distances by the marine currents and dissipated throughout the ocean water masses. Others will tend to be more or less bound to suspended particles in the water, causing sedimentary contamination by deposition on the ocean floor. The short -lived radioactive elements, such as iodine 131 (131I), will only be detectable for a few months (the radioactivity of iodine 131 reduces by a factor of 1000 every ten half-lives[1], i.e. every 80 days). Others, such as ruthenium 106 (106Ru) and caesium 134 (134Cs) will persist in the marine environment for several years. Caesium 137 (137Cs) has a long radioactive half-life (30 years): it will undoubtedly justify careful long-term monitoring, in Japanese coastal areas where it is liable to be present in sediments. The same would apply to plutonium if that is found in the marine effluents, but this has not yet been established.

According to the persistence of these radionuclides and their different concentrations, certain flora or animal species could be contaminated to significant levels, justifying the establishment of a radiological monitoring programme for sea food coming from the most severely affected Japanese coastal areas.

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1. ORIGINS OF THE CONTAMINATION OF THE MARINE ENVIRONMENT

Since several days, radioactive pollution was observed in the marine environment, at varying distances from the Fukushima-Daiichi power station. The main radionuclides regularly found in the sea water are (T = radioactive half-life): iodine 131 (T = 8 days), caesium 137 (T = 30 years), caesium 134 (T = 2.1 years), caesium 136 (T = 13.1 days), tellurium 132 / iodine 132 (T = 78 hours). Others have also been detected occasionally at lower concentrations: tellurium 129m / tellurium 129 (T = 33.6 days), barium 140 / lanthanum 140 (T = 12.7 days), ruthenium 105 (T = 4.4 hours), ruthenium 106 (T = 368 days), molybdenum 99 / technetium 99m (T = 65.9 hours), cobalt 58 (t = 70.9 days).

This radioactive pollution stems from three possible sources: liquid radioactive effluents escaping from the site of the accident, atmospheric fallout on the surface of the sea and conveyance of radioactive pollution by rainout of contaminated soils.

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[1] The radioactive half-life is the period after which the radioactivity of a radionuclide reduces by half.

1.1. Release of liquid effluents directly into the sea in the vicinity of the damaged reactors

The high concentrations recorded in the sea water in the immediate vicinity of the Fukushima-Daiichi power station, indicate that there are one or more sources of radioactive liquid effluents escaping from the nuclear power station. They probably consist of the water used to cool the damaged reactors, part of which may have washed over surfaces contaminated by radioactive deposits formed during the atmospheric release. It is equally possible that part of the water present in the damaged reactors (in particular reactor No. 2 of which the bottom part is damaged) could have leaked out of the containment building, and subsequently run into the sea. It is not currently possible to quantify the magnitude of such liquid release into the sea, nor its duration. The impact of these liquid effluents was observed from 21st March in the vicinity of the power station (1484 Bq/L of 137Cs, 5066 Bq/L of 131I). The concentrations in the sea water subsequently increased between 25th and 28th March (up to 12,000 Bq/L of 137Cs, 74,000 Bq/L of 131I). A further increase was recorded on 29th and 30th March (up to 47,000 Bq/L of 137Cs, 180,000 Bq/L of 131I). As a comparison, prior to the accident at Fukushima, the concentration levels of caesium 137 in the sea water off the Japanese coast was a few mBq/L (1 to 3 mBq/L) and iodine 131 was not detected.

This coastal radioactive pollution spread southwards between 25th and 28th March, with an increase in the concentrations of iodine 131 and caesium 137 of the order of a factor of 10 at Iwasawa (about 20 kilometres to the south of the damaged power station) from 28th March and especially on 29th March. These concentrations are likely to continue to increase at that location.

This spread of the pollution along the coast results largely from the tide which generates alternating sea currents parallel to the coast. This pollution is undoubtedly also spreading to the north of the Fukushima-Daiichi power station.

1.2. Atmospheric fallout onto the surface of the sea

Since 12th March, atmospheric releases caused by the explosions and depressurisations of the containment buildings at the Fukushima-Daiichi power station have spread over the sea. Part of the radionuclides contained in the plume may have fallen onto the surface of the sea, quickly causing a diffuse pollution of the surface water at tens of kilometres from the source. This radioactive fallout is currently continuing, but to a much lesser extent than during the first days following the accident.

The concentrations recorded some 30 km offshore are most probably due to such fallout. They vary between 2 to 27 Bq/L for caesium 137 and between 3 and 57 Bq/L for iodine 131.

The values measured on 25th March tend to indicate a reduction in such concentrations. This may be the result, either of mixing with the deeper water (dilution effect), or of the renewal of surface water by sea currents. The first hypothesis is the most likely.

1.3. Conveyance of radioactive pollution by rainout of contaminated ground

The radioactive fallout deposited on land at the moment of dispersion of the atmospheric release of the Fukushima-Daiichi power station may be partly washed off by rainwater and subsequently carried by runoff directly to the sea, or via water courses flowing into the sea. The contaminated land surfaces thus drained may represent several thousand km^2. The measurements available do not enable any distinction to be made between these diffused radionuclides and those stemming from other sources of radioactive pollution.

2. DISPERSION IN THE SEA OF RADIOACTIVE POLLUTANTS

2.1. Topography of the sea bed and sea currents off the Japanese coast

The Fukushima power station is located on the east coast of the island of Honshu, 200 km north-east of Tokyo. The coast runs north-south, facing the Pacific Ocean. The depth increases steadily offshore, reaching some 200 m at 50 km from the coast; it then increases suddenly to 5000 m beyond about 100 km (figure 1).

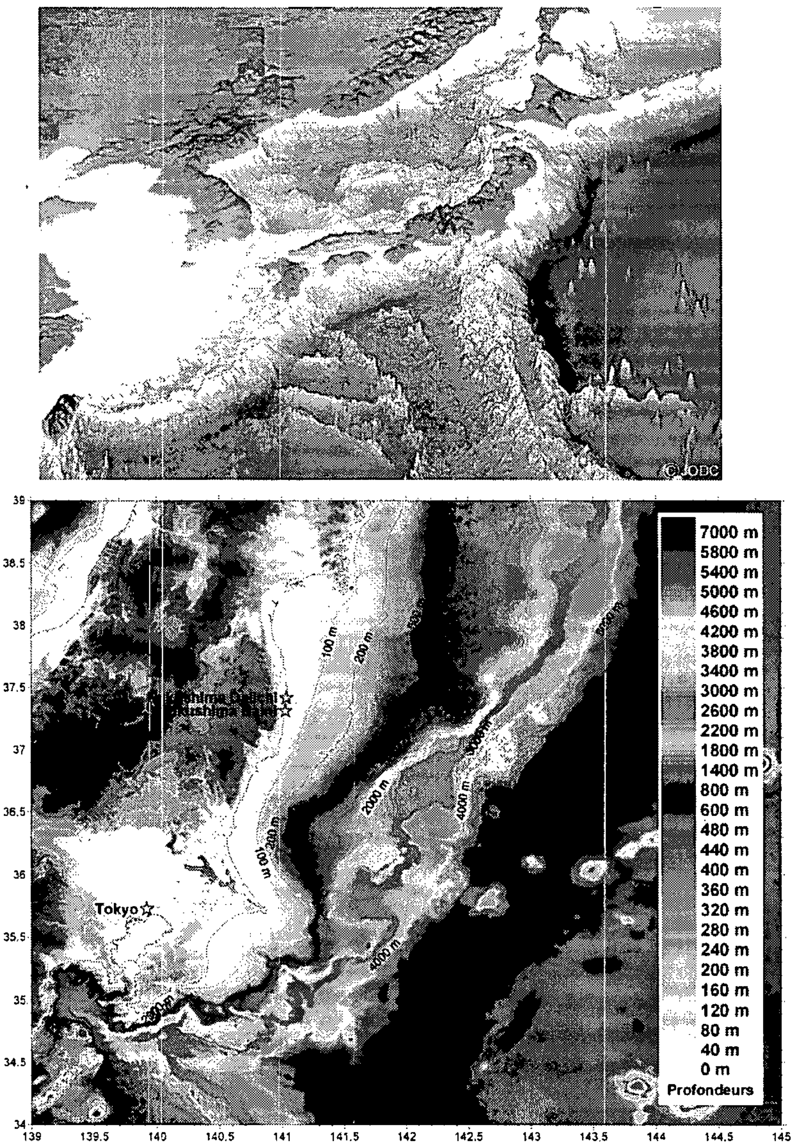

Figure 1 *Topography of Japan and bathymetry off the east coast*

In the zone currently affected by radioactive pollution, the currents are generated by the tide, the wind and the general circulation of the Pacific. In the short term, the effect of the tide is predominant; the tide move the water masses in an alternating motion, north and south along the coast, at speeds of the order of one meter per second and a periodicity of 12 hours. The wind influences the circulation of surface water.

The overall circulation on a larger scale results from the interaction between the Kuroshio ocean current which comes from the south, running along the Japanese coast and the Hoyashio current, which is not as strong, and which flows from the north (figures 2 and 3). The strength and extent of the Kuroshio current are comparable to those of the Gulf Stream. The coastal waters in the vicinity of the Fukushima-Daiichi power station are within the zone of interaction of the two currents, generating low strength and variable rotary currents. These currents will determine the mid-term dispersion of the radioactive pollution.

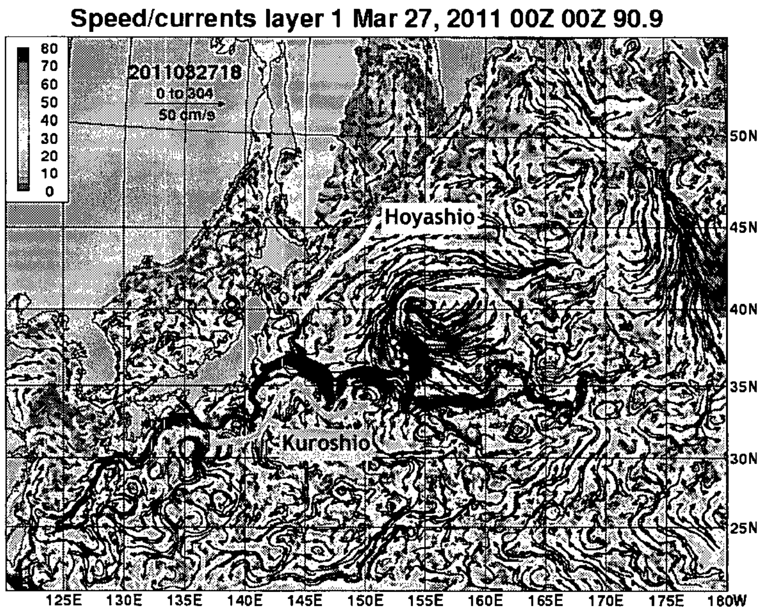

Figure 2 *Surface currents in the north-west of the Pacific (http://www.hycom.org/)*

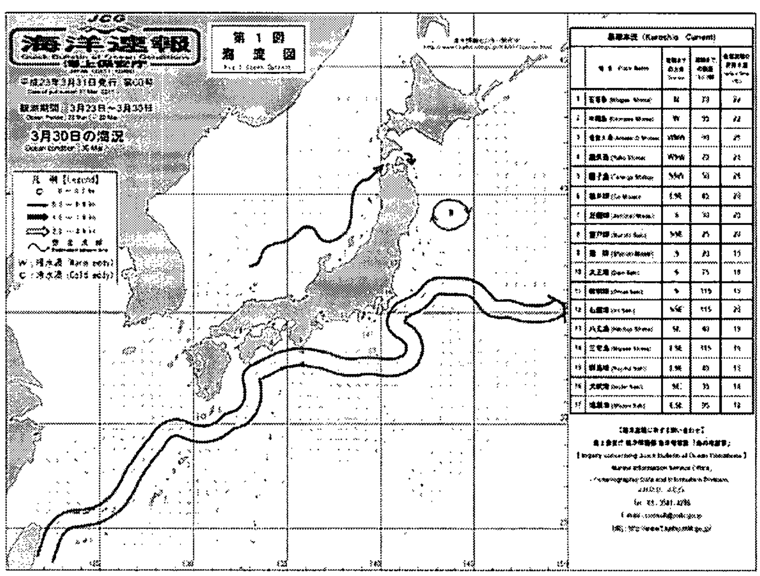

Figure 3 *Observation of the surface currents in the north-west Pacific. The Kuroshio current (in red) flows from south-west to east*
(http://www1.kaiho.mlit.go.jp/KANKYO/KAIYO/qboc/2011cal/cu0/qboc2011060cu0.html)

2.2. Immediate or short term dispersion (a few days)

The concentrations in 131I and 137Cs are representative of other radionuclides measured in the sea; the maps provided in figures 4 to 13 show the results of measurements made in sea water for these two radionuclides.

The great depth of the sea off the coast and the weak currents result in stratification of the water masses. A layer at the surface, some 20 to 50 metres deep near the coast mixes the radionuclides throughout its entire thickness. This layer may be up to 100 metres thick far offshore (source: Mercator-Ocean). It is separated from the deeper layers by a density gradient which limits mixing. The dispersion of soluble radionuclides occurs primarily at the surface. Radioactive particles may migrate to the bottom by sedimentation.

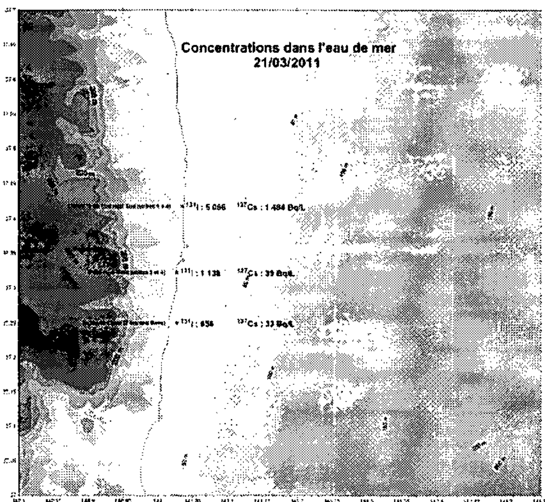

Figure 4 *Concentration recorded on 21st March*

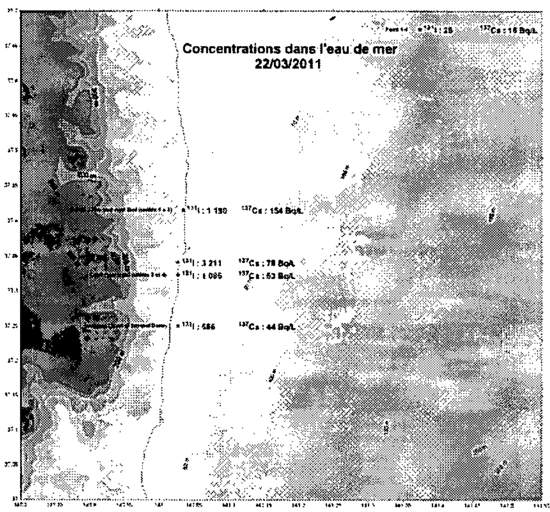

Figure 5 *Concentration recorded on 22nd March*

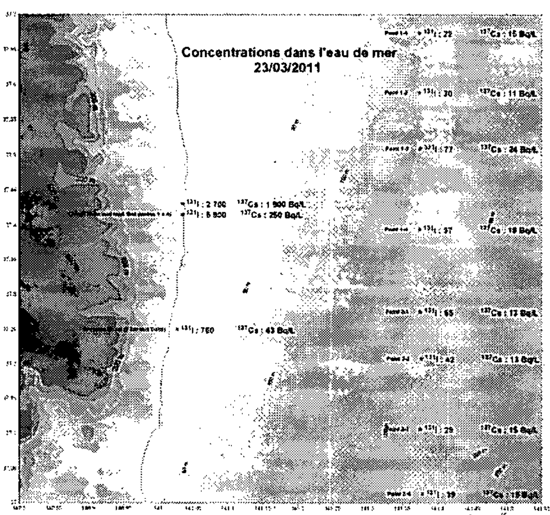

Figure 6 *Concentration recorded on 23rd March*

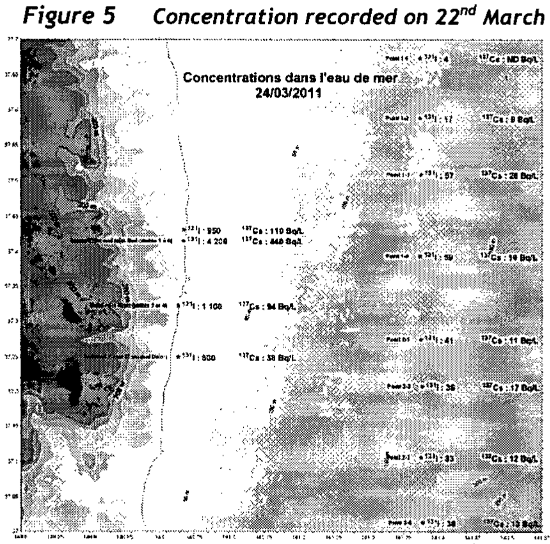

Figure 7 *Concentration recorded on 24th March*

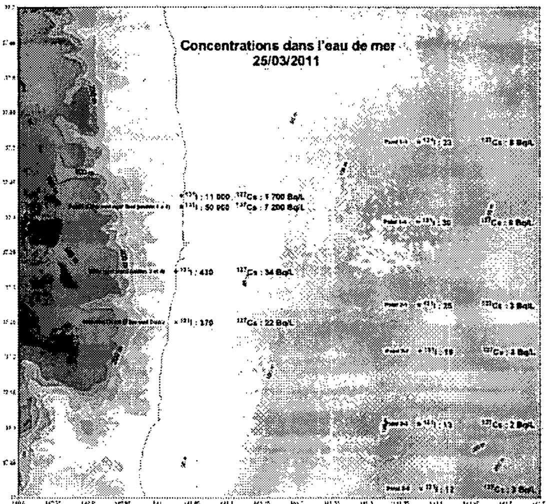

Figure 8 Concentration recorded on 25th March

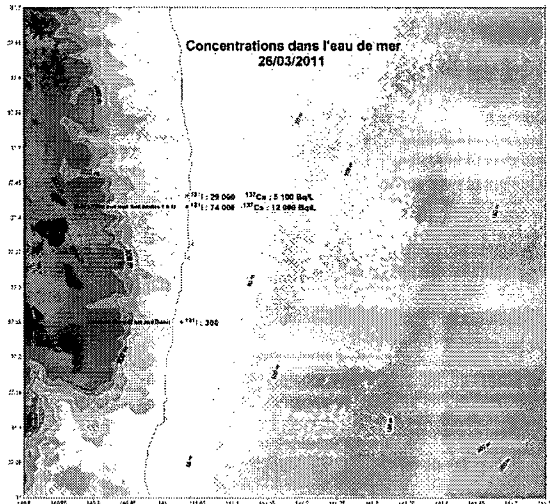

Figure 9 Concentration recorded on 26th March

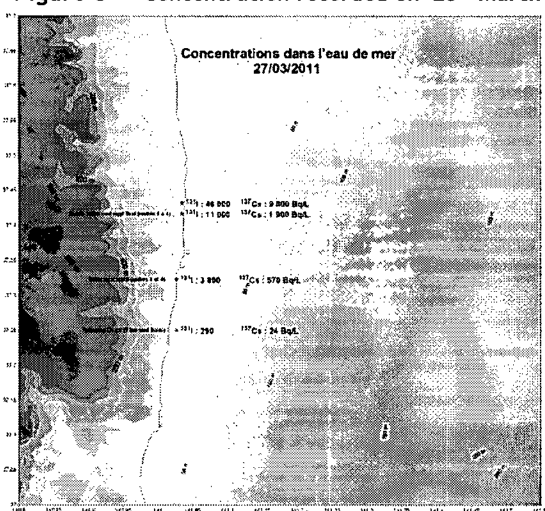

Figure 10 Concentration recorded on 27th March

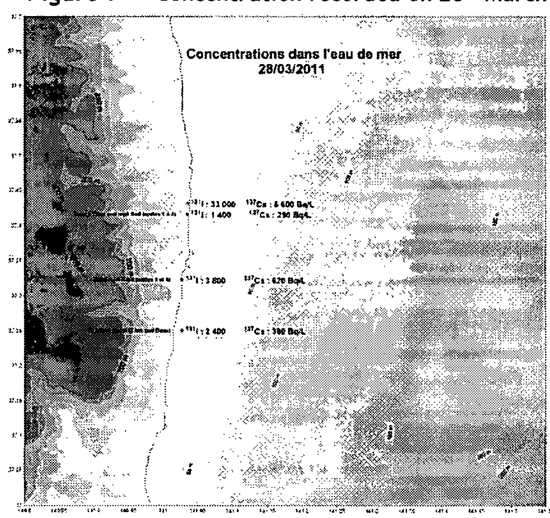

Figure 11 Concentration recorded on 28th March

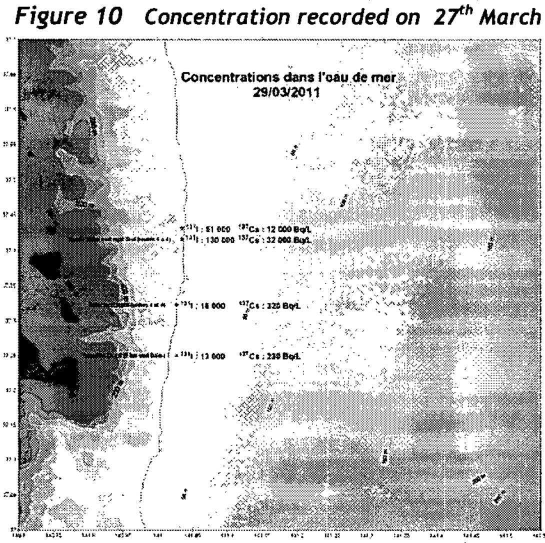

Figure 12 Concentration recorded on 29th March

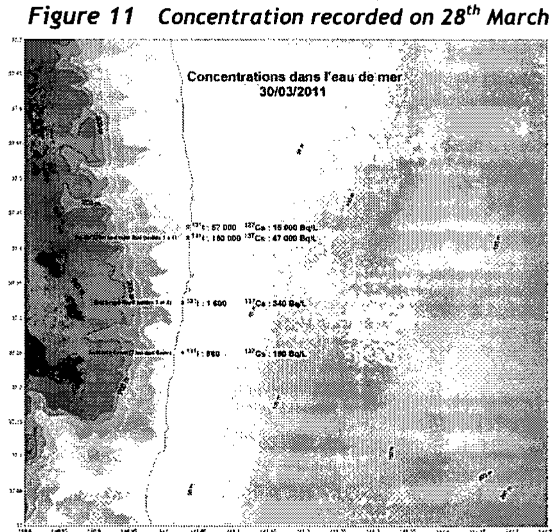

Figure 13 Concentration recorded on 30th March

Simulations have been performed of the dispersion in the sea of this radioactive pollution for the period between the 14th March and 5th April SIROCCO (CNRS and Toulouse University - http://sirocco.omp.obs-mip.fr/outils/Symphonie/Produits/Japan/SymphoniePreviJapan.htm).

They indicate the zones affected in the short term by the dispersion of radionuclides. The concentrations are provided indicatively (figures 14 and 15) as at present, there are no reliable data on the quantity of effluents released by the Fukushima-Daiichi power station nor on the radioactive fallout on the surface of the sea. These simulations do however enable evaluation of the effect of dilution on the radioactive pollution, as it spreads.

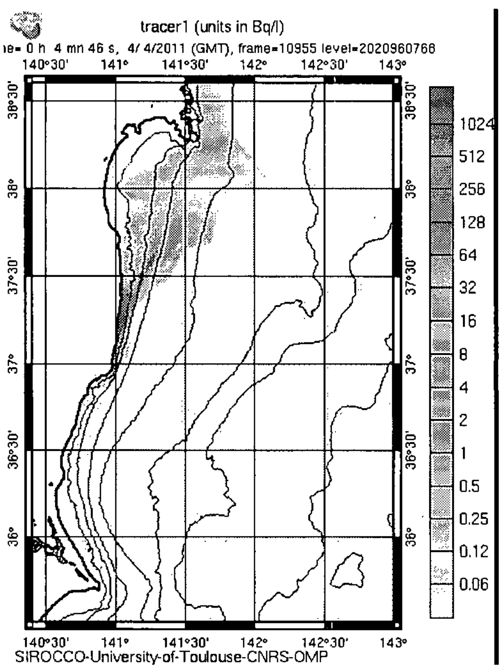

***Figure 14** Simulation of the dispersion in sea water of the liquid effluents on 4th April*

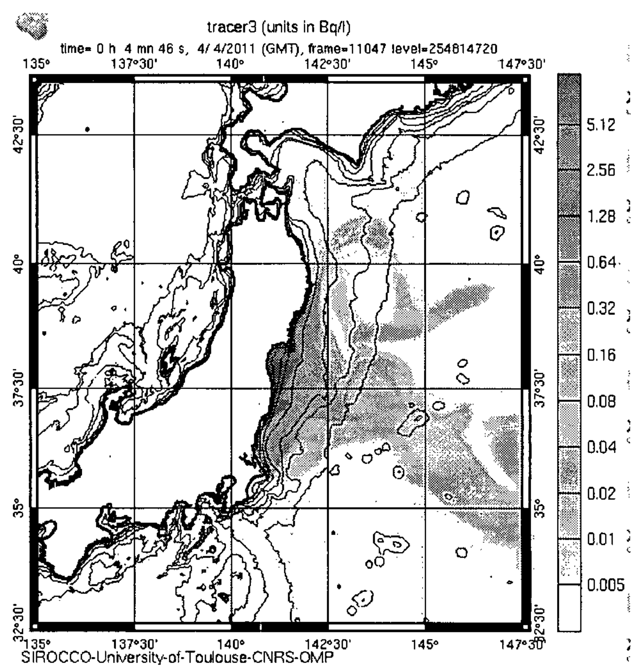

***Figure 15** Simulation of the dispersion in sea water of the atmospheric fallout on 4th April*

2.3. Mid-term dispersion (weeks, months)

The swirling structures present to the east of Fukushima are unstable. They mix the surface waters between the latitudes of 35°30'N and 38°30'N (figure 15). It is to be expected that the coastal zones located between those latitudes to be impacted by the dispersion of radioactive pollution. The long term migration of the surface waters will be southwards but will not extend beyond the latitude of Tokyo. The Kuroshio current will then carry the plume towards the centre of the Pacific.

A simulation of this migration of the radioactive pollution has been produced by Mercator-Ocean (figure 16). According to that simulation, the radionuclides dissolved in sea water in the vicinity of the Fukushima-Daiichi power station (the green spot on the map in figure 16) should drift for 90 days along the red trace shown on the map. The simulation shows that the coastal currents carry the polluted waters up to the Kuroshio current (the thick white swathe) and disperse to the north of that current. The diffusion is relatively turbulent but the dissolved radionuclides are contained by the Kuroshio current.

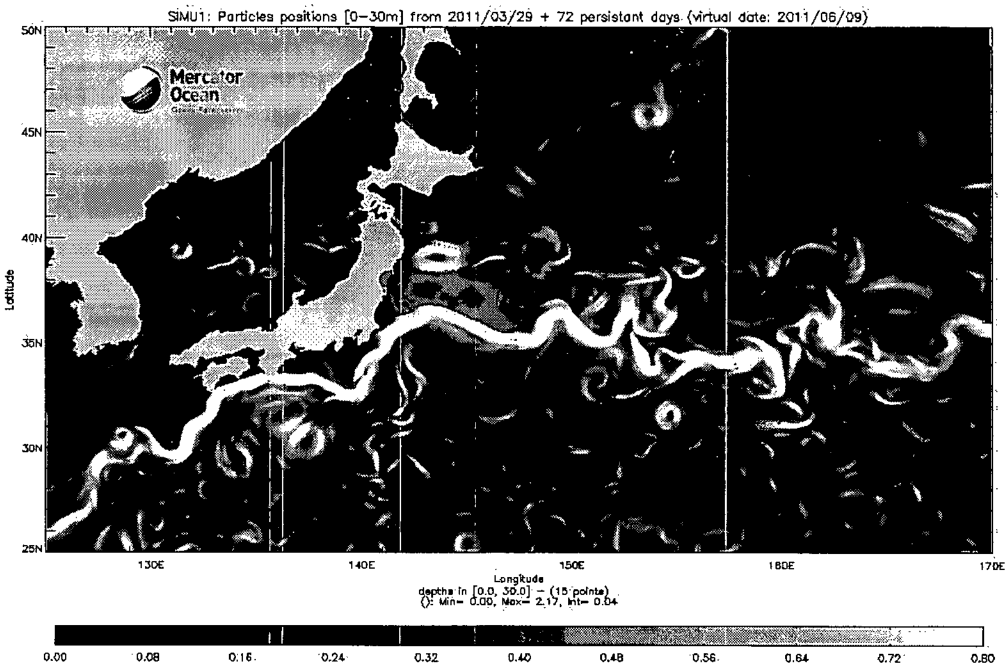

Figure 16 Simulation of the migration of radioactive pollution (Mercator-Ocean)

When the different sources of release into the sea are better evaluated, the marine dispersion simulations should provide a better estimate of the medium term changes in radionuclide concentrations.

2.4. Long term and large scale future of the radioactive pollutants

- **Residence times in the surface waters**

The short radioactive half-life radionuclides (less than a few tens of days) should cease to be detectable after a few months and should not therefore have any large scale long term impact. Others, such as ruthenium 106 and caesium 134 will persist in the marine environment for several years and will finally disappear by radioactive decay. The persistence time of caesium 137 in the surface waters of the Pacific Ocean varies between 11 and 30 years according to the region (10 years for the medium latitudes and 30 for the equatorial zone). For plutonium isotopes, assuming that these are present in the liquid effluents, the persistence time would be 5 to 17 years (the shortest times are again observed in the medium latitudes). These persistence times are dependent upon the respective affinity of the radionuclides for the particles in suspension in the surface waters, which are likely to settle and to carry the radionuclides to the seabed.

- **Transit times**

The transit times between the North-West Pacific and the equatorial zone is estimated to be about 10 to 15 years. Part of the North Pacific Ocean waters flow towards the Indian Ocean via the Indonesian seas and are then carried towards the south of the Atlantic Ocean. These transfer times have been estimated to be about 30 to 40 years.

Until recently, scientists considered that there was no exchange between the north Pacific and the south Pacific, due to the major barrier formed by the equatorial system of currents. Measurements

of traces of caesium 137 (fallout from atmospheric nuclear tests conducted in the northern hemisphere) in the Tasmanian Sea have shown that this barrier is not completely watertight and that exchanges are possible between the north and the south, in the western part of the Pacific.

3. IMPACT OF RADIOACTIVE POLLUTION ON LIVING SPECIES

In the short term, all the species in the marine trophic chains in coastal areas close to the Fukushima-Daiichi power station are likely to be impacted by the radioactive pollution of the sea water. Up to now, it is difficult to quantify the magnitude of such impact, which may be highly variable according to:

- the magnitude of the continuing release of radioactive liquids from the nuclear plant;
- atmospheric fallout onto the surface of the sea;
- the quantity of radionuclides brought by the watershed draining the contaminated zones;
- the renewal of water masses along the coast, etc.

Particular attention should be focussed on aquacultural installations (seaweed farms, molluscs and fisheries) located on the coast close to the nuclear plant, even if it is probable that such installations have been severely damaged by the tsunami on 11th March.

Iodine has a strong affinity for brown seaweed which is a major crop in Japan. There is therefore a risk of contamination of this type of seaweed by radioactive iodines, in particular iodine 131. However, in view of the short radioactive half-life of that radionuclide, the risk will only be significant for a few months.

In the longer term, it is the coastal zone subjected to contamination with radionuclides by rainout from the contaminated water basins which could be impacted by persistent radioactive pollution. Phenomena which put radionuclides initially bound to sediments back into seawater could also contribute to maintain significant concentration levels of certain radionuclides in the water and in certain living species.

Accumulation phenomena in living species could lead to higher concentrations than those measured in the water by a factor of 10 to several thousand, according to the radionuclide and the species considered (weight ratio of the concentrations in the species and in sea water). The accumulation capacity is dependent on the metabolism of each species. In the case of caesium, the concentration factors vary from 50 for molluscs and seaweed to 400 for fish. For iodine, the concentration factors vary between 15 for fish and 10,000 for seaweed.

These accumulation phenomena are ample justification for the establishment of radiological monitoring programmes. The geographic zones of interest should be specified by predictive mapping studies, covering the vegetable and animal species entering the human food chain either directly or indirectly.

From: OST01 HOC
Sent: Tuesday, April 12, 2011 4:34 PM
To: LIA08 Hoc
Subject: FW: Documents posted on the French nuclear regulator's website
Attachments: IRSN_Information-note-for-french-citizens-in-japan_N2-08042011.pdf; IRSN_Dispersion-model-radioactive-releases-in-atmosphere-worldwide-EN.pdf; IRSN_Assessment-of-environmental-dosimetric-consequences-radioactive-releases-EN.pdf; IRSN_Fukushima-Accident_Impact-on-marine-environment-EN_20110404.pdf

From: HOO Hoc [mailto:HOO.Hoc@nrc.gov]
Sent: Tuesday, April 12, 2011 12:33 PM
To: LIA07 Hoc; OST01 HOC; OST02 HOC; OST03 HOC
Subject: FW: Documents posted on the French nuclear regulator's website

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From: Kenagy, W David[SMTP:KENAGYWD@STATE.GOV]
Sent: Tuesday, April 12, 2011 12:31:23 PM
To: Kenagy, W David; vince.mcclelland@nnsa.doe.gov; Rodriguez, Veronica; ann.heinrich@nnsa.doe.gov; HOO Hoc; HOO2 Hoc; Huffman, William; decair.sara@epamail.epa.gov; timothy.greten@dhs.gov; maria.marinissen@hhs.gov; (b)(6) doehqeoc@oem.doe.gov; hhs.soc@hhs.gov; james.kish@dhs.gov; HOO Hoc; Smith, Brooke; Zubarev, Jill E; Shaffer, Mark R; nitops@nnsa.doe.gov; Skypek, Thomas M; (b)(6) clark.ray@epamail.epa.gov; Stern, Warren; DeLaBarre, Robin; Burkart, Alex R; Metz, Patricia J; Fladeboe, Jan P; Withers, Anne M; Lowe, Thomas J; Lewis, Brian M; SES-O_OS; EAP-J-Office-DL; O'Brien, Thomas P; Lane, Charles D; Conlon, John N; Foughty, Michael A; Mahaffey, Charles T (b)(6) Jih, Rongsong; (b)(6) Cutler, Kirsten B
Subject: Documents posted on the French nuclear regulator's website
Auto forwarded by a Rule

Documents posted on the French nuclear regulator's website

000525

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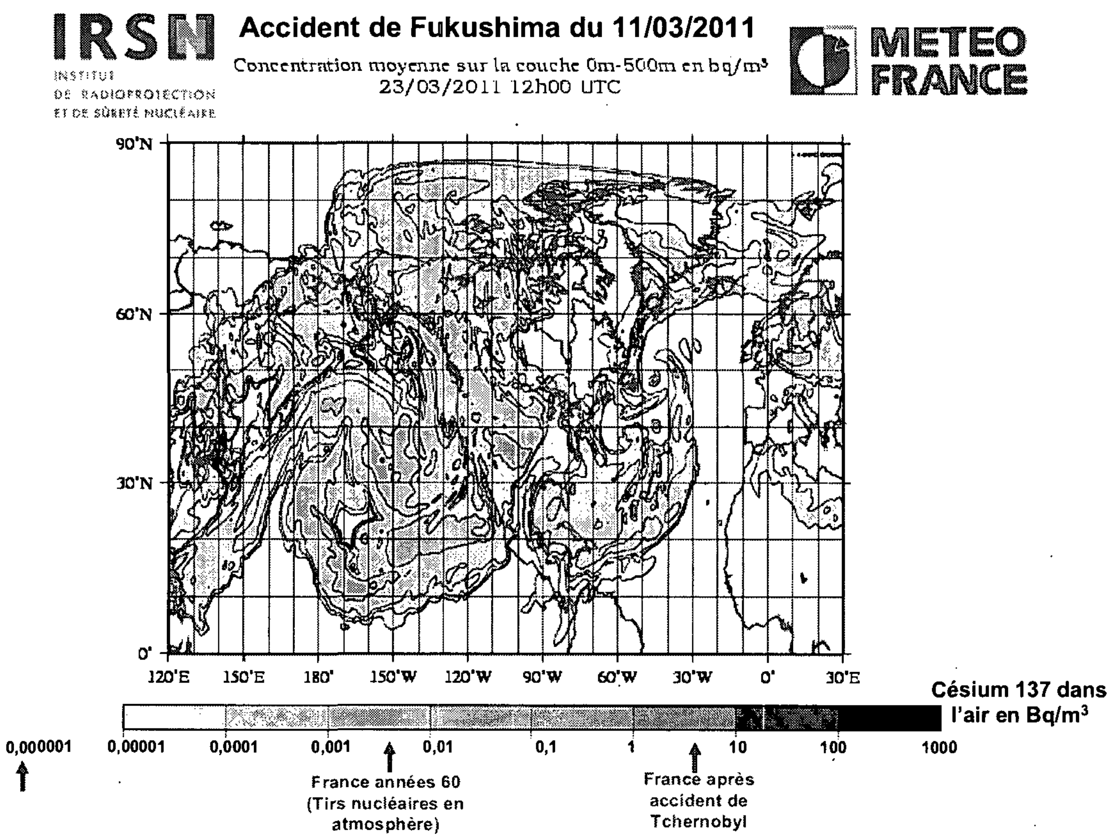
Dispersion model of the radioactive releases in the atmosphere on a worldwide scale

Update of March 22, 2011

Based on radioactive releases estimated by IRSN, Météo France (the national organisation weather forecast France) simulated the radioactive release dispersion on a large scale forecasted till March 26.



>> View the simulation (in french)

According to this simulation, the radioactive plume would have reached the United States as of March the 16 or 17. This forecast is coherent with the observation, of traces of iodine and caesium radioactive measured in the air on March 18 in Sacramento in California, as reported on the web site of the Agency of Environmental protection (US-EPA). The measured values were of 0,165 mBq/m3 for iodine 131, of 0,03 mBq/m3 for iodine 132 and of 0,002 mBq/m3 for caesium 137

The radioactive elements dispersed in the air then reached the French West Indies as from March 21 and Saint-Pierre-and-Miquelon March 23. The concentration levels of radionuclides in the air, estimated lower than 1 mBq/m3, are extremely low and cannot be detected by permanent radioactivity measurements in the environment (Téléray network) implemented at Point-à-Pitre, at Fort-de-France, at Cayenne and at Saint-Pierre-et-Miquelon. Moreover, EPA which is equipped with an alarm network similar to Téléray (Radnet network) currently does not announce any

abnormal radioactivity level on the American territory. The IRSN should soon receive samples of rainwater and plants taken in the French West Indies, in Guyana and Saint-Pierre-and-Miquelon.

Europe would be affected by the radioactive plume from the 22 or 23 March on. In France, it is mainly as from March 24 that traces of radioactive particles would be present in the air, on very low levels which should be around 1 mBq/m3 to the maximum. These very low concentrations, which would last several days even several weeks (in the absence of new significant releases coming from the power station of Fukushima), will not be detected by the Téléray network (163 radiation monitors in Metropolitan France) and will be not easily detectable by the usual means of monitoring. It is probable that only measurements of airborne samples of dusts collected by very high air flowrate stations of IRSN and then analysed with techniques allowing very low radioactive rate detection to quantify the radioactive elements released in the air at the time of the accident of Fukushima.
These samples and these analyzes will require several days before the first results are available. The results will make it possible to check the forecasts expressed by modelling.

As expected, the southern hemisphere is not significantly affected by the radioactive dispersion on a large scale.

The concentration levels in the air expected in America and Europe are too low to present any risk for health and the environment, even if they were to continue over several months.

As comparison, the values measured during the days following the accident of Tchernobyl were exceeded 100 000 Bq/m3 in the first kilometres around the nuclear power plant; they were around 100 to 1000 Bq/m3 in the most affected countries by the radioactive plume (Ukraine, Byelorussia).in France, the values measured in the East were about 1 to 10 Bq/m3 (on May 1, 1986). Today, a very low activity of caesium 137 remains in the air, about 0,000001 Bq/m3.

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Assessment of the environmental and dosimetric consequences in Japan due to the radioactive releases since March 12, 2011 by the nuclear power plant of Fukushima Daiichi

Updated March 23, 2011

1 - What is known about the radioactive releases emitted since 12 March 2011?

IRSN does not have any direct information regarding the composition and scale of the radioactive releases. But has the following information at its diposal:

- technical information on the damaged installations which makes it possible to assess their state of degradation;
- measurement results of the ambient dose rate carried out on the site, which give information on the release periods;
- results of measurement in the environment, allowing to identify the main radioactive elements released.

The interpretation of the information made it possible for IRSN to work out possible degradation scenarios for the 3 reactors since March 12. According to the new information received by the IRSN, the estimate of the radioactive releases is periodically updated. The most recent estimate of these releases is provided on the IRSN website.

> More information:
Assessment of radioactivity released by the Fukushima Daiichi Nuclear Power Plant (Fukushima I) through 22 March 2011

According to IRSN estimates, the main radioactive elements released during various radioactive release periods between the 12 and 23 March would be:

- The noble gases are radioactive elements with a very low chemical reactivity, and they remain in the air without ground deposits. In particular xenon 133 which has a radioactive half-life of 5,3 days;
- Volatile elements, mainly of the radioactive isotopes of iodine, radioactive caesium, radioactive tellurium. These elements form fine suspended particles in the air (aerosols), which due to their weight will gradually end up falling on the ground when released in the air.

The available measurement results in the environment, coming from Japan, confirm the presence of mainly:

- Iodine 131 (8 days of radioactive half-life), iodine 132 (2,3 hours of radioactive half-life) and of iodine 133 (20,8 hours of radioactive half-life);
- Tellurium 132 (3,2 days of radioactive half-life) the radioactive decrease produces iodine 132, as well as tellurium 129m (33,6 days of radioactive half-life) combined with tellurium 129 of a shorter period (1,16 hours);
- Caesium 137 (30 years of radioactive half-life) and of caesium 134 (2,1 years period).

2 - Dispersion of radioactive releases in the atmosphere on a regional scale

According to the meteorological observations available and forecasts provided by Meteo France, the IRSN re-assesses periodically, using its numerical models, dispersion in the air of released radioactive elements since March 12 by the nuclear power plants of Fukushima. These evaluations relate to the area close to the site (50 km around the site) as well as a broader area covering all of Japan and the area close to Japan.

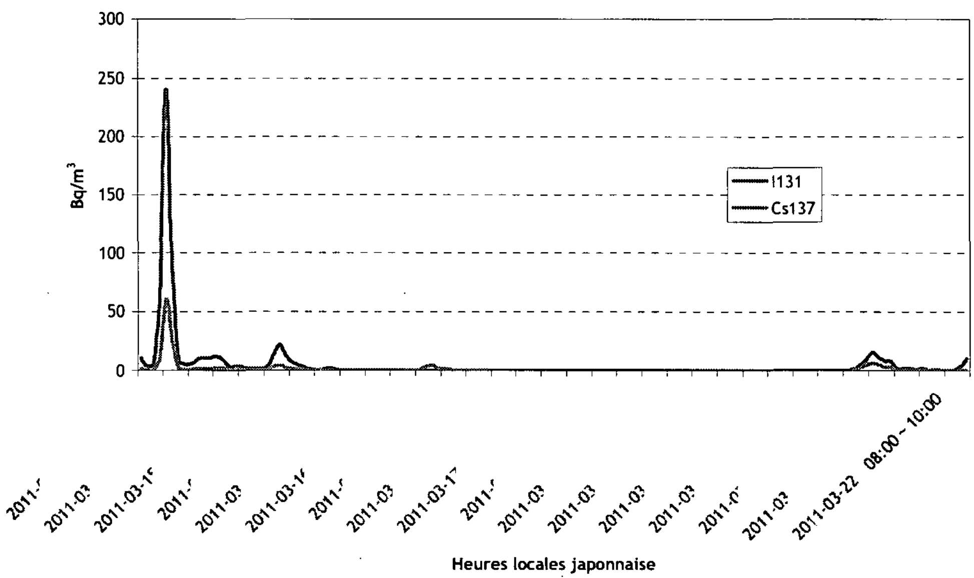
The map below shows the result of the most recent simulation carried out by IRSN, for the radioactive releases estimated between the 12 and March 23. This simulation was applied to caesium 137, selected as a representative element of the radioactive plume dispersion. The results of this modelling are expressed in becquerels of cesium 137 per cubic meter of air (Bq/m3).

> View the simulation updated on March 22, 2011

The modelling carried out on a Japan scale shows that the plume moved in directions which varied in the course of time: initially towards the North-East until March 14, then towards the south and south-west, for Tokyo, March 15, then towards the east, in direction of the Pacific Ocean. From March 20 and during the following days, the radioactive plume tends to move inland in a changing way, in particular towards Tokyo (especially on March 23) but also North-West. The plume should again move towards the east as from March 25.

The IRSN compared the results of this simulation with the measurement results of the air contamination carried out in Tokyo presented in the graph below for cesium 137 and iodine 131. They are of the same order of magnitude as the values measured in this city.

Evolution de l'activité volumique du césium 137 et de l'iode 131 (en Bq/m^3) mesurée dans l'air à Tokyo du 15 au 22 mars 2011 (Heure locale)



3 -Radioactive release consequences for the environment in Japan

According to the weather conditions, the radioactive elements released into the air at the time of the accident disperse on the ground and in the oceans by forming a radioactive plume. The radioactive elements in the form of particles settle gradually on various surfaces on the ground, in particular on the leaves of crop plants, grass of the grazing grounds, stagnant water outside or the water of the rivers, in the urban environments...

Vegetables with leaves (spinach, salads, leeks...) are particularly sensitive to this radioactive fallout and are quickly contaminated after the accident. The results of the measurements taken in Japan, at more than 100 km away from the nuclear power plant of Fukushima, on this product category confirm this:

Sampling date	Area / type of vegetable	Iodine 131	Caesium 137 et 134
18 mars 2011	Tochigi Prefecture - Spinach	2100 to 54100 Bq/kg	121 to 1931 Bq/kg
19 mars 2011	Tochigi Prefecture - Spinach - Leeks	3200 to 5700 Bq/kg 270 Bq/kg	460 to 790 Bq/kg 27 Bq/kg
	Ibaragi Prefecture - Spinach - Leeks	1900 and 11000 Bq/kg 440 Bq/kg	71 to 586 Bq/kg 7 Bq/kg
	Gunma Prefecture - Spinach - Leeks	2080 and 2630 Bq/kg 40 and 81,1 Bq/kg	268 to 310 Bq/kg 11,15 and 11,18 Bq/kg

These results indicate that for iodine 131 in spinach, the acceptable maximum level in Japan for marketing and the consumption of food products (2000 Bq/kg) are systematically exceeded in these territories. It is the same for radioactive caesium, but to a lesser extent (acceptable maximum level in Japan of 500 Bq/kg). The leeks, which offer a smaller leaf area in contact with the ambient air, seem less contaminated.

The contamination of vegetables with leaves is certainly more important while approaching the site of Fukushima, according to the importance of the radioactive fallout.

Generally, the contamination of these vegetables will remain important in the next days. During weeks to come, if new important releases do not occur, a clear reduction in the contamination of vegetables with leaves should be observed, because of the radioactive decrease of the radionuclides with a short life (iodine 131) and of the effect of the vegetable growth which dilutes the initial contamination in the mass of the plant.

4 - Estimating the doses likely to have been received by people exposed to the radioactive plume

IRSN has estimated the doses likely to have been received by a person exposed to the radioactive plume, assuming that this person remained in the same place and with no protection (i.e. outside) throughout the entire release period (from 12 to 20 March). For these dose calculations, IRSN studied the case of a one-year old infant, the most sensitive to iodine-131 (dose to the thyroid). In other words, these are the most cautious hypotheses.

The simulations below show how the doses evolve over time, throughout the simulation period. If there are further releases in the future, these doses may increase further if the most exposed people are unprotected.

Whole body doses likely to be received by a one-year old infant with no protection during the releases

> View the simulation updated on March 22, 2011

In the event of an accident, the recommended minimum dose values used to launch protective actions are 10 mSv for taking shelter and 50 mSv for evacuation. Below 10 mSv, the health risk is deemed to be sufficiently low and therefore such protective actions are considered unnecessary. To compare, the average annual dose received in France due to natural radioactivity and medical exposure is 3.7 mSv.

Doses to the thyroid likely to be received by a one-year old infant with no protection during the releases

> View the simulation updated on March 22, 2011

In the event of an accident, the recommended minimum dose values for prescribing the ingestion of stable iodine are 100 mSv in Japan

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Fukushima-Daiichi Accident

Information note n° 2 of the 8 April 2011

This information note, intended for French citizens in Japan, was drawn up by IRSN, the French Institute for Radiological Protection and Nuclear Safety, which currently has a radiation protection specialist among the response teams at the French Embassy in Tokyo

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1. SUMMARY OF THE SITUATION REGARDING THE ACCIDENT AND ITS CONSEQUENCES

This chapter summarises the main information regarding the operations carried out on the site of the Fukushima plant, the data available on radioactive discharges from the stricken reactors and the environmental consequences of the accident.

1.1. Situation regarding the Fukushima-Daiichi site

The state of the three reactors (1, 2 and 3) is still of great concern. Fresh water is now being used to cool the reactors and pools. Even though it is reported that some progress has been made (for example, the water injection pumps are now supplied by normal external power supply rather than by mobile back-up equipment), the means used to inject water remain nevertheless precarious. Since the 6th of April, TEPCO has been injecting nitrogen at a low rate into the containment vessel of reactor n°1 in order to limit the risk of explosion of the hydrogen present in this building. The same thing will be done afterwards in the containment vessels of reactors 2 and 3. These operations, which will last for several days for each reactor, could lead to new atmospheric discharges.

The presence of contaminated water in the turbine buildings of the three units is a result of the constant water releases onto the reactors to ensure their cooling and from probable water leaks coming from the reactor vessels or containment vessels of reactors 2 and 3. Water pumping operations are currently underway, particularly in the case of reactor 1. These operations are somewhat tricky given the quantity of water that needs to be treated and its high level of contamination.

A crack in the pit adjacent to the turbine building of reactor 2 led to a direct discharge of highly contaminated water into the sea. TEPCO managed to stop this discharge at around 6am local time on the 6th of April by plugging the leak with an injection of sodium silicate.

Since the 4th of April, TEPCO has been carrying out intentional discharges into the sea of water, which it terms as "slightly contaminated". This mainly involves 10,000 tonnes of liquid effluent stored in tanks, which was awaiting treatment and discharge before the accident. TEPCO justifies this operation by the need to free up storage space on the site to collect the highly contaminated water present in the buildings of the three damaged units. This discharge of liquid should be

finished by this weekend. Furthermore, a discharge is planned into the sea of around 1,500 tonnes of water from the buildings of units 5 and 6, probably due to the consequences of the flooding of these buildings during the tsunami.

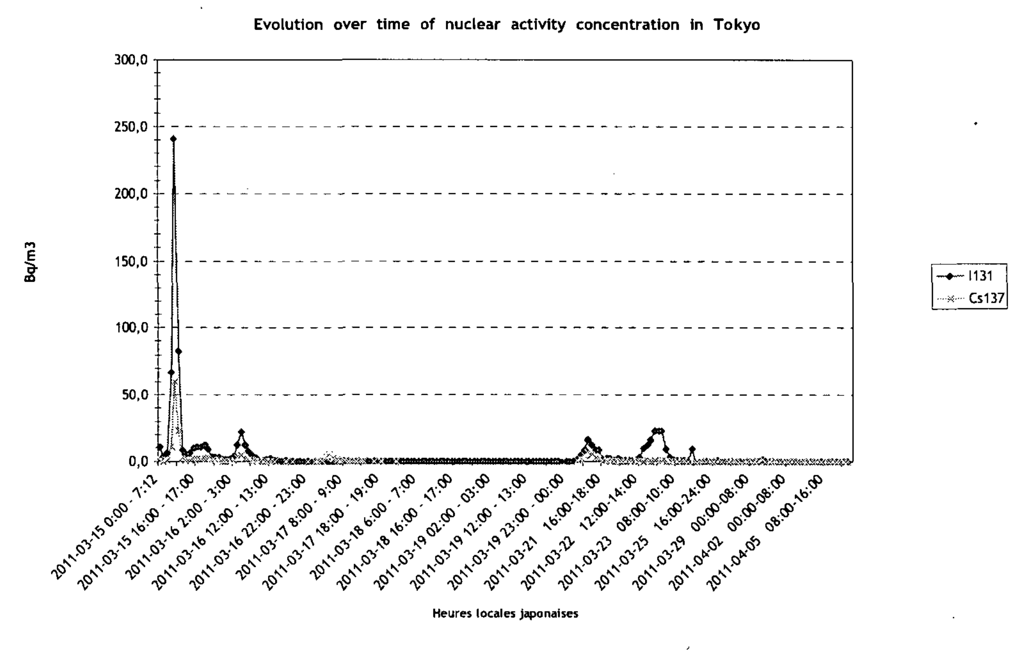
Measurements of sea water near to the plant taken over the last few days show a high level of contamination of the marine environment, a consequence of the discharge into the sea of part of the highly contaminated water present in the damaged units (see §3).

Atmospheric discharges (vapour plumes) will probably continue but will be smaller than those which resulted from the containment vessel depressurisation operations that took place during the first week following the initial accident. These discharges should not modify to any notable extent, over the next few days, the environmental contamination already present.

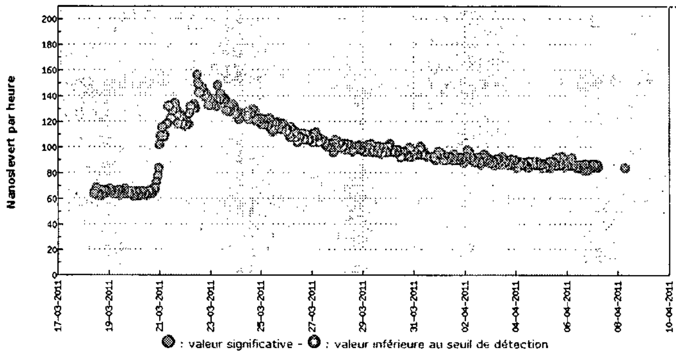
1.2. History of air radioactivity measured in Tokyo since the 15 March

The results of the measurements of air radioactivity (aerosols) in Tokyo, illustrated in the first graph below, show that:

- A peak in radioactive pollution due to the atmospheric dispersion of discharges from the Fukushima-Daiichi accident occurred on the 15th of March, the day on which the wind direction was towards Tokyo ;
- On the 16th of March, radioactive pollution of the air was still measurable, but at much lower levels ;
- A new episode of atmospheric pollution was observed in Tokyo between the 21 and 24 March. Although the levels reached were lower than on the 15 March, the rain that fell during this period led to a radioactive deposit that resulted in a twofold increase in the ambient dose rate measured by the IRSN Téléray radiation monitors installed in the French Embassy in Tokyo (see second graph below). The rapid rise observed on March the 21st, followed by several peaks between the 21 and 23 March, indicate the influence of the radiation emitted by the deposit formed by the rain and by the radionuclides present in the air during this period; the dose rate then reached was 130-140 nSv/h, a value comparable to that regularly measured in many regions due to natural radioactivity.



Evolution of ambient dose rates measured at the French Embassy in Tokyo



Since the 23 March, no significant presence of artificial radionuclides has been detected in the air in Tokyo. Only the radiation emitted by radioactive deposits contributes to the dose rate measured by the Téléray radiation monitor. This dose rate drops regularly due to the radioactive decay of the short half-life radionuclides present in the deposits. For instance, on the 8 April, it was 84 nSv/h.

1.3. Earthquake of the 7 April 2011

At 23.23pm JST on the 7 April, there was an earthquake at a depth of a 50 km. The epicentre was located several kilometres from the east coast of Honshu Island, around 20 km from the Onagawa nuclear power plant. There was a Tsunami warning but the alert was later lifted.

The Fukushima Dai-chi plant was not affected.

Three other nuclear facilities were however affected by this earthquake, namely reactors 1 to 3 of the Onagawa plant, reactor 1 of the Higashidoori plant and a fuel storage pool in Rokkasho. Temporary external power supply cuts were reported, but back-up diesel systems ensured the facilities were kept supplied with electricity. These power cuts led to a temporary rise in the temperature of the nuclear storage pools due to loss of cooling. In addition, there were small overflows of slightly contaminated water from the fuel storage pools in the buildings of reactors 1 to 3 in Onagawa. Finally, the operator (Tohoku) of the Onagawa reactors reported that other leaks had taken place in the buildings and that equipment had been damaged.

There have been no discharges recorded to date linked to this earthquake.

2. GENERAL RECOMMENDATIONS FOR FRENCH RESIDENTS IN JAPAN

Radioactive discharges from the site of the damaged plant have led to radiological pollution in some areas of the country, essentially in the four prefectures neighbouring the site. The purpose of the following recommendations is to limit as far as possible exposure to radiation induced by these discharges. Direct exposure to radioactive discharges dispersed in the air (external exposure to the radiation emitted by the radioactive plume and inhalation of radioactive particles) is essentially no longer a risk, since the discharges are now of little significance. Today, the risk of exposure is mainly linked to the consumption of foodstuffs contaminated by atmospheric fallout. The most sensitive foodstuffs to this radioactive pollution are leafy vegetables and milk from animals that consume contaminated grass or fodder. In certain areas of Fukushima prefecture and also outside of the 30 km zone around the nuclear site, important deposits have been identified and may lead to a significant dose through irradiation in the case of prolonged exposure.

Naturally, the following recommendations should not stand in the way of the application of measures decreed by the Japanese authorities.

2.1. *Eating and drinking recommendations for all French residents in Japan*

IRSN recommends:

- avoiding eating vegetables (spinach, *hana wasaki*, *kakina*, *komatsuna*, lettuce, chrysanthemum, cabbage, white cabbage, celery, broccoli, *bok choy*, parsley) and fresh milk produced since the 11 March in the prefectures of Fukushima, Tochigi, Ibaraki and Miyagi, Gunma.
- ensuring that the fresh foodstuffs listed above from prefectures where levels for these products have been observed higher than the norms authorising consumption (Saitama, Tokyo, Kanagawa, Chiba) comply with the Japanese regulations in force;
- in the absence of information regarding the source and the radiological quality of fresh foodstuffs, varying one's diet and avoiding, as far as possible, the prolonged consumption of leafy vegetables (spinach, *hana wasaki*, *kakina*, *komatsuna*, lettuce, chrysanthemum, cabbage, white cabbage, celery, broccoli, *bok choy*, parsley).

No restrictions regarding the use of tap water for preparing and cooking food need to be envisaged.

Products stored in hermetic packaging (tinned food, dried products, long-life milk or bottled mineral water) may be consumed without any risk.

It is important to note that occasionally eating foodstuffs contaminated at levels slightly above the authorised norms presents no significant risk to health.

2.2. *Recommendations for French residents in the areas the most affected by radioactive deposits*

Generally speaking, it is recommended to avoid going to the prefectures of Miyagi, Fukushima, Ibaraki and Tochigi unless absolutely necessary, in order to avoid needlessly receiving external radiation doses due to the radioactive deposits, which can be considerable in certain spots, especially in the north west of Fukushima prefecture (see below). French nationals residing in these prefectures are advised to follow the instructions given out by the Japanese authorities. Whatever the case, IRSN recommends:

- preparing the food of babies and young children with bottled mineral water,
- limiting as far as possible the consumption of foodstuffs from vegetable plots or kitchen gardens,
- thoroughly washing fruit and vegetables.

IRSN also recommends basic hygiene practices in the home in order to limit the transfer of contamination inside buildings:

- leaving shoes outside, especially with rainy weather,
- regularly washing floors with a damp cloth,
- cleaning air vents and ventilation systems,
- regularly vacuuming the surfaces of furniture, carpets and rugs (regularly change the vacuum cleaner bags).

It is also recommended to wash one's hands regularly with liquid soap from a dispenser so as to limit the risks of involuntary contamination by hand to mouth contact.

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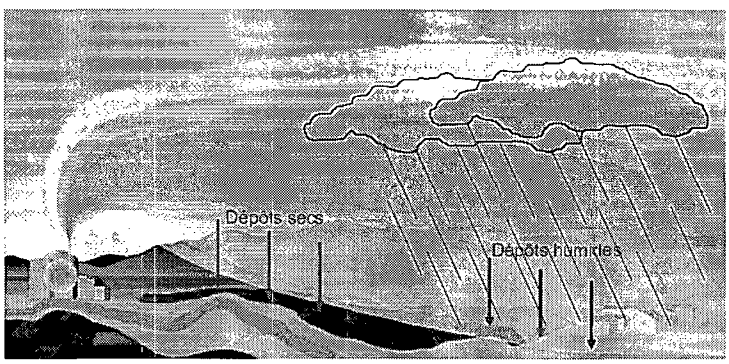
3. GENERAL INFORMATION ON ENVIRONMENTAL RADIOLOGICAL POLLUTION AND ITS CONSEQUENCES

The fate of radionuclides discharged into the environment (atmosphere, soil, water) following an accident obeys complex physical laws that IRSN has been studying for many years, particularly following the Chernobyl accident. The aim of this chapter is to share some of the results of this research, which will make it possible to better understand and predict the risks for ecosystems and for humans resulting from radiological pollution of the environment.

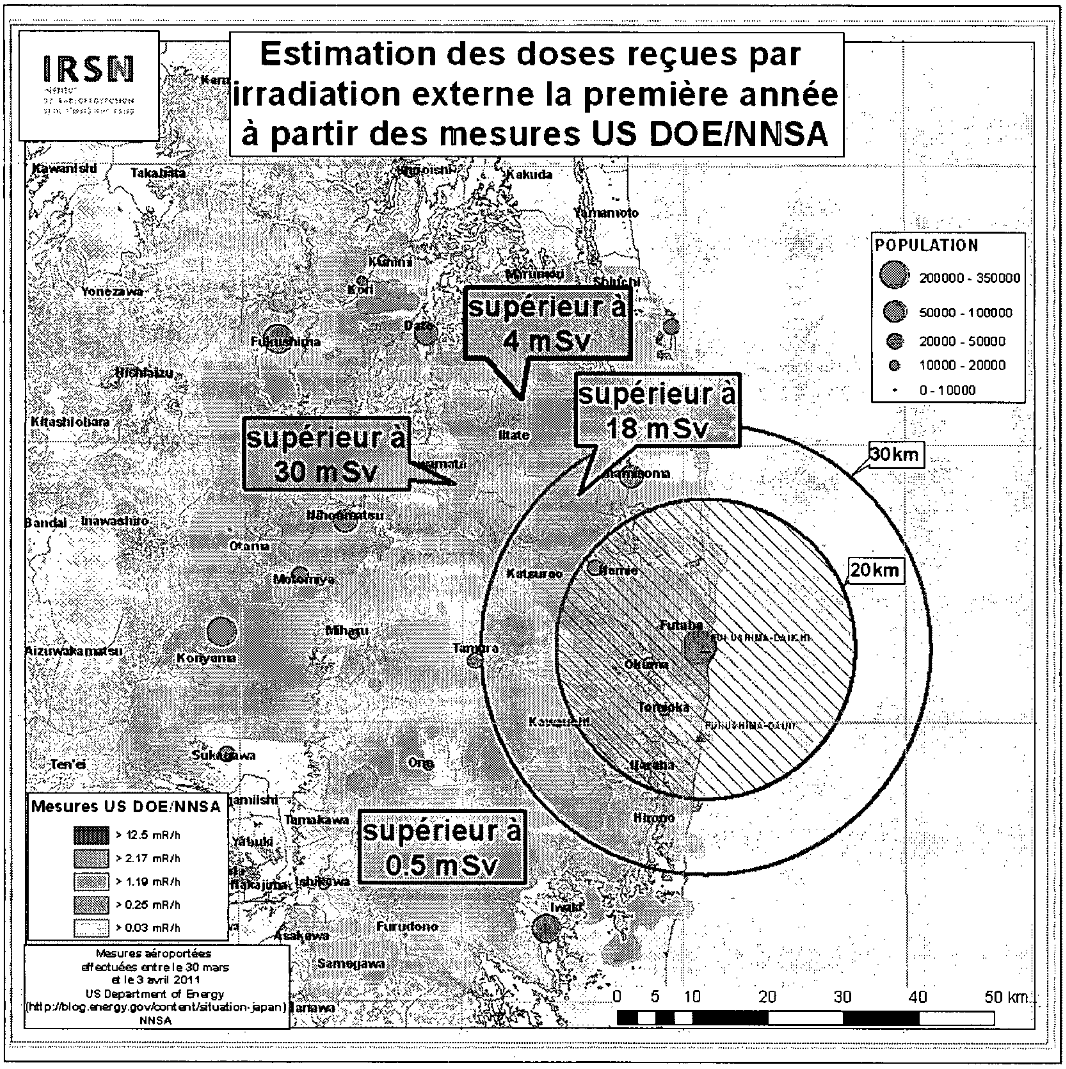
As long as the atmospheric discharge continues and up to the complete dissipation of the radioactive plume caused by the accident, part of the radionuclides (in the form of aerosols or water soluble gases) are deposited on the ground, according to two complementary processes (see figure below):

- Dry deposits, which form on all surfaces of the ground in contact with the radioactive particles in the air. The higher the concentration of radionuclides in the air and the longer the air pollution lasts, the greater the amount of dry deposits ;
- Wet deposits, which only form if it rains or snows. This type of deposit can be much greater than dry deposits formed at the same spot, because the drops of rain or flakes of snow concentrate the radioactive particles in the air and convey them to the ground. Some of these wet deposits remain where they are formed, but some can run off the surface into water courses.



The geographic distribution of deposits around the Fukushima-Daiichi plant is both non-uniform and complex. It depends both on the successive paths of the radioactive plumes formed by discharges from the plant, which took place over several days, and the location and the extent of precipitation over the same period. Consequently, the amount of radioactive materials deposited not only depends on the distance from the nuclear site but also on the terrain and the actual spot where such precipitation occurred during the discharges. "Spots of radioactive deposits" can also form at some distance from the site.

On the basis of the results of dose rate measurements conducted several days ago by an American airplane (DOE/NNSA), IRSN has estimated the dose likely to be received over the first year by the local population on account of external radiation due to exposure to radionuclides already deposited on the ground. The estimated values are shown in the map below. These estimations do not take account of doses likely to be received by internal contamination resulting from the consumption of locally produced foodstuffs, which are over and above the former doses. These initial dose estimations, provided here by way of indication, still need confirmed on the basis of new measurement results as and when they become available.



Estimation of doses received over the first year by external radiation, based on US DOE/NNSE airborne measurements conducted between 30 March and 3 April 2011

This map shows a NW-SE strip of land, several tens of kilometres long, where the deposits seem to have been much more important than elsewhere, doubtless because of the rain or snow that fell in this area when the radioactive plume was being dispersed.

By way of comparison, the whole body dose received annually by people living in France is on average 3.7 mSv, mainly resulting from exposure to natural radioactivity or from medical applications.

4. CONCLUSIONS

Living in Tokyo or in the Tokyo region does not constitute a real risk to health, but particular attention should be paid over the next few weeks to the origin of fresh foodstuffs consumed and to adopting a general attitude of vigilance, for as long as the situation of the damaged nuclear reactors is not totally stabilised.

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Impact on marine environment of radioactive releases resulting from the Fukushima-Daiichi nuclear accident

4th April 2011

Measurements taken over several days in the sea water in the vicinity of the power station have revealed severe contamination of the marine environment by various radionuclides released as a result of the accident at the Fukushima-Daiichi nuclear power station. As a general rule, the radioactive pollution of the sea is caused partly by the direct release of contaminated water from the power station, and partly by conveyance via rivers of the radioactive pollutants deposited on the ground following atmospheric release, and subsequent rainwater run-off, and partly finally by the fallout in the ocean of a proportion of the radionuclides from the atmospheric plume, which the winds carried over the sea during a large fraction of the accident sequence. Some of these radionuclides are soluble; and will be carried over very long distances by the marine currents and dissipated throughout the ocean water masses. Others will tend to be more or less bound to suspended particles in the water, causing sedimentary contamination by deposition on the ocean floor. The short -lived radioactive elements, such as iodine 131 (131I), will only be detectable for a few months (the radioactivity of iodine 131 reduces by a factor of 1000 every ten half-lives[1], i.e. every 80 days). Others, such as ruthenium 106 (106Ru) and caesium 134 (134Cs) will persist in the marine environment for several years. Caesium 137 (137Cs) has a long radioactive half-life (30 years): it will undoubtedly justify careful long-term monitoring, in Japanese coastal areas where it is liable to be present in sediments. The same would apply to plutonium if that is found in the marine effluents, but this has not yet been established.

According to the persistence of these radionuclides and their different concentrations, certain flora or animal species could be contaminated to significant levels, justifying the establishment of a radiological monitoring programme for sea food coming from the most severely affected Japanese coastal areas.

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1. ORIGINS OF THE CONTAMINATION OF THE MARINE ENVIRONMENT

Since several days, radioactive pollution was observed in the marine environment, at varying distances from the Fukushima-Daiichi power station. The main radionuclides regularly found in the sea water are (T = radioactive half-life): iodine 131 (T = 8 days), caesium 137 (T = 30 years), caesium 134 (T = 2.1 years), caesium 136 (T = 13.1 days), tellurium 132 / iodine 132 (T = 78 hours). Others have also been detected occasionally at lower concentrations: tellurium 129m / tellurium 129 (T = 33.6 days), barium 140 / lanthanum 140 (T = 12.7 days), ruthenium 105 (T = 4.4 hours), ruthenium 106 (T = 368 days), molybdenum 99 / technetium 99m (T = 65.9 hours), cobalt 58 (t = 70.9 days).

This radioactive pollution stems from three possible sources: liquid radioactive effluents escaping from the site of the accident, atmospheric fallout on the surface of the sea and conveyance of radioactive pollution by rainout of contaminated soils.

[1] The radioactive half-life is the period after which the radioactivity of a radionuclide reduces by half.

1.1. Release of liquid effluents directly into the sea in the vicinity of the damaged reactors

The high concentrations recorded in the sea water in the immediate vicinity of the Fukushima-Daiichi power station, indicate that there are one or more sources of radioactive liquid effluents escaping from the nuclear power station. They probably consist of the water used to cool the damaged reactors, part of which may have washed over surfaces contaminated by radioactive deposits formed during the atmospheric release. It is equally possible that part of the water present in the damaged reactors (in particular reactor No. 2 of which the bottom part is damaged) could have leaked out of the containment building, and subsequently run into the sea. It is not currently possible to quantify the magnitude of such liquid release into the sea, nor its duration. The impact of these liquid effluents was observed from 21st March in the vicinity of the power station (1484 Bq/L of 137Cs, 5066 Bq/L of 131I). The concentrations in the sea water subsequently increased between 25th and 28th March (up to 12,000 Bq/L of 137Cs, 74,000 Bq/L of 131I). A further increase was recorded on 29th and 30th March (up to 47,000 Bq/L of 137Cs, 180,000 Bq/L of 131I). As a comparison, prior to the accident at Fukushima, the concentration levels of caesium 137 in the sea water off the Japanese coast was a few mBq/L (1 to 3 mBq/L) and iodine 131 was not detected.

This coastal radioactive pollution spread southwards between 25th and 28th March, with an increase in the concentrations of iodine 131 and caesium 137 of the order of a factor of 10 at Iwasawa (about 20 kilometres to the south of the damaged power station) from 28th March and especially on 29th March. These concentrations are likely to continue to increase at that location.

This spread of the pollution along the coast results largely from the tide which generates alternating sea currents parallel to the coast. This pollution is undoubtedly also spreading to the north of the Fukushima-Daiichi power station.

1.2. Atmospheric fallout onto the surface of the sea

Since 12th March, atmospheric releases caused by the explosions and depressurisations of the containment buildings at the Fukushima-Daiichi power station have spread over the sea. Part of the radionuclides contained in the plume may have fallen onto the surface of the sea, quickly causing a diffuse pollution of the surface water at tens of kilometres from the source. This radioactive fallout is currently continuing, but to a much lesser extent than during the first days following the accident.

The concentrations recorded some 30 km offshore are most probably due to such fallout. They vary between 2 to 27 Bq/L for caesium 137 and between 3 and 57 Bq/L for iodine 131.

The values measured on 25th March tend to indicate a reduction in such concentrations. This may be the result, either of mixing with the deeper water (dilution effect), or of the renewal of surface water by sea currents. The first hypothesis is the most likely.

1.3. Conveyance of radioactive pollution by rainout of contaminated ground

The radioactive fallout deposited on land at the moment of dispersion of the atmospheric release of the Fukushima-Daiichi power station may be partly washed off by rainwater and subsequently carried by runoff directly to the sea, or via water courses flowing into the sea. The contaminated land surfaces thus drained may represent several thousand km^2. The measurements available do not enable any distinction to be made between these diffused radionuclides and those stemming from other sources of radioactive pollution.

2. DISPERSION IN THE SEA OF RADIOACTIVE POLLUTANTS

2.1. Topography of the sea bed and sea currents off the Japanese coast

The Fukushima power station is located on the east coast of the island of Honshu, 200 km north-east of Tokyo. The coast runs north-south, facing the Pacific Ocean. The depth increases steadily offshore, reaching some 200 m at 50 km from the coast; it then increases suddenly to 5000 m beyond about 100 km (figure 1).

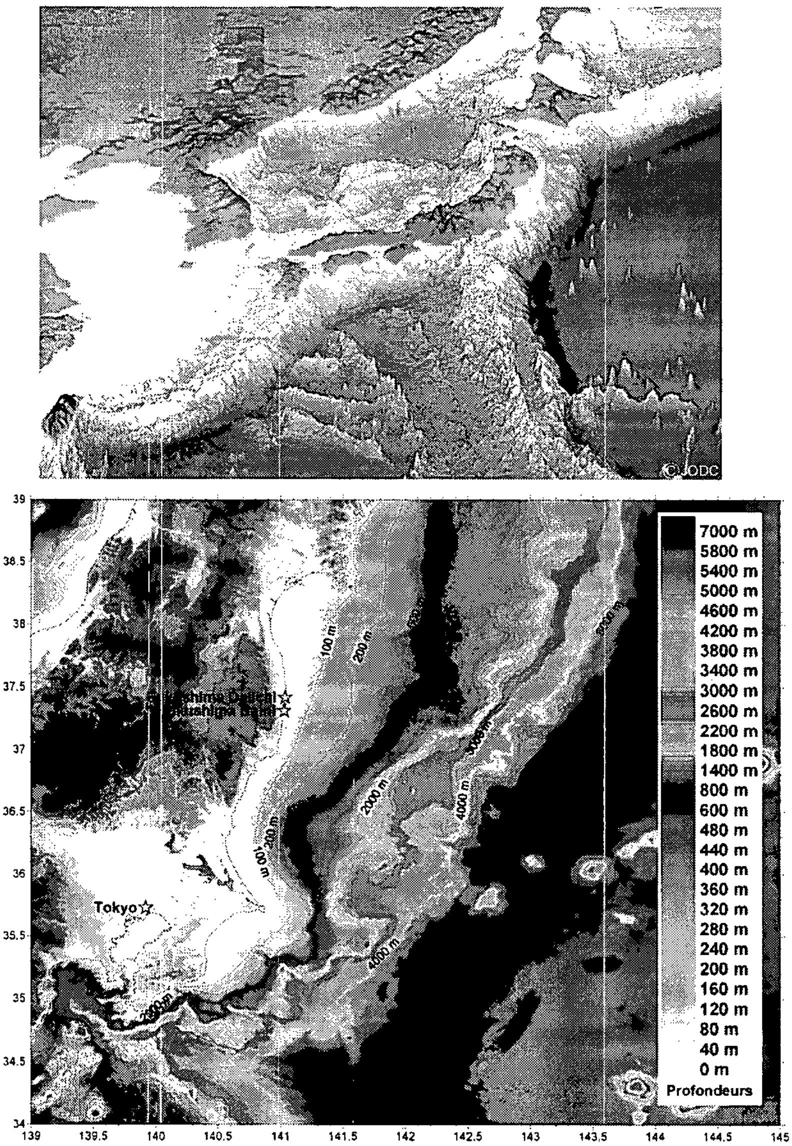

***Figure 1** Topography of Japan and bathymetry off the east coast*

In the zone currently affected by radioactive pollution, the currents are generated by the tide, the wind and the general circulation of the Pacific. In the short term, the effect of the tide is predominant; the tide move the water masses in an alternating motion, north and south along the coast, at speeds of the order of one meter per second and a periodicity of 12 hours. The wind influences the circulation of surface water.

The overall circulation on a larger scale results from the interaction between the Kuroshio ocean current which comes from the south, running along the Japanese coast and the Hoyashio current, which is not as strong, and which flows from the north (figures 2 and 3). The strength and extent of the Kuroshio current are comparable to those of the Gulf Stream. The coastal waters in the vicinity of the Fukushima-Daiichi power station are within the zone of interaction of the two currents, generating low strength and variable rotary currents. These currents will determine the mid-term dispersion of the radioactive pollution.

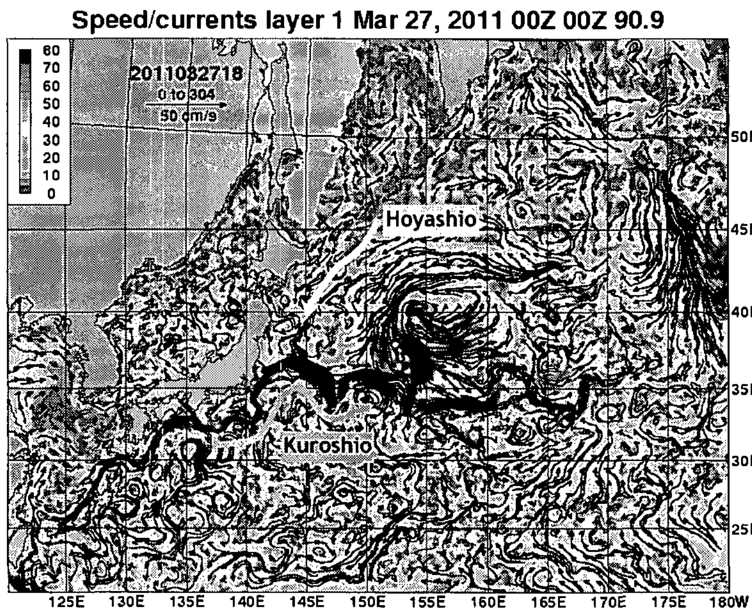

***Figure 2** Surface currents in the north-west of the Pacific (http://www.hycom.org/)*

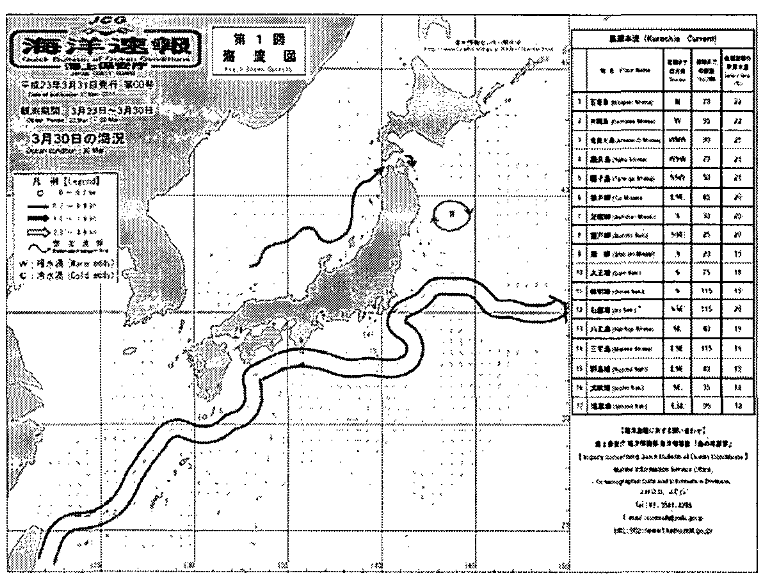

***Figure 3** Observation of the surface currents in the north-west Pacific. The Kuroshio current (in red) flows from south-west to east*
(http://www1.kaiho.mlit.go.jp/KANKYO/KAIYO/qboc/2011cal/cu0/qboc2011060cu0.html)

2.2. Immediate or short term dispersion (a few days)

The concentrations in 131I and 137Cs are representative of other radionuclides measured in the sea; the maps provided in figures 4 to 13 show the results of measurements made in sea water for these two radionuclides.

The great depth of the sea off the coast and the weak currents result in stratification of the water masses. A layer at the surface, some 20 to 50 metres deep near the coast mixes the radionuclides throughout its entire thickness. This layer may be up to 100 metres thick far offshore (source: Mercator-Ocean). It is separated from the deeper layers by a density gradient which limits mixing. The dispersion of soluble radionuclides occurs primarily at the surface. Radioactive particles may migrate to the bottom by sedimentation.

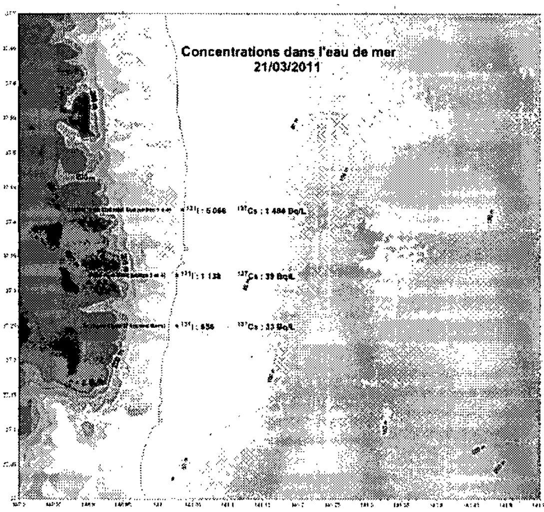

Figure 4 Concentration recorded on 21st March

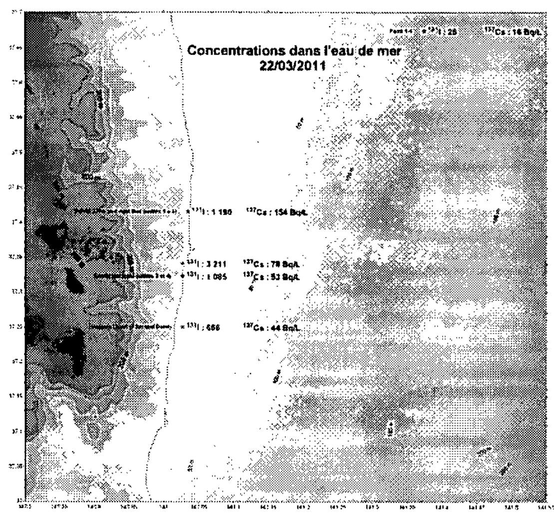

Figure 5 Concentration recorded on 22nd March

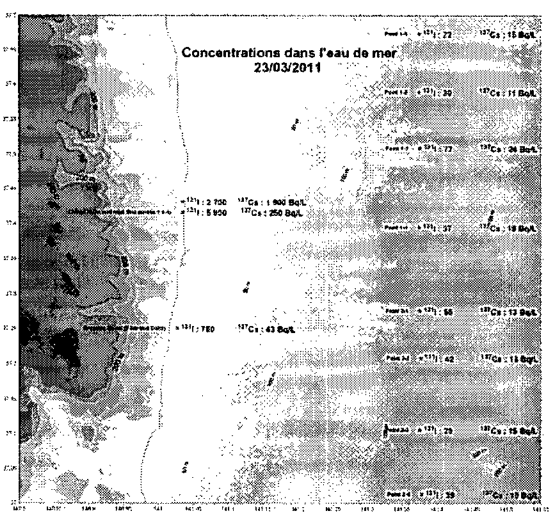

Figure 6 Concentration recorded on 23rd March

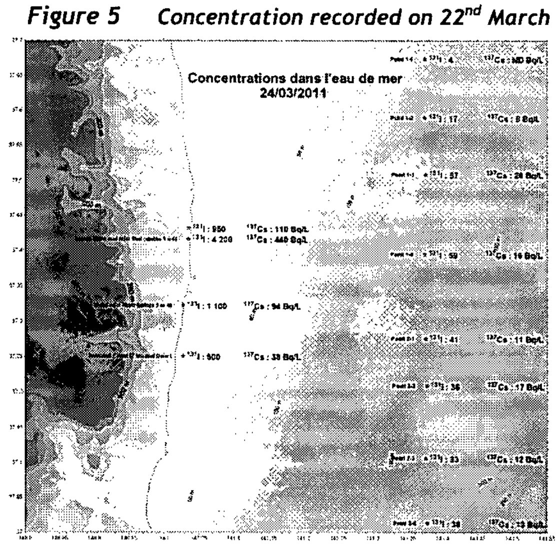

Figure 7 Concentration recorded on 24th March

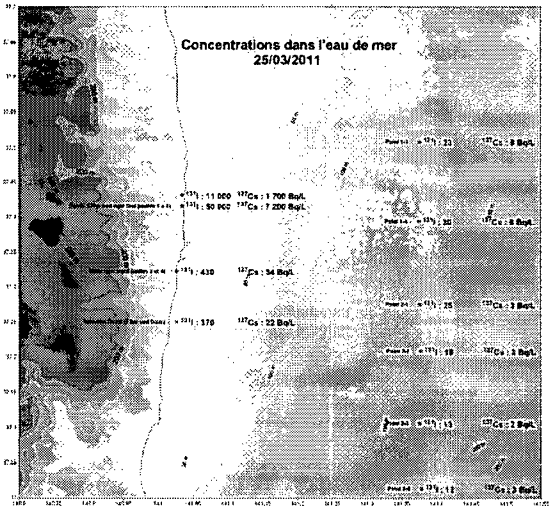

Figure 8 *Concentration recorded on 25th March*

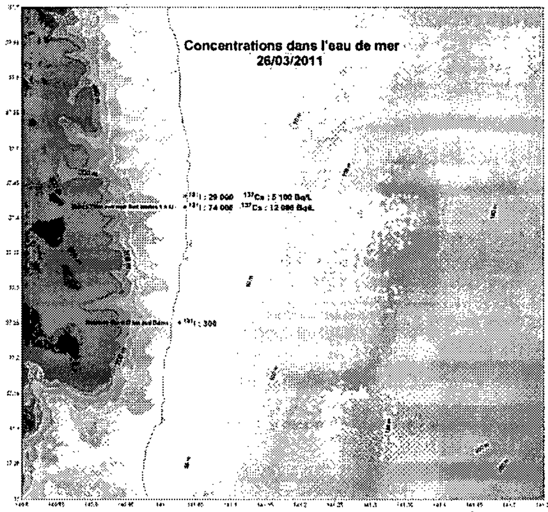

Figure 9 *Concentration recorded on 26th March*

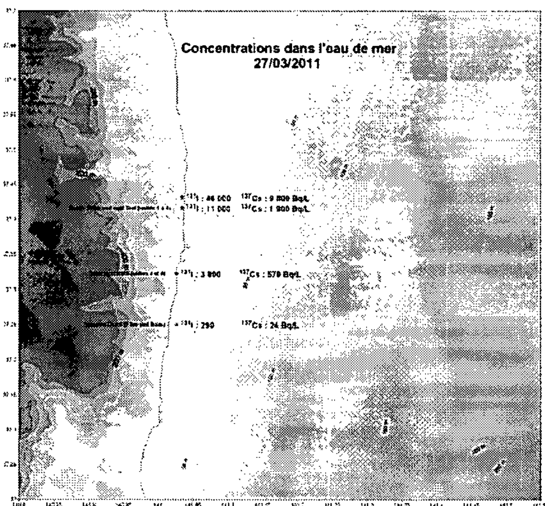

Figure 10 *Concentration recorded on 27th March*

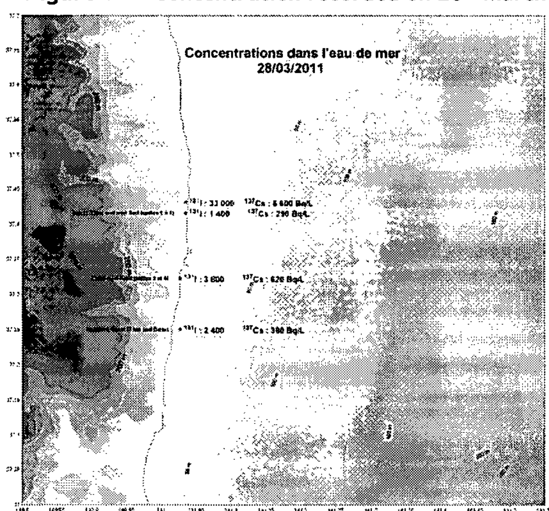

Figure 11 *Concentration recorded on 28th March*

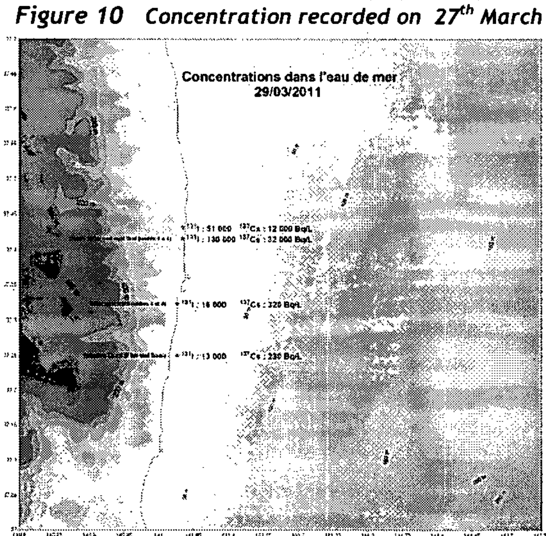

Figure 12 *Concentration recorded on 29th March*

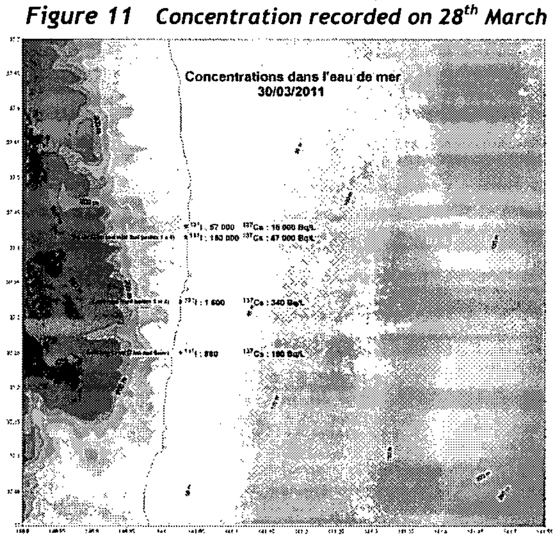

Figure 13 *Concentration recorded on 30th March*

Simulations have been performed of the dispersion in the sea of this radioactive pollution for the period between the 14th March and 5th April SIROCCO (CNRS and Toulouse University - http://sirocco.omp.obs-mip.fr/outils/Symphonie/Produits/Japan/SymphoniePreviJapan.htm).

They indicate the zones affected in the short term by the dispersion of radionuclides. The concentrations are provided indicatively (figures 14 and 15) as at present, there are no reliable data on the quantity of effluents released by the Fukushima-Daiichi power station nor on the radioactive fallout on the surface of the sea. These simulations do however enable evaluation of the effect of dilution on the radioactive pollution, as it spreads.

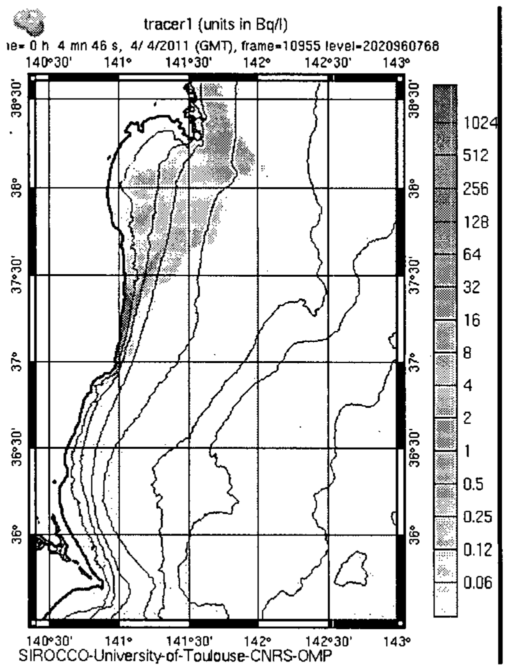

***Figure 14** Simulation of the dispersion in sea water of the liquid effluents on 4th April*

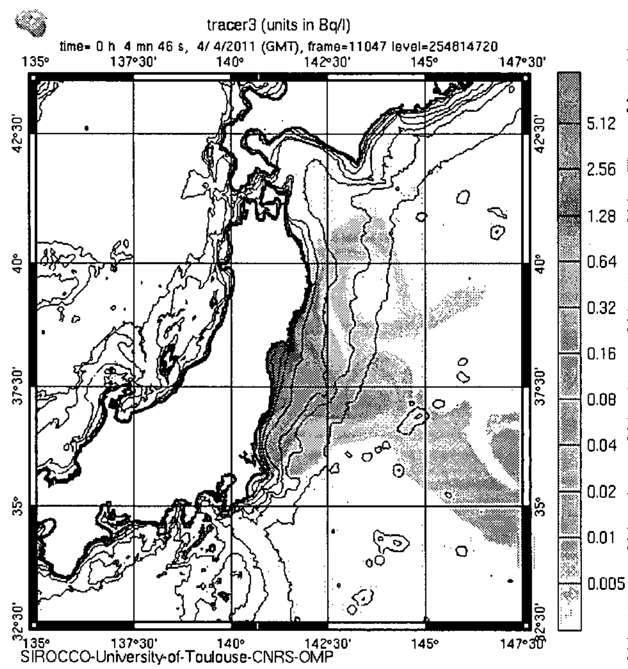

***Figure 15** Simulation of the dispersion in sea water of the atmospheric fallout on 4th April*

2.3. Mid-term dispersion (weeks, months)

The swirling structures present to the east of Fukushima are unstable. They mix the surface waters between the latitudes of 35°30'N and 38°30'N (figure 15). It is to be expected that the coastal zones located between those latitudes to be impacted by the dispersion of radioactive pollution. The long term migration of the surface waters will be southwards but will not extend beyond the latitude of Tokyo. The Kuroshio current will then carry the plume towards the centre of the Pacific.

A simulation of this migration of the radioactive pollution has been produced by Mercator-Ocean (figure 16). According to that simulation, the radionuclides dissolved in sea water in the vicinity of the Fukushima-Daiichi power station (the green spot on the map in figure 16) should drift for 90 days along the red trace shown on the map. The simulation shows that the coastal currents carry the polluted waters up to the Kuroshio current (the thick white swathe) and disperse to the north of that current. The diffusion is relatively turbulent but the dissolved radionuclides are contained by the Kuroshio current.

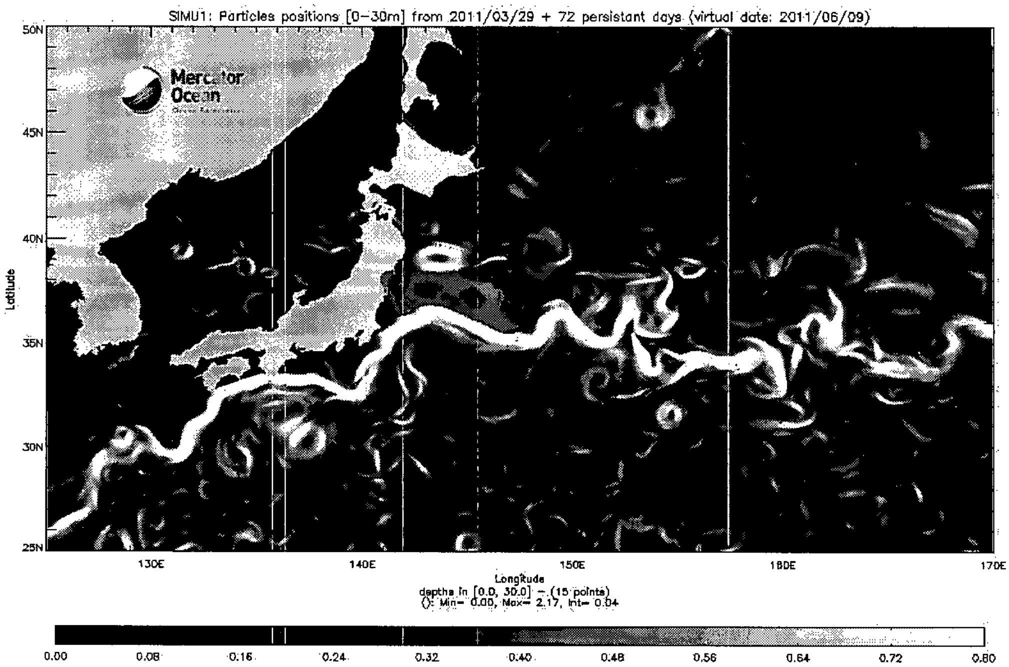

***Figure 16** Simulation of the migration of radioactive pollution (Mercator-Ocean)*

When the different sources of release into the sea are better evaluated, the marine dispersion simulations should provide a better estimate of the medium term changes in radionuclide concentrations.

2.4. Long term and large scale future of the radioactive pollutants

- **Residence times in the surface waters**

The short radioactive half-life radionuclides (less than a few tens of days) should cease to be detectable after a few months and should not therefore have any large scale long term impact. Others, such as ruthenium 106 and caesium 134 will persist in the marine environment for several years and will finally disappear by radioactive decay. The persistence time of caesium 137 in the surface waters of the Pacific Ocean varies between 11 and 30 years according to the region (10 years for the medium latitudes and 30 for the equatorial zone). For plutonium isotopes, assuming that these are present in the liquid effluents, the persistence time would be 5 to 17 years (the shortest times are again observed in the medium latitudes). These persistence times are dependent upon the respective affinity of the radionuclides for the particles in suspension in the surface waters, which are likely to settle and to carry the radionuclides to the seabed.

- **Transit times**

The transit times between the North-West Pacific and the equatorial zone is estimated to be about 10 to 15 years. Part of the North Pacific Ocean waters flow towards the Indian Ocean via the Indonesian seas and are then carried towards the south of the Atlantic Ocean. These transfer times have been estimated to be about 30 to 40 years.

Until recently, scientists considered that there was no exchange between the north Pacific and the south Pacific, due to the major barrier formed by the equatorial system of currents. Measurements

of traces of caesium 137 (fallout from atmospheric nuclear tests conducted in the northern hemisphere) in the Tasmanian Sea have shown that this barrier is not completely watertight and that exchanges are possible between the north and the south, in the western part of the Pacific.

3. IMPACT OF RADIOACTIVE POLLUTION ON LIVING SPECIES

In the short term, all the species in the marine trophic chains in coastal areas close to the Fukushima-Daiichi power station are likely to be impacted by the radioactive pollution of the sea water. Up to now, it is difficult to quantify the magnitude of such impact, which may be highly variable according to:

- the magnitude of the continuing release of radioactive liquids from the nuclear plant;
- atmospheric fallout onto the surface of the sea;
- the quantity of radionuclides brought by the watershed draining the contaminated zones;
- the renewal of water masses along the coast, etc.

Particular attention should be focussed on aquacultural installations (seaweed farms, molluscs and fisheries) located on the coast close to the nuclear plant, even if it is probable that such installations have been severely damaged by the tsunami on 11th March.

Iodine has a strong affinity for brown seaweed which is a major crop in Japan. There is therefore a risk of contamination of this type of seaweed by radioactive iodines, in particular iodine 131. However, in view of the short radioactive half-life of that radionuclide, the risk will only be significant for a few months.

In the longer term, it is the coastal zone subjected to contamination with radionuclides by rainout from the contaminated water basins which could be impacted by persistent radioactive pollution. Phenomena which put radionuclides initially bound to sediments back into seawater could also contribute to maintain significant concentration levels of certain radionuclides in the water and in certain living species.

Accumulation phenomena in living species could lead to higher concentrations than those measured in the water by a factor of 10 to several thousand, according to the radionuclide and the species considered (weight ratio of the concentrations in the species and in sea water). The accumulation capacity is dependent on the metabolism of each species. In the case of caesium, the concentration factors vary from 50 for molluscs and seaweed to 400 for fish. For iodine, the concentration factors vary between 15 for fish and 10,000 for seaweed.

These accumulation phenomena are ample justification for the establishment of radiological monitoring programmes. The geographic zones of interest should be specified by predictive mapping studies, covering the vegetable and animal species entering the human food chain either directly or indirectly.

From: ET02 Hoc
Sent: Tuesday, April 12, 2011 6:26 PM
To: OST01 HOC
Subject: FW: Question from Congressman Markey's staff
Attachments: Fukushima Daiichi Information as of 1800 EDT April 12 for Markey.doc

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From: ET01 Hoc
Sent: Tuesday, April 12, 2011 6:26:09 PM
To: ET02 Hoc
Subject: FW: Question from Congressman Markey's staff
Auto forwarded by a Rule

From: RST01 Hoc
Sent: Tuesday, April 12, 2011 6:26:08 PM
To: ET02 Hoc; ET01 Hoc
Subject: FW: Question from Congressman Markey's staff
Auto forwarded by a Rule

Please see below.

From: RST09 Hoc
Sent: Tuesday, April 12, 2011 6:02 PM
To: RST01 Hoc
Subject: RE: Question from Congressman Markey's staff

Information added qualifying table for Rep. Markey's office.

Antonios Zoulis
RST Severe Accident Analyst

From: RST01 Hoc
Sent: Tuesday, April 12, 2011 3:32 PM
To: RST09 Hoc; RST07 Hoc
Subject: FW: Question from Congressman Markey's staff

From: Riley (OCA), Timothy
Sent: Tuesday, April 12, 2011 3:31:32 PM
To: RST01 Hoc
Cc: Powell, Amy; Droggitis, Spiros
Subject: FW: Question from Congressman Markey's staff
Auto forwarded by a Rule

000/526

RST,
As I discussed over the phone with Mike Brown, OCA would like to provide the attached matrix of pressure and radiation readings from Fukushima to the staffer for Rep. Markey. However, OCA would also like to accompany the data with a statement explaining that the data does not lend itself readily to interpretation; that we cannot offer a comparison of Unit 1 to Unit 2 without relying overly on speculation.
So that I can send the data to Congressman Markey, can you provide me with approved language explaining this?

Timothy Riley
Congressional Affairs Officer
U. S. Nuclear Regulatory Commission
Office of Congressional Affairs
Phone: 301-415-8492
Blackberry: (b)(6)

From: RST09 Hoc
Sent: Tuesday, April 12, 2011 1:46 PM
To: Droggitis, Spiros
Cc: RST01 Hoc
Subject: FW: Question from Congressman Markey's staff

Spiros,

Attached are the pressure and radiation readings for Units 1, 2 and 3 as requested.

Ben Beasley
RST Accident Analyst

From: RST01 Hoc
Sent: Tuesday, April 12, 2011 10:49 AM
To: RST09 Hoc; RST08 Hoc
Subject: FW: Question from Congressman Markey's staff

From: Droggitis, Spiros
Sent: Tuesday, April 12, 2011 10:41 AM
To: RST01 Hoc
Cc: Riley (OCA), Timothy
Subject: Question from Congressman Markey's staff

A staffer from Congressman Markey's office has the following question:

She would like to know what the pressure and radiation readings are for Units 1 and 3 at Fukushima, and what can be inferred from those readings vis the readings at Unit 2.

Thanks

Fukushima Daiichi Information as of 1800 EDT 04/12/2011

	Reactor Vessel Pressure		Containment Status	Drywell Pressure (TEPCO 04/12/2011)	Drywell Radiation (TEPCO 04/12/2011)	Torus Pressure (TEPCO 04/12/2011)	Torus Radiation (TEPCO 04/12/2011)
	Channel A (TEPCO 04/12/2011)	Channel B (TEPCO 04/12/2011)					
Unit 1	60.3 psig	131.7 psig	Damage suspected, slow leakage, N_2 injection	12.9 psig	Uncertain	9.2 psig	1080 rem/hr
Unit 2	-3.3 psig	-3.6 psig	Damage suspected	-1.6 psig	2810 rem/hr	Uncertain	68.1 rem/hr
Unit 3	-2.8 psig	-11.5 psig	Damage suspected, N_2 injection planned	0.6 psig	1740 rem/hr	9.8 psig	67.1 rem/hr

Considering the damage that has been done to the site, instruments readings are suspect. Conjecture on the condition of the plant without further detailed information is not advisable. Instrument readings may be trusted for trends and approximate measurements. Furthermore, a comparison of Unit 1 to Unit 2 using the above information is speculative.

From: LIA03 Hoc
Sent: Tuesday, April 12, 2011 1:48 AM
To: LIA08 Hoc; LIA02 Hoc; LIA10 Hoc
Subject: FW: Urgent:Circular from MOFA (12 April 2011)

From: LIA02 Hoc
Sent: Tuesday, April 12, 2011 1:48 AM
To: LIA08 Hoc; LIA03 Hoc; LIA10 Hoc
Subject: FW: Urgent:Circular from MOFA (12 April 2011)

From: Hinds, Lynda J [mailto:HindsLJ@state.gov] **On Behalf Of** Tokyo Staff Assistant
Sent: Tuesday, April 12, 2011 1:47 AM
(b)(6)
[redacted]
Subject: FW: Urgent:Circular from MOFA (12 April 2011)

Lynda Hinds
Staff Assistant
(03) 3224- 5370

From: PROTOCOLOFFICE-EM [mailto:protocoloffice-em@mofa.go.jp]
Sent: Tuesday, April 12, 2011 10:15 AM
To: PROTOCOLOFFICE-EM
Subject: Urgent:Circular from MOFA (12 April 2011)

<u>URGENT (10:10) Tuesday12 April 2011</u>

000527

To All Missions (Embassies, Consular posts and International Organizations in Japan)

With regard to the accident at Fukushima Dai-ichi Nuclear Power Plant, the Nuclear and Industrial Safety Agency (NISA) has decided to raise nuclear accident severity level (provisional), according to the INES standard, to the highest level 7 (same as the accident at Chernobyl) from current level 5, based on the latest information gained.

The estimated total amount of radioactive material discharged into the air, however, is approximately 10 % of that of the accident at Chernobyl.

The press release will be issued around 11:00 am today, and details will be provided in today's daily briefing.

Contact: International Nuclear Energy Cooperation Division, Tel 03-5501-8227

From: LIA03 Hoc
Sent: Tuesday, April 12, 2011 11:26 AM
To: LIA08 Hoc; LIA02 Hoc; LIA10 Hoc
Subject: FW: Deployment to Japan

From: Evans, Michele
Sent: Tuesday, April 12, 2011 11:26 AM
To: Lupold, Timothy; Meighan, Sean; Norwood, Donald; LIA03 Hoc; LIA06 Hoc
Cc: Linnerooth, Sarah; Kerben, Valerie; Buchholz, Jeri; Lubinski, John; Giitter, Joseph; Morris, Scott; Tracy, Glenn
Subject: Deployment to Japan

Thank you for volunteering for deployment to Japan. This work is of highest priority for the agency and your efforts are enormously appreciated.

I've identified the remaining three staff to deploy to Japan to complete the 4th wave. **The plan is for Tim Lupold (NRR) and Sean Meighan (NRR) to leave the USA on Thursday, April 14, and Don Norwood (NSIR) April 14 or 15. The intent is that your stay will be about three weeks.**

The Operations Center Liaison Team (LT) has contacted you already to handle the logistic for your trip. This includes items such as flights, passports, country clearances, health immunizations, international blackberry service, dosimetry and KI tablets.

In addition, HR has requested that I provide you the information below:

-Please contact NRC Health Services at your earliest convenience on 301-415-8400 to schedule an appointment with Dr. Cadoux for health screening and counseling. If at all possible, it is important that you meet with Dr. Cadoux face-to-face. However, if you are located in the Region or if you are notified and deployed in a very short time frame so that medical screening is not possible, this screening will be conducted by phone. Please be aware that medical services available in Tokyo may be limited at this time. Additionally, working conditions are such that controlling diet, sleep, exercise, and routine may be impossible. All of these factors can impact your health. Please review any medical conditions that you may have with Dr. Cadoux so that he can provide you with advice and counseling on managing you medical condition while deployed.

-Before you deploy we recommend that you speak briefly with the NRC Employee Assistance Program counselor, Sarah Linnerooth. Sarah can be reached on 301-415-7113. While you are deployed, EAP services are available to both you and your family, including extended family members such as Grandparents. The telephone number is for EAP service is 1-800-896-0276. More information is available on the EAP on the web at www.eapconsultants.com. To learn more about the EAP and the services provided click on the member services tab. The NRC passcode is "nuclear". Please be sure to share this information with your family.

Thank you.

Michele Evans
Acting Deputy OD, NSIR
Michele.evans@nrc.gov
BB: (b)(6)

0001528

From: LIA03 Hoc
Sent: Tuesday, April 12, 2011 8:57 AM
To: LIA08 Hoc; LIA02 Hoc; LIA10 Hoc
Subject: FW: NRC travelers
Attachments: NRC - Information Required 1 page 4-12-11.docx

-----Original Message-----
From: Kozal, Jason
Sent: Tuesday, April 12, 2011 8:57 AM
To: LIA02 Hoc; LIA03 Hoc
Cc: Bloom, Steven
Subject: FW: NRC travelers

All,

For all travelers going forward please use the attached checklist.

V/r,

Jason Kozal
USNRC/NSIR/DPR/CB
301-415-6231

-----Original Message-----
From: RMTPACTSU_AC [mailto:RMTPACTSU_AC@ofda.gov]
Sent: Tuesday, April 12, 2011 8:21 AM
To: Kozal, Jason
Cc: travel
Subject: RE: NRC travelers

Hi Jason,

In order to avoid all of the back and forth that took place yesterday to get the information required on each traveler, please have them complete the following form. This provides all of the information we require for setting up the reservation, getting a TA issued and completing the Country Clearance process.

In addition, please have Ms. Kerben continue to forward over the security verification for each traveler as she has done for all other travelers.

Regards,

Ronald Mortensen
202-712-0031
(b)(6) [redacted]
Rmtpactsu_ac@ofda.gov
rmortensen@ofda.gov

000529

-----Original Message-----
From: Kozal, Jason [mailto:Jason.Kozal@nrc.gov]
Sent: Tuesday, April 12, 2011 6:14 AM
To: RMTPACTSU_AC
Subject: NRC travelers

Thanks for all the help. I just found out we have 3 more for this week. I have one name. Gathering info now. Looking for travel on thurs.

Donald Norwood. Dulles

Sent from an NRC BlackBerry
Jason W Kozal
(b)(6)

NRC – INFORMATION REQUIRED FOR TICKETING AND COUNTRY CLEARANCE

Departure Date:

Departing From (City/Airport):

Return Date:

Personal Information

Full Name:

Date of Birth:

Social Security Number:

Home Address:

Cell Phone Number:

E-Mail:

Employment type (Direct Hire/PSC, etc.):

Security Clearance (Secret/Top Secret/etc.):

Passport Information

Passport No:

Place/Country of Birth:

Passport Type (Official/Personal/Diplomatic)

Date of Issuance:

Expiration Date:

Emergency Contact Information

Name:

Relationship:

Phone Number:

Financial Information

Bank Name:

Name on Account:

Account No.:

Routing No:

From: LIA03 Hoc
Sent: Tuesday, April 12, 2011 2:33 PM
To: LIA08 Hoc; LIA02 Hoc; LIA10 Hoc
Subject: FW: Security clearences for 3 more travelers

From: Kozal, Jason
Sent: Tuesday, April 12, 2011 2:33 PM
To: Kerben, Valerie
Cc: LIA02 Hoc; LIA03 Hoc
Subject: Re: Security clearences for 3 more travelers

Valerie,

Did your branch get a chance to send these yet? I just got a call from USAID saying they have not received them yet.

Sent from an NRC BlackBerry
Jason W Kozal
(b)(6)

From: Kozal, Jason
To: Kerben, Valerie
Cc: LIA02 Hoc; LIA03 Hoc
Sent: Tue Apr 12 11:36:18 2011
Subject: Security clearences for 3 more travelers

Valerie,

Please send clearance info to USAID for the following NRC employees.

Donald Norwood

Sean Meighan

Tim Lupold

Thanks.

Respectfully,

Jason Kozal

Senior Emergency Response Coordinator-
Federal Interagency Coordinator
Office of Nuclear Security and Incident Response
Division of Preparedness and Response

000/530

Coordination Branch
US Nuclear Regulatory Commission
(O) 301-415-6231
(b)(6)
jason.kozal@nrc.gov

From: LIA10 Hoc REL
Sent: Tuesday, April 12, 2011 7:16 AM
To: LIA08 Hoc; LIA02 Hoc; LIA03 Hoc
Subject: FW: Arrived in U.S.

From: LIA03 Hoc
Sent: Tuesday, April 12, 2011 7:16 AM
To: LIA08 Hoc; LIA02 Hoc; LIA10 Hoc
Subject: FW: Arrived in U.S.

From: LIA02 Hoc
Sent: Tuesday, April 12, 2011 7:15 AM
To: Stahl, Eric; LIA03 Hoc
Subject: RE: Arrived in U.S.

great

From: Stahl, Eric
Sent: Monday, April 11, 2011 6:06 PM
To: LIA02 Hoc; LIA03 Hoc
Subject: Arrived in U.S.

Eric Stahl
U.S. Nuclear Regulatory Commission
Office of International Programs
Tel: +1 301-415-0246
(b)(6)

0001531

From:	LIA03 Hoc
Sent:	Monday, April 11, 2011 11:53 AM
To:	LIA08 Hoc; LIA02 Hoc; LIA10 Hoc
Subject:	FW: Bank Name

From: LIA02 Hoc
Sent: Monday, April 11, 2011 11:53 AM
To: LIA08 Hoc; LIA03 Hoc; LIA10 Hoc
Subject: FW: Bank Name

From: Garchow, Steve
Sent: Monday, April 11, 2011 11:53 AM
To: LIA02 Hoc
Subject: RE: Bank Name

(b)(6)

Steve Garchow
Chief Examiner
817-276-4426
SMG@NRC.gov

From: LIA02 Hoc
Sent: Monday, April 11, 2011 10:53 AM
To: Garchow, Steve; Reynolds, Steven; Huffert, Anthony
Subject: Bank Name

Please send me the name of your bank.

Thank you,

Steve

000/532

From:	Hayden, Elizabeth
To:	Clark, Kenneth; Strasma, Jan; McIntyre, David; Brenner, Eliot; Harrington, Holly; Couret, Ivonne; Janbergs, Holly; Burnell, Scott; Chandrathil, Prema; Screnci, Diane; Ledford, Joey; Sheehan, Neil; Hannah, Roger; Uselding, Lara; Dricks, Victor; Mitlyng, Viktoria
Cc:	Anderson, Brian; Clark, Theresa; Bonaccorso, Amy
Subject:	FW: NEI Talking Points Comparing Chernobyl and Fukushima
Date:	Wednesday, April 13, 2011 2:27:27 PM

fyi

Beth

From: Landau, Mindy
Sent: Wednesday, April 13, 2011 8:56 AM
To: Hayden, Elizabeth; Rihm, Roger; Ellmers, Glenn; Merzke, Daniel
Subject: FW: NEI Talking Points Comparing Chernobyl and Fukushima

More info on the comparison on Chernobyl and Fukushima, for use as appropriate. Beth – may be useful for OPA.

From: Nelson, Robert
Sent: Wednesday, April 13, 2011 8:36 AM
To: Roberts, Darrell; Croteau, Rick; Kennedy, Kriss; Lara, Julio; Burnell, Scott; Landau, Mindy; Guzman, Richard; Lyon, Fred; Markley, Michael; Meighan, Sean; Nguyen, Quynh; Oesterle, Eric; Polickoski, James; Tam, Peter; Thomas, Eric; Wertz, Trent; Broaddus, Doug; Campbell, Stephen; Carlson, Robert; Chernoff, Harold; Kulesa, Gloria; Pascarelli, Robert; Salgado, Nancy; Simms, Sophonia; Wall, Scott
Cc: West, Steven; Shear, Gary
Subject: FYI: NEI Talking Points Comparing Chernobyl and Fukushima

NELSON

From: Givvines, Mary
Sent: Tuesday, April 12, 2011 5:31 PM
To: Bahadur, Sher; Blount, Tom; Brown, Frederick; Cheok, Michael; Evans, Michele; Galloway, Melanie; Giitter, Joseph; Givvines, Mary; Hiland, Patrick; Holian, Brian; Howe, Allen; Lee, Samson; Lubinski, John; McGinty, Tim; Nelson, Robert; Quay, Theodore; Ruland, William; Skeen, David; Westreich, Barry
Subject: FW: FWD FYI: NEI Talking Points Comparing Chernobyl and Fukushima

Fyi

From: Leeds, Eric
Sent: Tuesday, April 12, 2011 4:02 PM
To: Schwarz, Sherry
Cc: Ruland, William; Boger, Bruce; Givvines, Mary
Subject: Fw: FWD FYI: NEI Talking Points Comparing Chernobyl and Fukushima

Sherry - please print a copy for me. Mary please distribute to the LT

From: Sam Collins (b)(6)
To: Virgilio, Martin; Leeds, Eric; jim.wigging@nrc.gov <jim.wigging@nrc.gov>
Cc: (b)(6) (b)(6)
Sent: Tue Apr 12 15:37:38 2011
Subject: FWD FYI: NEI Talking Points Comparing Chernobyl and Fukushima

000/533

Sam Collins
Samuel J. Collins Consulting, LLC
Nuclear Safety + Governance + Outreach Services
Cell: (b)(6)
Home: (b)(6)
(b)(6)

-----Original Message-----
From: Neely, Christine T. [mailto:Christine.Neely@pseg.com]
Sent: Tuesday, April 12, 2011 3:25 PM
To: Booth, Brian C.; Bouknight Jr., J. A. (Lon); Braun , Robert; Carr, Eric; Davison, Paul J.; Delmar Sr, Joseph; Dorsa, Caroline; Eilola Jr, Edwin; Fricker, Carl J.; Garecht, John F.; Garry Randolph (glrandolph@mchsi.com); Hoskins, Anne E.; Izzo, Ralph; Joyce, Thomas P.; Keenan, Jeffrie J; Lally, Kathleen A.; LaRossa, Ralph A.; Levis, William; Lewis, David P. (Nuc Dev); Leyden, Shawn P.; Linde, Tamara L.; Lopriore, Richard P.; Ludecke, Kristen M.; McCloskey, Donald M.; McKoy, Vaughn L.; Mehrberg, Randall E.; Perry, John F. (HC VP); Rosengren, Paul L.; Rostiac, Sheila; 'Sam Collins'; Sindoni, Joseph M.; Smith, Brian; Sosson, Gregory J.; Thigpen, Rick T.; Wagner, Lawrence M.; 'wtoconnor@buckeye-express.com'
Subject: NEI Talking Points Comparing Chernobyl and Fukushima

NEI has issued talking points about the raised crisis level scale for the Fukushima Daiichi nuclear plant event. I thought they would be of interest. Christine

---

From: NEI Response Center [mailto:NEIresponsecenter@nei.org]
Sent: Tuesday, April 12, 2011 3:11 PM
To: Neely, Christine T.
Subject: NEI Talking Points Comparing Chernobyl and Fukushima

April 12, 2011

Talking Points
Comparing Chernobyl and Fukushima

As the situation at the Fukushima Daiichi nuclear power plant continues, some are comparing events there to the 1986 accident at the Chernobyl reactor in the Soviet-era Ukraine. The Japanese government raised the crisis level from 5 to 7 on the International Nuclear and Radiological Event Scale, the same rating as the Chernobyl accident. Yet the accidents at the Chernobyl and Fukushima reactors are starkly different. Notably, the reactor designs are completely different; and to date, the public health consequences at Fukushima are much less severe.

Accident Conditions

- The Fukushima event has been rated 7 on the International Nuclear and Radiological Event Scale, the same level as the 1986 Chernobyl accident. Even so, Japanese authorities estimate that radiation released at Fukushima is only 10 percent of the amount released from the Ukrainian plant. A level 7 event, the highest on the rating scale, is considered a "major accident." It applies to an event with "a major release of radioactive material with widespread health and environmental effects requiring implementation of planned and extended

countermeasures," according to the International Atomic Energy Agency, which sponsors the ratings. The Japanese government set the rating, which it considers "provisional" and subject to change.

- Chernobyl was an old Soviet-design reactor, with less stable characteristics and no robust containment structures like most power reactors worldwide. Unconventional reactor operations at Chernobyl resulted in a runaway power surge followed by steam and hydrogen explosions and a sustained fire in the reactor. Absent a containment structure, the explosions propelled radioactive material from the reactor core high into the atmosphere and across eastern and western Europe for at least 10 days.
- The magnitude 9.0 earthquake and tsunami that struck the Fukushima Daiichi reactors were much stronger than the reactors were built to withstand. The resulting loss of on- and off-site electricity temporarily halted cooling of the fuel in the reactor cores and in the used fuel pools. There have been explosions at three of the reactors as a result of hydrogen buildup, but the reactor fuel remains inside the primary containment structures. Although some damage to the uranium fuel is expected, there have not been releases of radiation into the atmosphere at the levels seen during the Chernobyl accident.

Emergency Response

- The uncontrolled release of Chernobyl reactor's fission products was exacerbated by the failure of Soviet authorities to take immediate action to protect surrounding populations. The most discernible health effect from Chernobyl—thyroid cancer in children—could have been mitigated by the early and widespread use of radiation protection procedures such as distribution of potassium iodide and control of the food supply in affected areas.

- By contrast, the Japanese authorities took early steps to evacuate people from a 12.5-mile zone around the Fukushima plant. Authorities also distributed potassium iodide to residents near the plant and restricted the transport and sale of milk (the main source of radioactive iodine intake), leafy vegetables and other food from the region. The Japanese government is monitoring and reporting radiation levels to citizens on an ongoing basis and is providing information and health protection instructions to the public.

- Besides child thyroid cancer, no other health effects have been detected in the populations around Chernobyl, according to a 2008 report of the United Nations Scientific Committee on the Effects of Atomic Radiation.

- Based on all information to date, no health effects are expected among the Japanese people as a result of the events at Fukushima.

Long-Term Health Effects

- The unique nature of the Chernobyl accident resulted in widespread airborne dispersion of radioactive cesium as fallout, which has a half-life of 30 years. The incident left the area in a 30 kilometer radius around the facility as a long-term restricted zone.

- Although measurements of radioactivity in the air and water near the Fukushima plant have been evident at varying levels, wide dispersion of radioactive materials has not occurred at the facility. While there may be localized spots that will require monitoring and remediation, it is unlikely that any significant areas of land in Japan will have long-term restrictions.

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

P: 202.739.8000
F: 202.785.4019
Emergency Off-Hours: 703.644.8805

E: NEIResponseCenter@nei.org
Twitter: http://twitter.com/neiupdates

From: LIA03 Hoc
Sent: Wednesday, April 13, 2011 7:08 AM
To: LIA08 Hoc; LIA02 Hoc; LIA10 Hoc
Subject: FW: USAID Support

-----Original Message-----
From: Kozal, Jason
Sent: Wednesday, April 13, 2011 7:08 AM
To: Kowalczik, Jeffrey
Cc: 'RMTPACTSU_AC@ofda.gov'; Bloom, Steven; LIA02 Hoc; LIA03 Hoc; 'RMTPACTSU_RM@ofda.gov'
Subject: USAID Support

Jeff,

I am downtown all day for the NLE national TTX. Please act as the POC for USAID today. Respond to this e-mail with your contact info for Steve Bloom and Ron at USAID so they can get a hold of you. The number one priority is getting Don Norwoods if for travel. The rest of the info sheets for our travelers are in Jane's safe.

I will be checking my BB when I can today.

Ron, just to make sure, you have all the security clearance info correct?

Jason

Sent from an NRC BlackBerry
Jason W Kozal
(b)(6)

0001534

From: LIA03 Hoc
Sent: Wednesday, April 13, 2011 9:03 PM
To: LIA08 Hoc; LIA02 Hoc; LIA10 Hoc
Subject: FW: Daily: 4 New Items from Wednesday, April 13, 2011
Attachments: ~WRD354.jpg; image001.jpg; image002.jpg; image003.jpg; image004.jpg

From: NRC Announcement [mailto:nrc.announcement@nrc.gov]
Sent: Wednesday, April 13, 2011 9:00 PM
To: NRC Announcement
Subject: Daily: 4 New Items from Wednesday, April 13, 2011

Wednesday April 13, 2011 -- Headquarters Edition

- Event: Army Birthday Celebration
- Employee Resources: Solicitation of Interest - NMSS/SFST/TCB, Branch Chief, GG-15
- IT/IM Resources: Deployment of Public Web Site Redesign on April 15-18, 2011
- Event: NRC Toastmasters Club Meeting on April 21, 2011

Event: Army Birthday Celebration

The Army Birthday Celebration Committee is looking for additional volunteers, veterans and family members of veterans, to support the planning and execution of this year's 236th Army Birthday Celebration. The next planning meeting is scheduled for Thursday, April 21, 2011, at 9:30 a.m. in T-3 C1. If you are interested, but cannot make the meeting, please contact Susan Bagley at 301-415-2240. Thank you for your support.

Dial-in: 888-390-1017

Passcode: (b)(6)

(2011-04-13 00:00:00.0) View item in a new window

Employee Resources: Solicitation of Interest - NMSS/SFST/TCB, Branch Chief, GG-15

The **Office of Nuclear Material Safety and Safeguards** is soliciting interest from **GG-15** employees for permanent reassignment to the **Division of Spent Fuel Storage and Transportation** as a **Branch Chief** for the **Thermal and Containment Branch.**

Detailed information is available on the NRC internal Web page.

If you have difficulty accessing a Web link in this announcement, contact the NRC Announcement Coordinator, Beverly Martin, ADM/DAS, 301-492-3674.

(2011-04-13 00:00:00.0) View item in a new window

IT/IM Resources: Deployment of Public Web Site Redesign on April 15-18, 2011

Announcement:

On the evening of April 15, 2011, the Office of Information Services will deploy the Public Web Site Redesign. It will have a modern look-and-feel, streamlined navigation, and improved features and functionality to enhance the experience and satisfaction of site visitors. The NRC will then officially unveil the redesigned site on April 18, 2011, after verifying the integrity of its content, which comprises more than 45,000 Web pages and countless documents and high-value datasets. For additional information, see the video overview of the redesign, as well as the related posting on the NRC Blog.

Impact:

This redesign is primarily intended for our public Web site visitors, and the staff is sensitive to the time and effort that our frequent visitors have invested in learning to navigate the site. Consequently, the redesign preserves the site's existing content and functionality, while reformatting or reorganizing information to enhance usability. In addition, wherever possible, the redesign maintains the same or similar buttons and links to ensure a seamless transition. Where significant organizational changes are needed to enhance usability and simplify navigation, such changes will be phased in over time (following this initial redesign), consistent with best practices in Web design.

NRC staff will experience little or no impact as a result of this redesign, beyond the following considerations:

- If you interact with the public, you may encounter additional questions related to the public site redesign. If so, please invite the public to use our online comment form to Contact Us.
- All other NRC staff are encouraged to explore the redesigned site and become familiar with its rich new features. As always, we welcome your feedback and invite you to send your comments and suggestions to the Web Content Services Group.

Contact: Web Content Services Group, 301-415-1337

(2011-04-13 00:00:00.0) View item in a new window

Event: NRC Toastmasters Club Meeting on April 21, 2011

The NRC Toastmasters Club cordially invites you to attend its next meeting. The NRC Toastmasters Club supports the NRC mission by providing opportunities for the staff to practice and learn communication and leadership skills in a friendly and supportive environment.

The next NRC Toastmasters Club meeting will be held on April 21, 2011, from 12 noon to 1 p.m. in room T-10 A1.

For more information, please contact the Toastmaster of the Day, Evelyn Gettys (phone 301-415-4029), or the club Vice President for Public Relations, Don Habib (301-415-1035).

(2011-04-13 00:00:00.0) View item in a new window

The latest Announcements are always on the NRC@WORK Home Page.

Announcements by Date | Announcements by Category

Search Announcements: term term [Go]
Frequently Asked Questions About the NRC Daily Announcements Email

From: Droggitis, Spiros
Sent: Wednesday, April 13, 2011 9:12 AM
To: Powell, Amy; Decker, David; Riley (OCA), Timothy
Subject: FW: DNDO News 4/13/2011
Attachments: DNDO NEWS 4-13-11.htm; 2010 Nuclear Security Summit_Status Report_041111.pdf

From: Bolling, Lloyd [mailto:Lloyd.Bolling@dhs.gov]
Sent: Wednesday, April 13, 2011 9:08 AM
To: Layton, Michael; Reis, Terrence; Jones, Cynthia; Wastler, Sandra; Jackson, Gerard
Cc: Droggitis, Spiros; Dembek, Stephen; Owens, Janice; Breskovic, Clarence; Casey, Timothy; Mike_Stephens@doh.state.fl.us
Subject: DNDO News 4/13/2011

Attached is the DNDO News for Wednesday, April 13, 2011.

Summary of news items:

1. Yesterday the Arms Control Assn. and Partnership for Global Security released a report entitled, "The 2010 Nuclear Security Summit: A Status Update."
2. NYC "Dirty Bomb" drill hailed as success.
3. The consequence of a Dirty Bomb attack are discussed.
4. Nations seen on course to meet nuclear security pledges.
5. Japan ranks the Fukushima nuclear event at the same level as Chernobyl.
6. Congress will vote on Homeland Security spending cuts.
7. Modernization of the nuclear stockpile will get full funding.

<u>Today in Congress</u>:
The **Senate** will convene at 10 a.m.

- The Clean Air and Nuclear Safety Subcommittee and the full Senate Environment and Public Works panel will hold a hearing titled "**Review of the Nuclear Emergency in Japan and Implications for the U.S..**" *2:45 p.m., 406 Dirksen*

The **House** will convene at noon.

Lloyd Bolling, NRC Liaison
Operations Support Directorate
Domestic Nuclear Detection Office
Department of Homeland Security
Phone: 202-254-7123
Blackberry: (b)(6)
Fax: 202-254-7752
Lloyd.Bolling@dhs.gov

000536

April 13, 2011 DNDO News Brief

Report by Arms Control Assn. and Partnership for Global Security, "The 2010 Nuclear Security Summit: A Status Update," released yesterday. As momentum builds for the second Nuclear Security Summit in South Korea next spring, here is a status report on progress towards commitments made at the Summit last year. Nuclear detection and forensics mentioned throughout, and DNDO highlighted on page 23. Referenced in Global Security Newswire article below, "Nations Seen on Course to Meet Nuclear Security Pledges". (See attachment)

NYC "Dirty Bomb" Drill Hailed as Success
Global Security Newswire - The five-day exercise was carried out under the federally funded Securing the Cities initiative, which is aimed at deterring a radiological or nuclear assault on New York City. A New York City Department spokesman noted that the drill appears to have gone very well, with good communication among participants. An official determination is expected from the U.S. Homeland Security Department.
http://www.globalsecuritynewswire.org/gsn/nw_20110412_7659.php

The Consequence of a Dirty Bomb Attack
Carl Robichaud, The Hill (blog) - This past week New York conducted a major emergency preparedness exercise to practice its emergency ability to detect and response to a radiological dispersion device or "dirty bomb".
http://thehill.com/blogs/congress-blog/homeland-security/155493-the-consequence-of-a-dirty-bomb-attack

Nations Seen On Course to Meet Nuclear Security Pledges
Global Security Newswire - Following their security pledges, Armenia, Georgia and the United Kingdom have ratified the International Convention on the Suppression of Acts of Nuclear Terrorism. Though Argentina and Australia also pledged to ratify the convention, steps toward that goal have not been publicly shared. Mexico will receive assistance, from the U.S. and Canada, in removing its HEU.
http://www.globalsecuritynewswire.org/gsn/nw_20110412_5331.php

Japan Ranks Nuclear Crisis Alongside Chernobyl
Global Security Newswire - Japan on Tuesday upgraded the incident level for the Fukushima Daiichi nuclear power plant from 5 to 7, a classification reserved for the most severe nuclear crises that had previously applied only to the 1986 Chernobyl disaster. The announcement was made after a check of accumulated data assessed in two different ways by two sources.
http://www.globalsecuritynewswire.org/gsn/nw_20110412_5708.php

Afternoon Take: Congress to Vote on Homeland Security Spending Cuts
Chad Brand, Congressional Quarterly Staff
Before lawmakers head home Friday for a two-week recess, the House and Senate are scheduled to hold votes on the appropriations measure (HR 1473) that would cut $39.9 billion from discretionary accounts, including significant reductions to homeland security activities.

Although the spending bill was written to garner at least 60 votes in the Senate and has gained the blessing of President Obama and Senate Majority Leader Harry Reid, aides said this week that there is no guarantee of a consensus in time to send the bill to Obama before Friday, when the temporary measure currently funding the government expires.

Both chambers are expected to vote on passage of the measure Thursday. The House was previously scheduled to vote earlier in the week, but pushed its schedule back to allow lawmakers more time to study the bill.

The agreement reached between the White House and congressional leaders last week provides spending levels $78.5 billion below the president's fiscal 2011 request and $38.5 billion below fiscal

2010 enacted levels. Negotiators agreed to provide the Department of Homeland Security with $41.75 billion in funding, which is $700 million less than fiscal 2010 enacted levels, according to the Senate Appropriations Committee.

The cuts were imposed over a broad swath of programs that included the Coast Guard and Customs and Border Protection, but the Federal Emergency Management Agency's Disaster Relief Fund received a $1.05 billion boost.

Modernization of Nuclear Stockpile Would Get Full Funding
Emily Cadei, Congressional Quarterly Staff
A nuclear weapons modernization program that was at the center of the debate over arms control policy last year would be fully funded under the fiscal 2011 spending bill released Tuesday.

Lawmakers advocating for the program successfully beat back proposed cuts to the president's fiscal 2011 request that were in the House-passed spending bill (HR 1) and the Senate draft appropriations bill to fund the government for the rest of the year.

President Obama requested a 10 percent bump in the budget for modernization efforts as a part of effort to win support from Republican senators for a strategic arms reduction treaty with Russia, known as New START, which the Senate approved narrowly last December. A number of lawmakers had argued that it would be too risky to reduce the U.S. nuclear weapons stockpile, as the treaty requires, without also significantly improving the upkeep of the country's aging fleet of existing weapons and weapons research.

Minority Whip Jon Kyl, R-Ariz., was an advocate for the program and succeeded in convincing House Republicans to reconsider the more than $300 million they tried to cut from the program.

The spending bill (HR 1473), which Congress is expected to pass this week, would appropriate $6.99 billion for weapons activities at the National Nuclear Security Agency (NNSA), the arm of the Energy Department that manages the U.S. nuclear weapons complex. That is just under the $7 billion the administration requested.

The measure also includes funding for NNSA programs to promote nonproliferation, although not at the level the administration requested.
Efforts to reduce the threat of nuclear weapons and nuclear attack have been at the heart of President Obama's foreign policy, and the NNSA is at the front lines of that endeavor with its programs to detect, secure and eliminate nuclear weapons overseas.

The compromise bill would appropriate $2.3 billion for the agency's nuclear nonproliferation programs, an increase of $195 million — or 9 percent — over fiscal 2010 funding levels, but $361 million less than the president's fiscal 2011 request.

Non-proliferation experts hailed the outcome, saying the cuts proposed earlier would have been damaging.

"This reversal happened due to strong pressure exerted by key members of Congress such as Sens. Dianne Feinstein (D-Calif.) and Robert Casey (D-Pa.), the Obama administration and the advocacy community," said John Isaacs, the executive director of Council for a Livable World.

An Arms Control Association and Partnership for Global Security Report

The 2010 Nuclear Security Summit: A Status Update

April 2011

Robert Golan-Vilella, Michelle Marchesano, and Sarah Williams

An Arms Control Association and
Partnership for Global Security Report

The 2010 Nuclear Security Summit: A Status Update

April 2011

Robert Golan-Vilella, Michelle Marchesano, and Sarah Williams

About the Authors

Robert Golan-Vilella is a Herbert Scoville Jr. Peace Fellow at the Arms Control Association. He is a graduate of Yale University and has previously interned at the Center for Strategic and International Studies and the James Martin Center for Nonproliferation Studies.

Michelle Marchesano is a senior budget and policy analyst at the Partnership for Global Security (PGS). She has been with PGS since graduating from Drexel University in 2007. She is currently earning a graduate degree in international science and technology policy from the Elliott School of International Affairs at the George Washington University.

Sarah Williams is a Herbert Scoville Jr. Peace Fellow in the Center for Science, Technology and Security Policy at the American Association for the Advancement of Science. She is also the Coordinator of the Fissile Materials Working Group. She holds a graduate degree in global policy studies from the LBJ School of Public Affairs at the University of Texas-Austin and a bachelor's degree from the University of Maryland - College Park.

Acknowledgements

The authors would like to thank Tom Collina and Kenneth Luongo for reviewing drafts of this report. We would also like to thank Margaret Balza for her research assistance and fact-checking and Lovely Umayam for her general assistance in the early stages of this project. Special thanks go to Brian Creamer for his excellent work in the report's layout and design. We would also like to thank the Fissile Materials Working Group and its members for designing the initial survey for foreign ministries and embassies. Finally, Robert and Sarah would like to express their sincere gratitude to the Scoville Fellowship.

The Arms Control Association is grateful for the generous support of our members and donors, without which this report would not have been possible. In particular, we wish to thank the John D. and Catherine T. MacArthur Foundation, the Carnegie Corporation of New York, and the Ploughshares Fund which provide support for ACA's research and public education programs.

The Partnership for Global Security wishes to thank the Carnegie Corporation of New York, the Connect U.S. Fund, and the Ford Foundation.

Cover Photo

White House photo.

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"With about one year to go before the next Nuclear Security Summit in Seoul in spring 2012, we are very confident that we will be able to demonstrate significant progress toward fulfilling the work plan agreed to in Washington."

—**Tom Donilon**, *National Security Advisor to the President, March 29, 2011*

Executive Summary

This report highlights the progress made in nuclear material security since the April 2010 Nuclear Security Summit (NSS) and serves as a status update halfway to the next summit in 2012.

- A core achievement of the 2010 summit was that the 47 nations in attendance reached consensus that nuclear terrorism is among the top global security challenges and that strong nuclear material security measures are the most effective way to prevent it.

- The White House released a highlights document last April listing 54 national commitments made by 29 of the countries at the summit. Some countries, including the United States, made additional commitments in their national statements. However, not all of these statements are publicly available.

- Important progress has been made in a number of areas and states are generally on track to meeting their key commitments by 2012. Based on our assessment of open source information, we conclude that approximately 60 percent of these national commitments have been completed, and notable progress has been made on another 30 percent.

- Examples of completed national commitments include:

    - Chile sent all of its highly enriched uranium (HEU) to the United States.

    - Kazakhstan secured enough HEU and plutonium to make 775 nuclear weapons.

    - Russia ended its plutonium production and signed a plutonium disposition protocol with the United States.

- Examples of progress made on national commitments include:

    - China signed a memorandum of understanding with the United States to work together on establishing a nuclear security Center of Excellence in China.

    - Ukraine removed over half of its HEU, putting it on track to meet its pledge to eliminate all of its HEU by the 2012 summit.

- The progress made in implementing the national commitments demonstrates the promise of the NSS process in generating concrete outcomes and improvements in global nuclear material security. The NSS process offers a unique vehicle with great potential for moving the nuclear security agenda forward.

- However, it is important to recognize that the nuclear security challenge will not be solved once the commitments made in 2010 are completed. An objective for the next summit should be to gain acknowledgement that nuclear material security is an ongoing, long-term challenge that will require new initiatives, funding streams, and collaborations to confront evolving threats and prevent nuclear terrorism.

Introduction

The 2010 Nuclear Security Summit (NSS), held on April 12-13 in Washington, D.C., marked an important step toward improving nuclear material security around the world. Forty-seven nations, 38 of them represented by their head of state or head of government, attended the summit and signed on to joint documents outlining goals for strengthening the global nuclear security regime. Countries plan to share progress on meeting these objectives at a second summit, planned for 2012 in the Republic of Korea. U.S. President Barack Obama, who set a goal for securing all vulnerable nuclear material within four years in his landmark April 2009 speech in Prague, has made the summit process a central part of his nuclear security agenda.

While President Obama's four year timeframe helped to galvanize support and bring urgency to this cause, this issue has a longer time-horizon. Efforts to strengthen nuclear material security must adapt to evolving threat environments over the long term, and it is crucial to understand the threats posed by insufficient control over nuclear material.

The prospect of nuclear terrorism is a global concern; a nuclear weapon detonated in any of the world's major cities would have dramatic economic, political, and human consequences. There is currently enough highly enriched uranium (HEU) in the world to make more than 60,000 nuclear weapons.[1] Moreover, the level of security over this material varies widely.

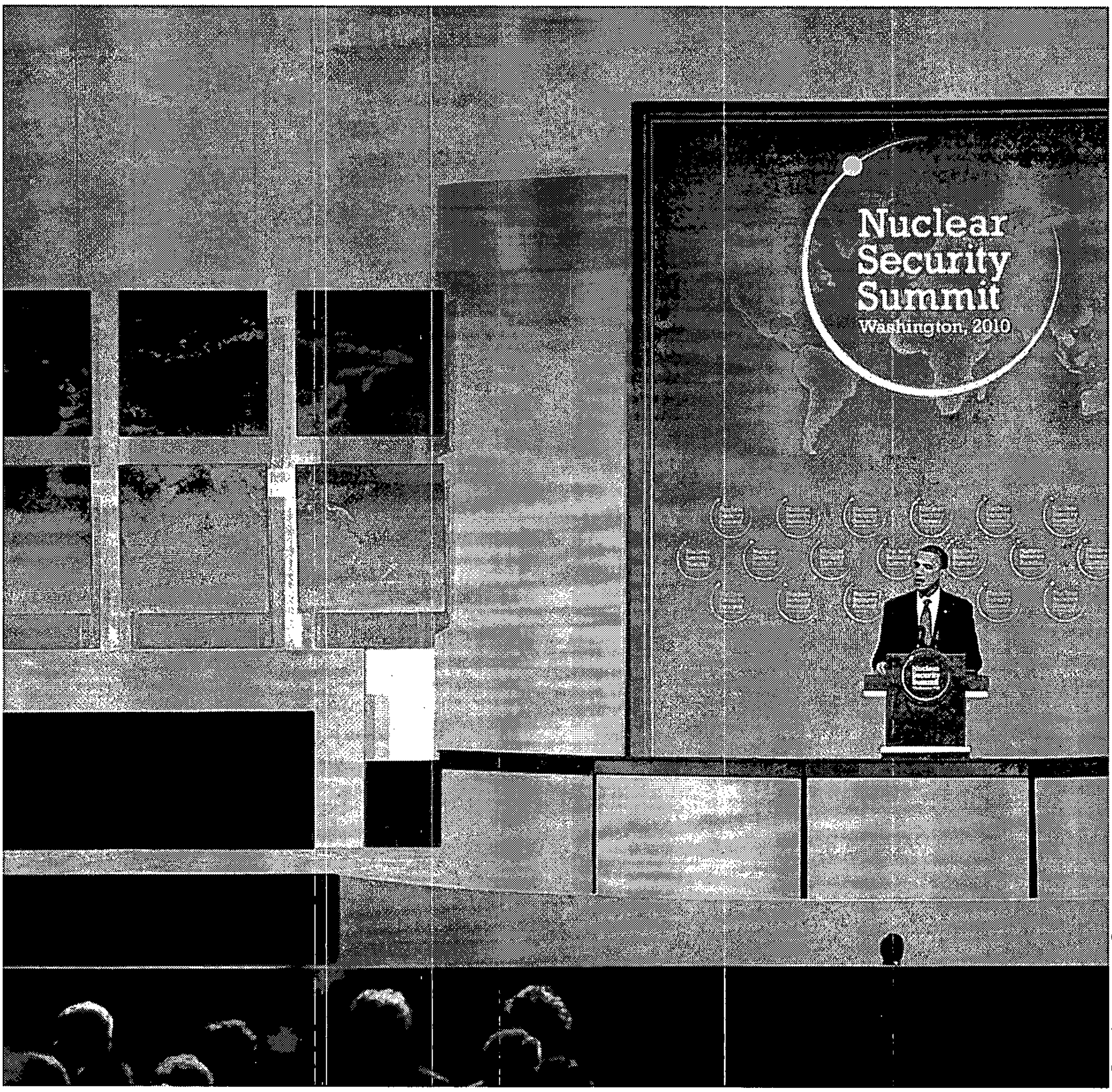
Increasing the ability of states to prevent theft or diversion of material is the primary goal of the nuclear material security regime. The NSS process has helped to generate immediate results and improvements in nuclear security by focusing on gaining compliance with the existing structures and mechanisms. The summit process is valuable because it elevates the issue of nuclear security to a major international priority and allows countries to monitor and recognize progress with open lines of dialogue.

This report seeks to highlight the progress that has been made in nuclear material security and serve as a status update halfway between the Washington summit and the next summit in 2012. It focuses on the national commitments made last April, but also includes instances where significant progress has been made outside of these commitments. Although additional commitments were made in the April 2010 summit's communiqué and work plan, their language is generally vague, and they do not contain clear or specific goals that might be tracked with open source documents. The roughly 60 national commitments listed in the highlights document and U.S. national statement, by comparison, are more concrete. For example, national commitments include specific states promising to pass legislation to strengthen export control laws, ratify certain international agreements, and remove and repatriate nuclear material.

While the nuclear security challenge will not be solved by the next meeting in 2012, important progress has been made in a number of areas and the states are on track to meeting their key commit-

ments. Eight countries have removed all or some of their remaining nuclear material, 13 countries have signed on to one of two major international agreements, and four have joined the Global Initiative to Combat Nuclear Terrorism. In addition, 12 countries have made domestic improvements to their regulatory systems, engaged in nuclear security training initiatives, or hosted international conferences on nuclear security issues. In doing so, these states reinforce the idea that the summit process' very nature—repeated meetings and continued dialogue—can be effective in generating concrete actions and outcomes.

We recognize that nuclear security improvements are difficult, require sustained political and financial support from the international community, and are often not publicized in open sources. The extent to which non-governmental organizations can be involved in the monitoring and tracking of commitments made at the first NSS is largely dependent on items reported in open sources. The information contained in this report is accurate and up to date to the best of our knowledge as of March 2011. Given that the summit process is the main mechanism by which the Obama administration is coordinating efforts to implement its nuclear security agenda, we hope to play a constructive role in taking stock of what progress has and has not been made. Our aim is to provide a broad audience with information on the status of commitments made at the 2010 summit as well as a basis for looking forward to the 2012 meeting.



Mandel Ngan/AFP/Getty Images

U.S. President Barack Obama holds a press conference at the conclusion of the Washington Nuclear Security Summit on April 13, 2010.

National Commitments by Category

By Michelle Marchesano

The United States and 29 other countries participating in the April 2010 Nuclear Security Summit (NSS) made over 60 specific national commitments to bolster global nuclear security. The United States' commitments were included in its national statement, and those of the 29 nations were listed in a highlights document released by the White House.[2] These national commitments include pledges consistent with the declarations in the NSS communiqué and work plan and others that go beyond the summit's consensus outcomes. While over 50 non-binding commitments were agreed to by all 47 summit participants in the work plan, most are caveated and require nations to fulfill them "as appropriate," when "technically and economically feasible," and "as soon as possible." Communiqué and work plan commitments are not tracked here.[3]

Specific commitments made in the U.S. national statement and the highlights document have been tracked and categorized in this section of the report as follows:

- International Conventions
- Removing and Securing HEU
- Reactor Conversions or Shut Downs
- New IAEA Cooperation
- New Centers, Conference, and Training Activities
- New National Laws
- Global Initiative to Combat Nuclear Terrorism
- Preventing Nuclear Smuggling
- G-8 Global Partnership

To see the commitments organized by country, see "National Commitments by Country."

International Conventions

The communiqué and work plan recognize the importance of the International Convention on the Suppression of Acts of Nuclear Terrorism (ICSANT), Convention on the Physical Protection of Nuclear Material (CPPNM), and the CPPNM's 2005 Amendment as legally-binding, multilateral mechanisms for enhancing material security and preventing nuclear terrorism. Summit participants called for their universal adoption, as even a number of countries attending the summit had not yet ratified them (see country profiles for details).

Results

In line with their national commitments, **Armenia**, **Georgia**, and the **United Kingdom** have ratified the nuclear terrorism convention.[4] **Germany** and the **United Kingdom** ratified the CPPNM's 2005 Amendment, and **France** recently confirmed that it is still working to ratify the 2005 Amendment.[5]

Though **Argentina** committed to moving toward the ratification of ICSANT and the 2005 CPPNM Amendment, its progress in doing either is not clear. Similarly, **Australia** committed to move toward ratifying the nuclear terrorism convention, but any progress in doing so has not been publicly reported.

The **United States** also pledged to accelerate its ratification of ICSANT and the 2005 CPPNM Amendment. According to the United States' NSS national statement, legislation that would update U.S. law to comply with the treaties has been submitted to Congress, and ratification instruments will be submitted after the new laws are in place. Neither convention has been ratified yet.

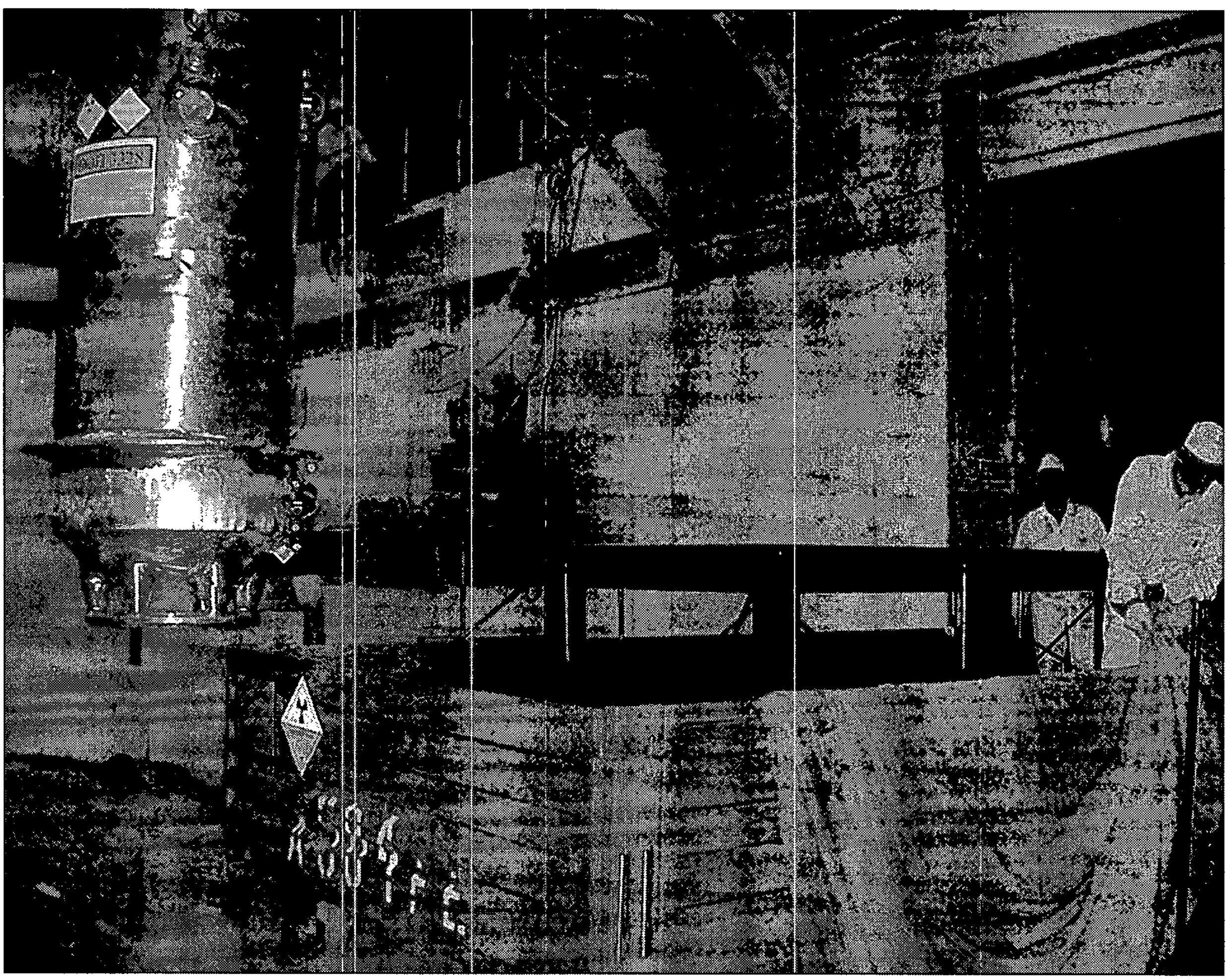
Removing and Securing HEU

Summit documents recognize that the use and management of nuclear materials and facilities are under the jurisdiction of individual states but encourage steps to keep them secure, including consolidating national sites where material is stored and removing and disposing of materials no longer in use. In this vein, a number of participants made national commitments to consolidate, secure, or remove highly enriched uranium (HEU) in their territory, and notable progress has been achieved.

Chile, Mexico, and Ukraine committed to a full clean out of their HEU stocks. Kazakhstan pledged to cooperatively work on BN-350 reactor shutdown and fuel security as well as the elimination of HEU from a reactor that will undergo conversion. Canada committed to funding HEU removal activities in Mexico and Vietnam. Canada will also return HEU spent fuel to the United States. Additionally, the United States pledged to convert its six remaining HEU-fueled research reactors.

Results

In February 2010, **Chile** collaborated with the U.S. National Nuclear Security Administration (NNSA) to remove all HEU from the country.[6] The removal operation included approximately 13 kilograms (kg) of HEU from the La Reina Nuclear Center, 4 kg of slightly irradiated HEU and less than 1 kg of fresh fuel from Lo Aguirre Nuclear



NNSA

The U.S. National Nuclear Security Administration announced the removal of 73.6 kg of Russian-origin HEU spent fuel from Kazakhstan in May 2009.

Center, and more than 400 radiological sources.

Ukraine committed to give up all of its HEU by the 2012 NSS, and half by the end of 2010. On December 31, 2010, NNSA announced that it had worked with Ukrainian, Russian, British, and International Atomic Energy Agency (IAEA) authorities to remove 50 kg of HEU fresh fuel from three sites in Ukraine, including Sevastopol National University of Nuclear Industry and Energy.[7] The material was returned to Russia, and NNSA provided low-enriched uranium (LEU) to replace the HEU that had been removed from the Kiev Institute for Nuclear Research and Kharkiv Institute for Physics and Technology. Earlier in the year, NNSA and Ukraine worked together to return another 56 kg of HEU spent fuel to Russia. These removals have placed the country on track to meet its 2012 goal.

Kazakhstan has also been working with NNSA to secure its HEU, including by completing the transport of spent fuel from its BN-350 reactor facility to a new storage facility in eastern Kazakhstan in November 2010.[8] The spent fuel, which was packaged and transported in specially designed dual-use transportation and storage casks, will remain under IAEA safeguards at this new secure facility.

On the final day of the NSS, **Mexico** announced that it would eliminate all HEU from its territory. According to a trilateral agreement, it will work with the United States and Canada under the auspices of the IAEA to convert its HEU-fueled research reactor to use LEU.[9] Negotiations among the countries have been initiated.[10] In support of this agreement, **Canada** made a national commitment to fund Mexico's removal efforts, as well as another planned HEU removal operation in Vietnam. **Vietnam** signed a memorandum of understanding with the United States in December 2010 reaffirming its pledge to remove HEU fuel from its Dalat research reactor.[11]

Canada also committed to returning a large amount of HEU spent fuel to the United States that was used to produce medical isotopes. The project to return material that is currently stored at Chalk River Laboratories in Ontario is scheduled to occur between 2010 and 2018.[12] The **United States** completed the conversion of all 20 HEU-fueled research reactors that are able to be converted to use existing LEU-fuel in 2009.[13] However, there are six more HEU-fueled research reactors in the country that have not been converted because alternative fuel has yet to be developed.

The 2010 NSS has also spurred at least one country outside of the summit process to commit to fully eliminate its stocks of HEU. Less than a year after **Belarusian** President Alexander Lukashenko rejected the notion of returning all of his country's HEU to Russia, Belarusian Foreign Minister Sergei Martynov announced in a December 1, 2010 joint statement with U.S. Secretary of State Hillary Clinton that Belarus would give up its entire stocks prior to the 2012 NSS.[14] Reports indicate that classified operations by NNSA in October and November 2010 removed over 84 kg of weapons-grade uranium from a research facility in Sosny, prior to committing to a full clean out. While Belarus was not invited to the 2010 NSS, experts speculate that it is leveraging the HEU removal to gain a seat at the table in 2012.[15] The Republic of Korea (ROK), which is hosting the 2012 summit, has tentatively agreed to invite Belarus if the clean out occurs.[16] However, U.S. National Security Council staff has indicated that plans to remove all of Belarus' HEU by the 2012 summit are at risk.[17] This is due to federal budget battles in the U.S. Congress that have frozen the budgets for critical nuclear security programs within NNSA at the fiscal year (FY) 2010 level, which does not include funding for new opportunities such as the Belarus clean out.

Additionally, other significant material removals have occurred independent of countries' publicized national summit commitments. For instance, **Poland**, a NSS participant, completed the removal of over 450 kg of Russian-origin HEU spent fuel in October 2010 in collaboration with NNSA.[18] Overall, since President Obama announced a four year, international effort to secure vulnerable nuclear materials in his April 5, 2009 speech in Prague, NNSA's Global Threat Reduction Initiative (GTRI) has removed all of the HEU from six countries: Serbia, Chile, Romania, Libya, Taiwan, and Turkey.[19]

Reactor Conversions or Shut Downs

Summit participants encouraged the conversion of HEU-fueled reactors to LEU in the communiqué and work plan as part of efforts to minimize the use of HEU. They recognized that the HEU used in these reactors, even for civilian purposes, carried higher risks than other nuclear materials. They also agreed to shut down reactors that were no longer required. In the spirit of this summit commitment, Russia, Kazakhstan, Mexico, Vietnam, and the United States pledged to shut down or convert reactors that use or produce weapons-usable materials.

Results

Russia's ADE-2 plutonium production reactor in Zheleznogorsk was shut down on April 15, 2010 in fulfillment of the country's national commitment to end plutonium production.[20] This reactor had once produced plutonium for the Soviet Union's

nuclear weapons program, but its main purpose since 1995 had been supplying heat for the city with the plutonium produced as a byproduct of its operation.[21] The Zheleznogorsk ADE-2 reactor was the last of three Soviet-era reactors that the United States and Russia have worked together to close.

Additionally, **Russia's** Foreign Minister Sergey Lavrov and **U.S.** Secretary of State Hillary Clinton signed the Plutonium Disposition Protocol on April 12, 2010, fulfilling another of their countries' national pledges.[22] The signing enables both countries to move forward in implementing the September 2000 Plutonium Management and Disposition Agreement which commits each country to eliminate 34 metric tons of excess military plutonium.[23]

A memorandum of understanding was signed on December 8, 2010 by the United States and **Vietnam** in which Vietnam reaffirmed its 2010 NSS national commitment to convert its HEU-fueled Dalat research reactor to LEU fuel.[24] NNSA had previously worked with Vietnam to partially convert the reactor in September 2007, but this new agreement establishes the legal framework for its full conversion and the return of its spent fuel to Russia.

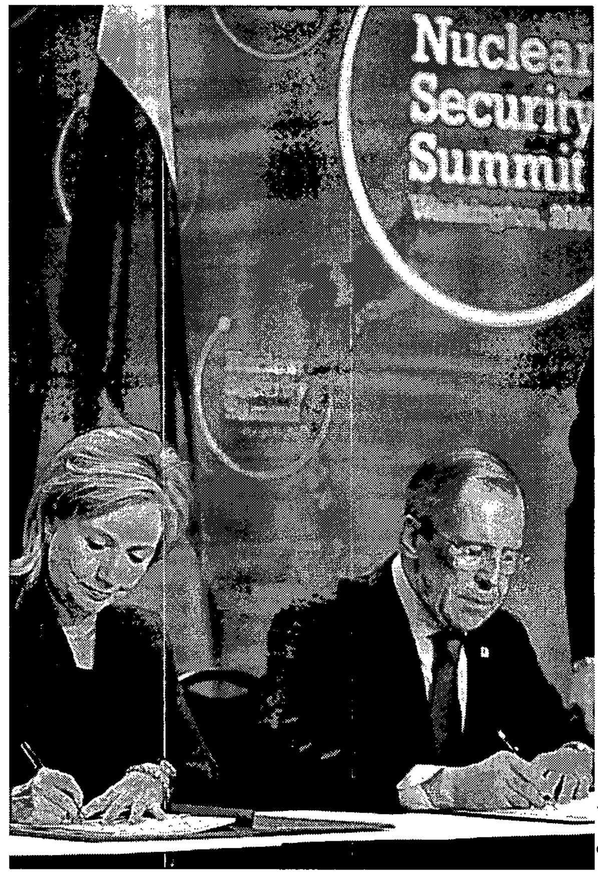
Kazakhstan committed to convert a HEU research reactor and eliminate the remaining HEU fuel. Sources indicate that the Institute of Nuclear Physics' research reactor in Alatau is the intended target and that Kazakhstan is talking with Russia and the United States about its conversion.[25] However, no conversion timeline has been made public. Kazakhstan continues to make progress on securing and eliminating its HEU, as detailed in the previous section.

Mexico also committed to convert its research reactor, and made a trilateral announcement with the United States and Canada on working collaboratively to complete the conversion on April 13, 2010.[26] The conversion will be completed under the auspices of the IAEA. Negotiations have been initiated to determine the terms of the conversion.[27]

Finally, the **United States** also noted in its NSS national statement that it is in the "final stages of approval to bring up to 100 kg of plutonium from sites of concern into the United States pending disposition."[28]

New IAEA Cooperation

The essential role that the IAEA plays in advancing nuclear security was highlighted in the 2010 summit documents. The work plan detailed the valuable services, including the International Physical Protection Advisory Service (IPPAS), and guidance documents, including the Nuclear Security Series, that the agency offers. NSS participants were encouraged to take advantage of these resources and also to provide support to the IAEA and member states' nuclear security efforts. Belgium, Japan, Norway, New Zealand, Russia, and the United Kingdom made national commitments to provide additional funding to the IAEA's Nuclear Security Fund (NSF). France, Finland, and the United Kingdom announced their intentions to invite an IPPAS security review.



Brendan Hoffman/Getty Images

U.S. Secretary of State Hillary Clinton and Russian Foreign Minister Sergey Lavrov sign a plutonium disposition protocol at the Washington Nuclear Security Summit on April 13, 2010.

Belgium committed to provide the NSF with $300,000, and Norway committed to contribute $3.3 million to the NSF over four years for use in developing countries. The United Kingdom committed to provide $6 million to the NSF, but it did not specify the timeframe. Japan, New Zealand, and Russia did not specify dollar amounts or timeframes in their national commitments to contribute to the NSF.

Results

A December 5, 2010 announcement revealed that **Russia** had signed an agreement with the IAEA to contribute $6.5 million to the NSF between 2010 and 2015.[29] On March 8, 2011, the IAEA announced that it had signed an agreement with the **United Kingdom** for a £4 million (approxi-

mately $6.4 million) contribution to the NSF.[30] The top contributors to the NSF are the United States, the European Union, the United Kingdom, and Canada.

The IAEA's "Nuclear Security Report 2010" notes that as of June 30, 2010, new pledges or contributions to the NSF had been made or announced by **Japan**, **Norway**, and the **United Kingdom** (as well as Denmark, Finland, France, Ireland, Italy, the ROK, the Netherlands, Spain, Sweden, and the United States).[31] **Belgium** and **New Zealand** have also made contributions.[32]

The Nuclear Security Report also indicates that the **United Kingdom** requested an IPPAS mission to their Sellafield Nuclear Reprocessing Facility, and **France** and the **United States** announced their intentions to request IPPAS missions.[33] **Finland** received an IPPAS mission in June 2009 and is implementing its recommendations.[34] A follow-up mission is planned for 2012.[35]

Additionally, the **United States** noted in its NSS national statement that it had led the efforts in 2009 to create a dedicated line item for nuclear security in the IAEA's regular budget. Before this, the agency's nuclear security work had been almost entirely funded with voluntary contributions from member states. Since 2007, the United States' voluntary contribution to IAEA nuclear security activities has risen nearly 60 percent.[36]

New Centers, Conferences, and Training Activities

Summit documents emphasized the importance of the human dimension of nuclear security, and countries responded with a series of national commitments to enhance nuclear security culture and build human capacity through hosting or establishing new training and educational centers, conferences, and activities.

The United States pledged to continue to support the work of the World Institute for Nuclear Security (WINS), and Canada and Japan committed to fund and host nuclear security best practices workshops with WINS. Japan said it would launch an integrated regional support center and conduct research and development on nuclear detection and forensic techniques. China announced that it would be opening a nuclear security Center of Excellence, and India announced that it would establish a Nuclear Energy Center with a nuclear security component. Kazakhstan said it would consider hosting an International Nuclear Security Training Center and committed to hosting a Global Initiative to Combat Nuclear Terrorism (GICNT) activity. The ROK also committed to host a GICNT activity. Italy committed to establish a school of nuclear security in Trieste, and France said it would incorporate nuclear security training into the curriculum of the European Nuclear Safety Training and Tutoring Institute (ENSTTI) and International Nuclear Energy Institute. Saudi Arabia pledged to host a United Nations Security Council Resolution (UNSCR) 1540 conference for the Gulf Cooperation Council (GCC). And perhaps most notably, the Republic of Korea announced that it would be hosting the 2012 Nuclear Security Summit.

Results

U.S. support for the activities of WINS began with an initial pledge of $3 million in 2009 and continues with a new award from the Department of State for $900,000 over two years.[37] According to WINS' 2010 Annual Report, the U.S. Department of Energy provided €1,112,942 to the organization last year.[38] A WINS workshop on "Guard Force Recruitment, Training, Deployment, and Exercises" took place in Ontario, **Canada** in June 2010. Another WINS workshop on "Corporate Governance and Security Leadership" took place in Tokyo, **Japan** in September 2010.[39]

Japan's new Integrated Comprehensive Support Center for Non-proliferation and Nuclear Security for Asia opened at the Japan Atomic Energy Agency (JAEA) facility in Tokai-muria on February 4, 2011.[40] The center will be operated by JAEA and offer lectures, seminars, hands-on training courses, and e-learning opportunities.[41] In support of the center and related efforts, the **United States** and Japan established a bilateral Nuclear Security Working Group in November 2010 to help facilitate cooperation and tangible outcomes for the 2012 NSS.[42] This interaction supports the international effort that the United States has launched to develop a nuclear forensics library, common lexicon, and other foundational elements of nuclear forensic cooperation.[43] Additionally, Japan hosted an "International Workshop on Nuclear Forensics Following on the Nuclear Security Summit" in October 2010 in Tokai as part of its efforts to advance research and development on nuclear detection and forensics.[44]

China and the **United States** announced the signing of a memorandum of understanding on January 19, 2011 that paves the way for NNSA to work with China's Atomic Energy Authority on a Center of Excellence in China that will promote effective nuclear security and safeguards throughout Asia.[45] NNSA will provide some equipment to the center and help develop training programs and best practice exchanges.[46] It is not clear when the center will open. This center

in China is a part of the United States' broader effort to create new Centers of Excellence in Nuclear Security in countries outside of the former Soviet Union (FSU). As part of an overall requested budget increase for international weapons of mass destruction (WMD) security programs in FY 2011, the Obama administration requested $30 million to establish these centers under the Department of Defense's Cooperative Threat Reduction program.[47]

A press release from **India's** Press Information Bureau in August 2010 indicated that India's Global Centre for Nuclear Energy Partnership would be owned and operated by the government, but open to international participation.[48] A "phased approach" for setting up the center will be pursued, and India's Atomic Energy Commission (AEC) chairman explained that the center will consist of four different schools dedicated to topics that include nuclear security, nuclear energy systems, and radiation safety.[49] Over 200 acres of land in Bahadurgarh, Haryana is being purchased by AEC for the center's campus.[50] Additionally, a November 2010 Joint Statement by President Obama and Prime Minister Singh acknowledged a memorandum of understanding between the two countries for cooperating on the center.[51]

Kazakhstan fulfilled its pledge to host a GICNT activity by co-hosting an "Exercise on Countering the Financing of Nuclear Terrorism" in September 2010 and the "Inaugural Implementation and Assessment Group (IAG) Meeting" in October 2010.[52] No new information about Kazakhstan's plans to consider hosting an International Nuclear Security Training Center is available.[53]

The **Republic of Korea** hosted GICNT's "Workshop on Detecting and Responding to Illicit Transport and Trafficking of Nuclear and Radioactive Materials" and the "3rd Exercising Planning Group Meeting" in April 2009. The ROK will also host the group's next Plenary meeting in Seoul in 2011.[54]

On November 8, 2010, the Nuclear Energy Management School was opened at the International Centre for Theoretical Physics (ICTP) in Trieste, **Italy**.[55] The school, a collaboration between ICTP and the IAEA, will provide specialized management training to young professionals from developing countries.

In March 2010, **France's** President Nicolas Sarkozy announced that his country would create an International Nuclear Energy Institute that would interact with the budding array of nuclear centers of excellence being established around the world and expand training opportunities for nuclear professionals.[56] At the 2010 summit France made a commitment to incorporate nuclear security into this Institute and reaffirmed it in January 2011.[57] France also committed to incorporating nuclear security training into ENSTTI's curriculum. The school's 2011 curriculum now includes this training as part of its "Induction to Nuclear Safety" program.[58]

Saudi Arabia satisfied its commitment to host a UNSCR 1540 conference for the GCC on December 11-12, 2010.[59] The regional workshop took place in Riyadh and focused on implementing UNSCR 1540 to prevent terrorist acquisition of WMDs. Additionally, in February 2011, NNSA and the Department of State announced that a new Gulf Nuclear Energy Infrastructure Institute (GNEII) would be created within the Khalifa University of Science, Technology, and Research in Abu Dhabi.[60] GNEII will provide classroom instruction and hands on training in nuclear energy security, safeguards, and safety infrastructure. Currently, GNEII is only open to three nuclear-related GCC organizations, but it will expand to accommodate all six in 2012.

Preparation is underway for the 2012 NSS to be hosted by the **Republic of Korea**. An inter-minis-

Philippe Wojazer/AFP/Getty Images

French President Nicolas Sarkozy delivers a speech at the International Conference on Access to Civilian Nuclear Energy in Paris, France on March 8, 2010.

terial preparatory committee headed by the prime minister has been convened which will oversee the general planning, management, protocol, and public relations aspects of the 2012 summit.[61] The event's agenda and participants list is under development in consultation with the representatives from other countries—"sherpas" and "sous sherpas." The scope of the summit is expected to include an evaluation of commitment implementation from the 2010 summit and may also be broadened to include a greater emphasis on radiological material security and other topics like information technology security. Side events with civil society and the nuclear industry will likely be held on the margins of the summit, similar to what took place around the Washington summit. Additionally, the ROK announced in September 2010 that it will open an International Nuclear Security Training Center in 2014.[62] Though it was not among their national commitments, the center is intended to support the ROK's plans to spread the benefits of nuclear energy while mitigating the risks of its misuse.

Regional meetings have taken place to support the summit process and include countries beyond those present at the 2010 NSS, including one in Warsaw, **Poland** on August 30, 2010 and one planned for **Chile** in spring 2011.[63] Also, a sherpa meeting took place in Buenos Aires, **Argentina** on November 2, 2010 and another occurred in Vienna, **Austria** in March 2011.[64]

New National Laws

Given that it is primarily the responsibility of states to ensure that the nuclear material on their territory is protected, summit documents encouraged participants to maintain and enforce effective national laws and regulations to keep materials secure and criminalize any misuse or misconduct. In advance of the 2010 summit, Armenia, Egypt, and Malaysia passed new export controls laws and regulations to govern their nuclear activities.

Results

Egypt enacted a law in March 2010 on "Regulating Nuclear and Radiological Activities" that confirms the country's adherence to all international, regional, and bilateral treaties and agreements that Egypt has ratified.[65] The law was passed as part of preparation to achieve the country's goal of building four nuclear reactors by 2025.[66]

In April 2010, **Malaysia** passed the "Strategic Trade Bill 2010" which includes new export controls and authorizes state action against anyone involved with designing, developing, or producing WMDs.

Armenia passed new export control laws beginning in November 2009. The legislation updated the country's export control laws and regulations to comply with international standards and was accomplished over a period of approximately 15 months.[67]

Global Initiative to Combat Nuclear Terrorism (GICNT)

The value of the GICNT in promoting nuclear security was recognized in summit documents, and participants were encouraged to work together and expand cooperation under this and other multilateral initiatives that support improved nuclear security. Since its creation in 2006, GICNT has grown to include 82 countries and four official observers who voluntarily commit to implementing a set of nuclear security goals articulated in the group's Statement of Principles.[68]

Results

Argentina, the **Philippines**, **Thailand**, and **Vietnam** all made national commitments to join the initiative. All four countries, plus **Mexico** and **Singapore**, were welcomed as new members of GICNT at its June 2010 Plenary Meeting.[69]

In its NSS national statement, the **United States** reiterated its April 2009 pledge to turn GICNT into a "durable international institution." Ideas under consideration by the GICNT for achieving this goal, which the group has termed "enhancing implementation," include "clearly identifying a policy making body, having a decision making mechanism that is open to all partners, better coordinating exercise planning, and...facilitating capacity building."[70] At the 2010 GICNT plenary meeting, five accomplishments aimed at "enhancing implementation" were highlighted: 1) adopting a revised Terms of Reference to define participant roles, responsibilities, and implementation mechanisms, 2) endorsing the continuation of the United States and Russia as the group's co-chairs, 3) agreeing to activate the Implementation and Assessment Group (IAG) to provide strategic oversight, 4) selecting Spain as the first IAG Coordinator, and 5) identifying nuclear detection and nuclear forensics as priority issue areas for 2011.[71]

Preventing Nuclear Smuggling

Summit documents emphasized the need for states to work together to prevent and respond to incidents of nuclear smuggling. One mechanism that supports this objective is the United States' Megaports Initiative. It is part of the United States' Second Line of Defense (SLD) program within NNSA that provides equipment, training, and technical


Government of Vietnam

Vietnam's Vice Minister of Finance Do Hoang Anh Tuan and U.S. Ambassador Michael Michalak sign a Megaports Agreement on July 2, 2010.

support to partner countries to help prevent nuclear and radioactive material smuggling at maritime ports. Another mechanism is the United States' Nuclear Smuggling Outreach Initiative (NSOI). NSOI engages with countries to create Joint Action Plans to improve anti-smuggling capabilities and facilitate donor partnerships that fortify human and capital resources to prevent nuclear smuggling. The GICNT also offers resources and expertise to help its members bolster capacity to counter nuclear smuggling. Additionally, UNSCR 1540, unanimously passed in 2004, requires UN member states to enforce measures to prevent WMD proliferation. The United States has proposed a voluntary fund to help countries meet this obligation.

Italy and the United Arab Emirates (U.A.E.) both listed their recently signing Megaports agreements with the United States as national commitments at the 2010 NSS. New Zealand committed to contributing to NSOI, and Norway pledged $500,000 in additional resources to support GICNT efforts to upgrade radiation portal monitors in Kazakhstan. The United States pledged to contribute to the UNSCR 1540 voluntary fund that it proposed.

Results

The **United Arab Emirates** signed its agreement with the United States in December 2009 to begin cooperative efforts to install radiation detection equipment and infrastructure at the ports of Abu Dhabi and Sharjah.[72] This agreement was signed in Abu Dhabi, and it builds on a Megaports agreement signed with Dubai in 2005.[73]

Italy signed its agreement in March 2010 under which NNSA will work with the Customs Agency of the Italian Republic to deter, detect, and interdict nuclear trafficking at several Italian ports, including Genoa and Gioia Tauro.[74] The agreement will enable NNSA to provide equipment and training for the ports and includes cost-sharing arrangements.[75]

Under NSOI, **New Zealand** provided radiological monitoring equipment for the Boryspol International Airport in Kyiv, Ukraine in 2010.[76] Funding for this project, as well as two earlier ones in 2007 and 2009, was provided under NSOI and implemented by the U.S. SLD program.[77]

In December 2010, **Norway's** $500,000 contribution to upgrading portal monitors in Kazakhstan through the GICNT was announced.[78] The funding under GICNT will be used by the U.S. SLD program on radiation detection equipment at the Almaty airport.[79]

In its FY 2011 budget request, the **United States** included $3 million for the proposed UNSCR 1540 implementation fund, but Congress had not appropriated this funding at the time of this report. For FY 2012, the Obama administration has requested $1.5 million for the voluntary fund. Additionally, the United States is

working to develop new neutron detection technologies. According to the U.S. NSS national statement, the development timeframe for these new detectors has been shortened from five years to 18 months.[80]

G-8 Global Partnership

The role and contributions of the G-8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction (Global Partnership) were recognized in summit documents. The work plan welcomed additional programming to enhance nuclear material security by partners in this multilateral initiative. The Global Partnership was created in 2002 by the G-8 to provide $20 billion over ten years for WMD safety, security, and nonproliferation projects in Russia and the FSU. It currently has 15 partners outside of the G-8. The Global Partnership's geographic mandate was broadened in 2008, but operationally, its work continues to be focused in the FSU.

With the Global Partnership set to expire in 2012, Canada pledged to champion its extension. U.S. President Obama expressed his support for a 10 year extension and mission expansion of the Global Partnership at the 2010 NSS and committed another $10 billion in funding for new projects.[81]

Results

At the June 2010 G-8 summit in Muskoka, Canada, the **United States** supported **Canada's** efforts to extend and expand the initiative. However, the G-8 only agreed for an expert group to examine the initiative's future.[82] Canadian officials are working to build support for the initiative through diplomatic channels and public outreach events.[83] One such event took place on March 11, 2011 at the Canadian embassy in Washington D.C., titled "Global Efforts in WMD Threat Reduction: Perspectives on the Nuclear Security Summit and G-8 Global Partnership."[84]

National Commitments by Country

By Robert Golan-Vilella

This section of the report provides brief profiles of the 47 nations that attended the 2010 Nuclear Security Summit (NSS), as well as Belarus (for reasons explained in the Belarusian profile). The profiles list the status of the national commitments made in Washington, the states' membership in the relevant international conventions, and their fissile material holdings. The profiles also contain brief notes about why certain countries are relevant to the broader nuclear security agenda. The purpose is not to single countries out for criticism, but rather to provide readers with context for understanding the commitments.

The profiles cover the major commitments made at the 2010 NSS, as outlined in the White House document "Highlights of the National Commitments made at the Nuclear Security Summit" and the American national statement.

As the profiles demonstrate, roughly 60 percent of the commitments made in 2010 have already been met, and notable progress has been made on another 30 percent. Very few commitments have seen no progress at all. In short, countries are doing what they committed to do in Washington and are generally on track to complete these commitments by 2012. This is not to say that the world's nuclear security problems are on the cusp of being solved – far from it. There will still be much left to do even if every one of the commitments is completed. Hopefully, these findings can serve a useful function in terms of laying out the significant progress that has been made in the past year and pointing towards what is left to be done in the lead-up to the Seoul summit and beyond.

Notes and Sources:

National commitments made in 2010 are from: "Highlights of the National Commitments made at the Nuclear Security Summit," The White House, April 13, 2010, http://www.whitehouse.gov/the-press-office/highlights-national-commitments-made-nss

All information on fissile material holdings is from one of the following two sources unless otherwise noted:

- International Panel on Fissile Materials, "Global Fissile Materials Report 2010: Balancing the Books: Production and Stocks," December 2010, http://www.ipfmlibrary.org/gfmr10.pdf.

- "Highly Enriched Uranium: Who Has What?," Nuclear Threat Initiative, April 22, 2010, http://www.nti.org/db/heu/Heu_Who_Has_What.pdf.

Unless otherwise noted, all information on nuclear weapons stockpiles is from: "Status of World Nuclear Forces," Federation of American Scientists, February 19, 2011, http://www.fas.org/programs/ssp/nukes/nuclearweapons/nukestatus.html.

All data for membership in the Convention on the Physical Protection of Nuclear Material (CPPNM) is from: "Convention on the Physical Protection of Nuclear Material," International Atomic Energy Agency, January 11, 2011, http://www.iaea.org/Publications/Documents/Conventions/cppnm_status.pdf.

All data for the 2005 amendment to

the CPPNM is from: "Amendment to the Convention on the Physical Protection of Nuclear Material," International Atomic Energy Agency, March 29, 2011, http://www.iaea.org/Publications/Documents/Conventions/cppnm_amend_status.pdf.

All data for the International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT) is from: "15. International Convention for the Suppression of Acts of Nuclear Terrorism," United Nations Treaty Collection, April 1, 2011, http://treaties.un.org/Pages/ViewDetailsIII.aspx?&src=UNTSONLINE&mtdsg_no=XVIII~15&chapter=18&Temp=mtdsg3&lang=en#Participants.

All information on membership in the Global Initiative to Combat Nuclear Terrorism (GICNT) is from: "Partner Nations List," U.S. Department of State, http://www.state.gov/t/isn/c37083.htm.

In the fall of 2010, the Fissile Materials Working Group (FMWG) sent out a questionnaire to the embassies and foreign ministries of the 47 countries attending the Washington summit. The survey asked questions regarding nuclear security in each of the countries and the actions that they had taken toward meeting the commitments they made in Washington. Some of their responses have been incorporated into this report.

Throughout this section, tons refer to metric tons.

Algeria

National Commitments Made at NSS
None

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: State Party
ICSANT: State Party (acceded March 2011)

Fissile Material Holdings
None

Argentina

National Commitments Made at NSS

1. Joined the Global Initiative to Combat Nuclear Terrorism (GICNT)
    - Status: COMPLETED

2. Moving toward the ratification of ICSANT
    - Status: Unclear / No progress evident

3. Moving toward the ratification of the CPPNM 2005 Amendment
    - Status: Unclear / No progress evident

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: Signatory

Fissile Material Holdings
HEU: 1-10 kilograms (kg). Argentina's stocks are "in the final stages of cleanout."[85]

Armenia

National Commitments Made at NSS

1. Ratified International Convention on Suppression of Acts of Nuclear Terrorism
    - Status: COMPLETED (ratified September 2010)

2. Passed new export control law
    - Status: COMPLETED[86]

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: State Party

Fissile Material Holdings
None

Australia

National Commitments Made at NSS

1. Moving toward the ratification of ICSANT
    - Status: Unclear / No progress evident

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: State Party
ICSANT: Signatory

Fissile Material Holdings
HEU: 1-10 kg. Australia's stocks are "in the final stages of cleanout."[87]

Belarus

National Commitments Made at NSS
None (did not attend summit)

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: State Party

Fissile Material Holdings
HEU: 85-285 kg (see below)

Notes
Prior to 2010, Belarus was estimated to have 170-370 kg of HEU. Belarus was not invited to attend the Washington summit. At the time, its president Alexander Lukashenko declared that his country would never give up its HEU. Nevertheless, in late 2010 the United States helped remove 85 kg of HEU from Belarus in two secret operations, and in December 2010 Belarus pledged to eliminate all of its stocks of HEU by the time of the 2012 Nuclear Security Summit.[88] As a result, South Korea "has agreed to invite Belarus" to the next summit, "contingent upon the completion of its highly enriched uranium removal."[89]

Belgium

National Commitments Made at NSS

1. Contributing $300,000 to the International Atomic Energy Agency's Nuclear Security Fund
    - Status: COMPLETED[90]

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: State Party

Fissile Material Holdings
HEU: 700-750 kg

Notes
In addition to its HEU stocks, Belgium hosts an estimated 10-20 American tactical nuclear weapons at Kleine Brogel Air Base.[91]

Brazil

National Commitments Made at NSS
None

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: State Party

Fissile Material Holdings
HEU: <1 kg

Canada

National Commitments Made at NSS

1. Returning a large amount of spent HEU fuel from its medical isotope production reactor to the United States
    - Status: In progress. The fuel is scheduled to be repatriated to the United States "between 2010 and 2018."[92]

2. Championing the extension of the G-8 Global Partnership
    - Status: In progress. Canada has advocated for the Global Partnership's extension, but it has so far not occurred. The Global Partnership will expire in 2012 if it is not extended.

3. Funding highly enriched uranium removals from Mexico and Vietnam
    - Status: In progress. Canada pledged to provide $8 million in funding to the U.S. Global Threat Reduction Initiative to support the two projects.[93] A trilateral agreement between the United States, Mexico, and Canada was reached concerning the Mexican removals.[94]

4. Hosting and funding a World Institute of Nuclear Security best practices workshop
    - Status: COMPLETED (hosted June 2010)[95]

5. Unveiling $100 million in new bilateral security cooperation with Russia
    - Status: Unclear / no progress evident

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: Signatory

Fissile Material Holdings
HEU: About 1,350 kg

Notes
Canada is the world's leading producer of the medical isotope molybdenum-99 (Mo-99), which is widely used in treating cancer, heart disease, and brain disorders.[96] Canada produces this isotope at its National Research Universal (NRU) reactor in Chalk River, which uses HEU targets.[97] The NRU's operating license is currently set to expire in 2016; it is unclear how Canada will proceed after this date.

Chile

National Commitments Made at NSS

1. Removed all HEU (18 kg) in March 2010
    - Status: COMPLETED[98]

International Instruments
CPPNM: State Party

CPPNM 2005 Amendment: State Party
ICSANT: State Party (ratified September 2010)

Fissile Material Holdings
HEU: <1 kg

China

National Commitments Made at NSS

1. Announce cooperation on a nuclear security Center of Excellence
   - Status: In progress. China and the United States signed a memorandum of understanding on the creation of the center in January 2011.[99]

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: State Party
ICSANT: State Party (ratified November 2010)

Fissile Material Holdings
HEU: 16 ± 4 tons
Plutonium: 1.8 ± 0.5 tons

Notes
Little is officially known about the status of China's nuclear weapons and fissile material stockpiles, which Beijing has never disclosed. China is estimated to possess approximately 240 nuclear warheads. China is thought to have stopped producing fissile materials for weapons around 1990, but has never formally made a declaration to this effect.[100] Beijing's current stocks of fissile materials are believed to be entirely devoted to military activities; this may change in the upcoming years if China goes ahead with plans to develop a commercial-scale reprocessing plant.[101]

Czech Republic

National Commitments Made at NSS
None

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: State Party (accepted December 2010)
ICSANT: State Party

Fissile Material Holdings
HEU: 10-100 kg. The Czech Republic's stocks are "on track to be cleaned out in the next few years."[102]

Egypt

National Commitments Made at NSS

1. Passed new comprehensive nuclear law in March 2010 that includes nuclear security, criminalization of sabotage and illicit trafficking provisions as well as envisaging an independent regulatory authority
   - Status: COMPLETED[103]

International Instruments
CPPNM: No action
CPPNM 2005 Amendment: No action
ICSANT: Signatory

Fissile Material Holdings
None

Finland

National Commitments Made at NSS

1. Invited an International Physical Protection Advisory Service (IPPAS) security review from the IAEA
   - Status: COMPLETED (review completed in June 2009)[104]

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: State Party

Fissile Material Holdings
None

France

National Commitments Made at NSS

1. Ratifying the 2005 Amendment to the CPPNM
   - Status: In progress. According to the French government, "We are currently amending our national legislation in order to be able to ratify ... the amendment to the Convention on the Physical Protection of Nuclear Material."[105]

2. Inviting an IPPAS security review from the IAEA
   - Status: In progress. "France will soon request the IAEA to conduct an International Physical Protection Advisory Service (IPPAS) mission to assess its system."[106]

3. Incorporating training in nuclear security at the European Nuclear Safety Training and Tutoring

Institute and the International Nuclear Energy Institute

- Status: In progress. France's ENSTTI summer 2011 training program is scheduled to include courses on "Nuclear security and non-proliferation objectives."[107]

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: Signatory

Fissile Material Holdings
HEU: 30.9 ± 6 tons
Plutonium: 61.9 ± 1 tons

Notes
France has an arsenal of approximately 300 nuclear warheads and extensive civilian stockpiles of fissile materials. France possesses 55.9 tons of plutonium and 4.9 tons of HEU as of its most recent declaration of civilian stocks.[108] In addition, roughly 26 tons of foreign-owned plutonium, principally owned by Japan, is stored on French territory. France is also one of the few countries to continue reprocessing spent nuclear fuel.

Georgia

National Commitments Made at NSS

1. Signed instrument of approval for ICSANT
   - Status: COMPLETED (acceded April 2010)

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: State Party

Fissile Material Holdings
HEU: <1 kg

Germany

National Commitments Made at NSS

1. Moving toward ratifying the 2005 Amendment of the CPPNM
   - Status: COMPLETED (ratified October 2010)

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: State Party
ICSANT: State Party

Fissile Material Holdings
HEU: About 920 kg
Plutonium: 9.5 tons (7.5 tons stored outside country)

Notes
Germany's HEU stockpiles are predicted to increase in the coming years and cross the 1,000 kg threshold. This is due to the operation of its FRM-II research reactor in Bavaria. Should the reactor continue functioning, Germany "could become the last non-weapon state with a HEU-fueled reactor."[109] The United States is also believed to store 10-20 nuclear weapons in Germany.[110]

India

National Commitments Made at NSS

1. Announcing the creation of a Nuclear Energy Center with a nuclear security component
   - Status: In progress. A memorandum of understanding was signed with the United States in November 2010.[111]

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: State Party
ICSANT: State Party

Fissile Material Holdings
HEU: 1.3 ± 0.5 tons
Plutonium: 4 ± 0.65 tons

Notes
India is one of the few countries today that continues to produce both HEU and plutonium. India's production of HEU is chiefly intended to fuel its nuclear submarine propulsion program, which is believed to be working toward a fleet of three to five nuclear submarines.[112] Its nuclear weapons arsenal, believed to contain roughly 80-100 warheads, is based on plutonium. It is estimated that 0.5 tons of its plutonium stockpile are weapons-grade, while the remaining 3.5 tons are reactor-grade.[113]

Indonesia

National Commitments Made at NSS
None

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: State Party (ratified May 2010)
ICSANT: No action

Fissile Material Holdings
HEU: <1 kg

Israel

National Commitments Made at NSS
None

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: Signatory

Fissile Material Holdings
HEU: 0.3 tons
Plutonium: 0.8 ± 0.15 tons

Notes
Israel's government maintains extreme secrecy over every aspect of its nuclear development, from its still-unacknowledged nuclear arsenal to its fissile material stockpiles to its nuclear security arrangements. As a result, estimates of its stockpiles are highly uncertain. Israel is believed to possess approximately 80 nuclear weapons.

Italy

National Commitments Made at NSS

1. Signed a Megaports agreement with the United States
   - Status: COMPLETED (signed March 2010)[114]

2. Establishing a school of nuclear security in Trieste
   - Status: COMPLETED (opened November 2010)[115]

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: Signatory

Fissile Material Holdings
HEU: 100-200 kg

Notes
Italy's HEU stocks are chiefly accounted for by its Tapiro fast-neutron reactor, whose fuel type makes it difficult to convert to LEU fuel. The reactor is used only intermittently.[116] Italy also hosts an estimated 60-70 American nuclear weapons at two locations.[117]

Japan

National Commitments Made at NSS

1. Launching an integrated regional support center
   - Status: COMPLETED[118]

2. Research and development on detection and forensics
   - Status: COMPLETED (hosted the "International Workshop on Nuclear Forensics Following on Nuclear Security Summit" in October 2010)[119]

3. Contributing new resources to the Nuclear Security Fund
   - Status: COMPLETED[120]

4. Hosting a WINS best practices workshop
   - Status: COMPLETED (hosted September 2010)[121]

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: State Party

Fissile Material Holdings
HEU: About 2,000 kg
Plutonium: 46.1 tons (36.1 tons stored outside country)

Notes
Japan accounts for the lion's share of the separated plutonium located outside of the nuclear weapon states. It is "the only non-weapon state that reprocesses spent fuel and fabricates plutonium-containing fuel."[122]

Jordan

National Commitments Made at NSS
None

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: State Party
ICSANT: Signatory

Fissile Material Holdings
None

Kazakhstan

National Commitments Made at NSS

1. Converting an HEU research reactor and eliminating remaining HEU
   - Status: In progress. Sources indicate that the research reactor in Alatau is the intended target and that Kazakhstan is engaged in discussions with Russia and the United States about its conversion.[123] However, no timeline for conversion has been made public.

2. Cooperative work on BN-350 reactor shutdown and fuel security
   - Status: COMPLETED (completion announced in November 2010)[124]

3. Hosting a GICNT activity
   - Status: COMPLETED[125]

4. Considering an International Nuclear Security Training Center
   - Status: In progress. Kazakhstan's president, Nursultan Nazarbaev, has promoted Kazakhstan as a potential location for the proposed center,[126] but its status remains unclear.

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: State Party

Fissile Material Holdings
HEU: At least 10,000 kg
Plutonium: At least 3 tons (see below)

Notes
Kazakhstan has by far the largest holdings of HEU of any non-weapon state. This is almost entirely due to the fact that Kazakhstan inherited the Soviet Union's BN-350 reactor. Most of the country's 10,000 kg of HEU consists of spent fuel from that reactor, which was also used to breed plutonium for the Soviet Union's nuclear weapons program.[127] In November 2010 the United States and other international partners completed a long-term effort to shut down the reactor and provide long-term storage for its spent fuel in a facility in eastern Kazakhstan. This included securing more than 10 tons of HEU and three tons of weapons-grade plutonium.[128]

Malaysia

National Commitments Made at NSS

1. Passed new export control law
   - Status: COMPLETED (passed in April 2010)[129]

International Instruments
CPPNM: No action
CPPNM 2005 Amendment: No action
ICSANT: Signatory

Fissile Material Holdings
None

Mexico

National Commitments Made at NSS

1. Converting an HEU research reactor and eliminating remaining HEU working through IAEA
   - Status: In progress. Mexico, Canada, and the United States signed a trilateral agreement at the Washington summit which provides for the elimination of Mexico's HEU.[130]

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: State Party

Fissile Material Holdings
HEU: 10-100 kg. Mexico's stocks of HEU are "on track to be cleaned out in the next few years."[131]

Morocco

National Commitments Made at NSS
None

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: State Party (ratified March 2010)

Fissile Material Holdings
None

Netherlands

National Commitments Made at NSS
None

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: State Party (accepted June 2010)

Fissile Material Holdings
HEU: 730-810 kg

Notes
The Netherlands is a major producer of Mo-99 at its HFR research reactor in Petten. The reactor has been converted to use LEU fuel, but still uses HEU targets; as a result, the Netherlands continues to require stockpiles and shipments of HEU.[132] The Netherlands also hosts an estimated 10-20 American nuclear weapons.[133]

New Zealand

National Commitments Made at NSS

1. Contributing to the International Atomic Energy Agency's Nuclear Security Fund
   - Status: COMPLETED[134]

2. Contributing to the U.S. Nuclear Smuggling Outreach Initiative (NSOI)
   - Status: COMPLETED. According to the NSOI, "In 2010, New Zealand supplied radiological monitoring equipment for Boryspol International Airport in Kyiv, Ukraine."[135]

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: Signatory

Fissile Material Holdings
None

Nigeria

National Commitments Made at NSS
None

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: State Party
ICSANT: No action

Fissile Material Holdings
HEU: About 1 kg

Norway

National Commitments Made at NSS

1. Contributing $3.3 million over the next four years to the IAEA Nuclear Security Fund (flexible funds for use in developing countries)
   - Status: COMPLETED[136]

2. Contributing $500,000 in additional support to Kazakhstan's efforts to upgrade portal monitors to prevent nuclear smuggling as part of the GICNT
   - Status: COMPLETED[137]

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: State Party
ICSANT: Signatory

Fissile Material Holdings
HEU: 1-10 kg

Pakistan

National Commitments Made at NSS
None

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: No action

Fissile Material Holdings
HEU: 2.6 ± 1 tons
Plutonium: About 100 kg

Notes
Pakistan is thought to possess an arsenal of 90-110 nuclear weapons. This number reflects a significant recent increase, as Pakistan is believed to have doubled its nuclear arsenal over the past several years.[138] Virtually all of its fissile material stockpiles are designated for military use; Islamabad "does not have a civilian plutonium program,"[139] and its civilian stocks of HEU are estimated at only 17 kg.[140]

Analysts have expressed concern over the status of nuclear security in Pakistan due to the "extraordinary threats" it faces as a result of the presence of al-Qaeda and other extremist organizations in the country.[141] However, Pakistan has also taken a number of significant steps to improve its nuclear security over the past decade.[142]

Philippines

National Commitments Made at NSS

1. Joining the GICNT
   - Status: COMPLETED

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: Signatory

Fissile Material Holdings
HEU: <1 kg

Poland

National Commitments Made at NSS
None

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: State Party
ICSANT: State Party (ratified April 2010)

Fissile Material Holdings
HEU: 100-1000 kg

Notes
Over the past several years, there have been a number of high-profile HEU removals from Poland. Most notably, in October 2010 the NNSA announced that over 450 kg of HEU had been removed from Poland in five shipments over the previous year.[143] It is unclear how much HEU remains following these removals, which involved clearing out all HEU from Poland's "Ewa" research reactor.[144] The material left is concentrated in the "Maria" reactor, which uses HEU fuel to produce Mo-99, but is on track to convert to LEU fuel in mid-2012.[145]

Republic of Korea

National Commitments Made at NSS

1. Hosting the 2012 Nuclear Security Summit.
   - Status: In progress. Will presumably happen.

2. Hosting a GICNT activity
   - Status: In progress. The GICNT's next plenary session is scheduled for 2011 in Seoul.[146]

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: Signatory

Fissile Material Holdings
HEU: <1 kg

Notes
The Republic of Korea possesses an extensive nuclear power program and is seeking to become a major exporter of nuclear reactors, setting a goal of exporting 80 nuclear power reactors by 2030.[147]

Russia

National Commitments Made at NSS

1. Signing Plutonium Disposition protocol
   - Status: COMPLETED[148]

2. Ending plutonium production
   - Status: COMPLETED[149]

3. Contributing to the IAEA's Nuclear Security Fund
   - Status: COMPLETED[150]

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: State Party
ICSANT: State Party

Fissile Material Holdings
HEU: 770 ± 120 tons
Plutonium: About 175.7 tons

Notes
As Harvard University's Matthew Bunn notes, "Russia has the world's largest stockpiles of nuclear weapons, plutonium, and HEU, located in the world's largest numbers of buildings and bunkers."[151] Its estimated 11,000 nuclear warheads and hundreds of buildings containing nuclear materials alone mean that Russia is central to the broader nuclear security agenda.

The United States has a wide variety of programs in Russia whose functions include conducting security upgrades at nuclear facilities, consolidating Russian HEU, and converting Russian reactors to use LEU. These efforts have made varying degrees of progress in recent years. The Government Accountability Office (GAO) reported that the Material Protection, Control and Accounting program has had the greatest success, conducting security upgrades at over one hundred sites. However, progress in terms of consolidating Russian HEU and converting Russian reactors to use LEU has been more limited.[152]

Saudi Arabia

National Commitments Made at NSS

1. Hosting a UNSCR 1540 conference for Gulf Cooperation Council
   - Status: COMPLETED (hosted in Riyadh in December 2010)[153]

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: State Party (accepted January 2011)
ICSANT: State Party

Fissile Material Holdings
None

Singapore

National Commitments Made at NSS
None

International Instruments
CPPNM: No action
CPPNM 2005 Amendment: No action
ICSANT: Signatory

Fissile Material Holdings
None

South Africa

National Commitments Made at NSS
None

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: State Party

Fissile Material Holdings
HEU: 610-760 kg

Notes
South Africa is "the only non-weapon state that produced its own stockpile of HEU," which is a legacy of its nuclear weapons program of the 1980s.[154] South Africa is also a major producer of Mo-99, and it is leading the transition to produce it with LEU. In December 2010, South Africa's Nuclear Energy Corporation delivered the first large-scale shipment of Mo-99 to the United States made using both LEU fuel and targets.[155]

Spain

National Commitments Made at NSS
None

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: State Party
ICSANT: State Party

Fissile Material Holdings
HEU: <1 kg

Sweden

National Commitments Made at NSS
None

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: Signatory

Fissile Material Holdings
HEU: <1 kg

Switzerland

National Commitments Made at NSS
None

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: State Party
ICSANT: State Party

Fissile Material Holdings
HEU: 1-10 kg
Plutonium: <0.05 tons[156]

Thailand

National Commitments Made at NSS

1. Joining the Global Initiative to Combat Nuclear Terrorism
    - Status: COMPLETED

International Instruments
CPPNM: No action
CPPNM 2005 Amendment: No action
ICSANT: Signatory

Fissile Material Holdings
HEU: <1 kg

Turkey

National Commitments Made at NSS
None

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: Signatory

Fissile Material Holdings
HEU: <1 kg. Turkey was formally "cleaned out" of HEU in January 2010.[157]

Notes
Turkey is believed to host approximately 60-70 American nuclear weapons.[158]

Ukraine

National Commitments Made at NSS

1. Removing all HEU by next Summit — half of it by year's end
    - Status: In progress (see below)

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: State Party
ICSANT: State Party

Fissile Material Holdings
HEU: Less than 62 kg (see below)

Notes

Prior to 2010, Ukraine's HEU was stored at three locations: a research reactor in Kiev, an experimental facility in Kharkiv, and a critical assembly in Sevastopol. Following on Ukraine's commitment at the Washington summit, the United States completed two removals of HEU from Ukraine in 2010. In May 2010, 56 kg of HEU spent fuel were removed. According to the GAO, this represents "more than a third of Ukraine's HEU inventory."[159] In December 2010 an additional 50 kg of HEU fresh fuel were removed.[160]

United Arab Emirates

National Commitments Made at NSS

1. Signed a Megaports Agreement with the United States
   - Status: COMPLETED (signed December 2009)[161]

International Instruments

CPPNM: State Party
CPPNM 2005 Amendment: State Party
ICSANT: State Party

Fissile Material Holdings

None

United Kingdom

National Commitments Made at NSS

1. Contributing $6 million to the IAEA Nuclear Security Fund
   - Status: COMPLETED[162]

2. Inviting an IPPAS security review from the IAEA
   - Status: COMPLETED[163]

3. Ratification of ICSANT
   - Status: COMPLETED (ratified September 2009)

4. Ratification of 2005 CPPNM Amendment
   - Status: COMPLETED (ratified April 2010)

International Instruments

CPPNM: State Party
CPPNM 2005 Amendment: State Party
ICSANT: State Party

Fissile Material Holdings

HEU: 21.2 tons
Plutonium: 92.9 tons

Notes

The United Kingdom possesses a stockpile of 225 nuclear warheads, of which less than 160 are operationally available. According to the most recent British defense review, these numbers are scheduled to be reduced to 180 and 120, respectively, by the mid-2020s.[164]

In addition, the United Kingdom also possesses extensive civilian stockpiles of fissile materials, the result of "an extensive program of reprocessing spent fuel from power reactors."[165] The bulk of London's plutonium (84.4 tons) is civilian, which makes it the largest stockpile of civilian plutonium in the world.[166]

United States

National Commitments Made at NSS[167]

1. Request an IPPAS mission
   - Status: In progress. The United States has formally declared its intention to request an IPPAS mission.[168]

2. Accelerate efforts to ratify ICSANT and the CPPNM 2005 Amendment
   - Status: In progress. According to Washington's national statement, legislation that would bring U.S. laws into line with both treaties has been submitted to Congress. Neither treaty has been ratified.

3. Convert its six remaining HEU-fueled reactors
   - Status: In progress. The United States is currently developing new fuel that will allow it to convert the final six reactors.

4. Sign Plutonium Disposition protocol
   - Status: COMPLETED[169]

5. Bring up to 100 kg of plutonium from sites of concern into the United States pending disposition
   - Status: In progress. This project is in the "final stages of approval."[170]

6. Develop and deploy new neutron detection technologies
   - Status: In progress. The U.S. Domestic Nuclear Detection Office has begun "performance tests of 11 neutron detector variations to identify promising technologies."[171]

7. Launch an international effort to develop a nuclear forensics library, exercises, common lexicons, and other foundational elements for cooperation in nuclear forensics
   - Status: In progress. In November 2010 the United States and Japan established a bilateral Nuclear Security

Working Group, and agreed "to expand joint activities in the fields of nuclear forensics."[172]

8. Provide financial support for WINS
   - Status: COMPLETED[173]

9. Requested the largest ever amount for nuclear security programs in its fiscal year 2011 budget
   - Status: COMPLETED. However, the increased funding has not been appropriated, as the U.S. Congress has not yet approved a final budget for fiscal year 2011.

10. Proposing a voluntary fund to help countries meet their obligations under Resolution 1540
    - Status: COMPLETED. The United States proposed the fund, and the White House requested $3 million for it in fiscal year 2011 and $1.5 million in fiscal year 2012.[174]

11. Led efforts at the IAEA to establish for the first time a dedicated line item for nuclear security in 2009
    - Status: COMPLETED

12. Support extension of the Global Partnership
    - Status: In progress. The United States has advocated for a 10-year extension of the Global Partnership and pledged to commit an additional $10 billion to support it, but it has so far not occurred.

International Instruments
CPPNM: State Party
CPPNM 2005 Amendment: No action
ICSANT: Signatory

Fissile Material Holdings
HEU: 614 tons
Plutonium: 91.9 tons

Notes
The United States has been a leading force in helping to remove and secure nuclear materials in other nations. In recent years, its Global Threat Reduction Initiative has worked to shut down or convert 72 HEU research reactors and remove a cumulative total of 2,852 kg of HEU around the world.[175] The United States has worked with 19 countries to remove "all HEU material," and is working with 16 additional nations "to remove the last of their material."[176]

As of September 2009, the United States had 5,113 nuclear weapons deployed and in reserve, plus several thousand awaiting dismantlement.[177] The majority of its fissile material stockpile is designated for military purposes. For HEU, 260 tons is used for weapons and 230 tons reserved as fuel for naval reactors.[178] When it comes to plutonium, 38.3 tons are either in weapons or weapons laboratories; the rest has been declared as "excess."[179] As part of its plan to dispose of these materials, the United States concluded an agreement with Russia for each country to dispose of at least 34 tons of weapons-grade plutonium starting in 2018. The United States is also in the process of blending down large amounts of its HEU: it has designated 235 tons of its HEU for blend-down, of which 131 have already been blended down and 104 tons remain to be eliminated.[180]

Vietnam

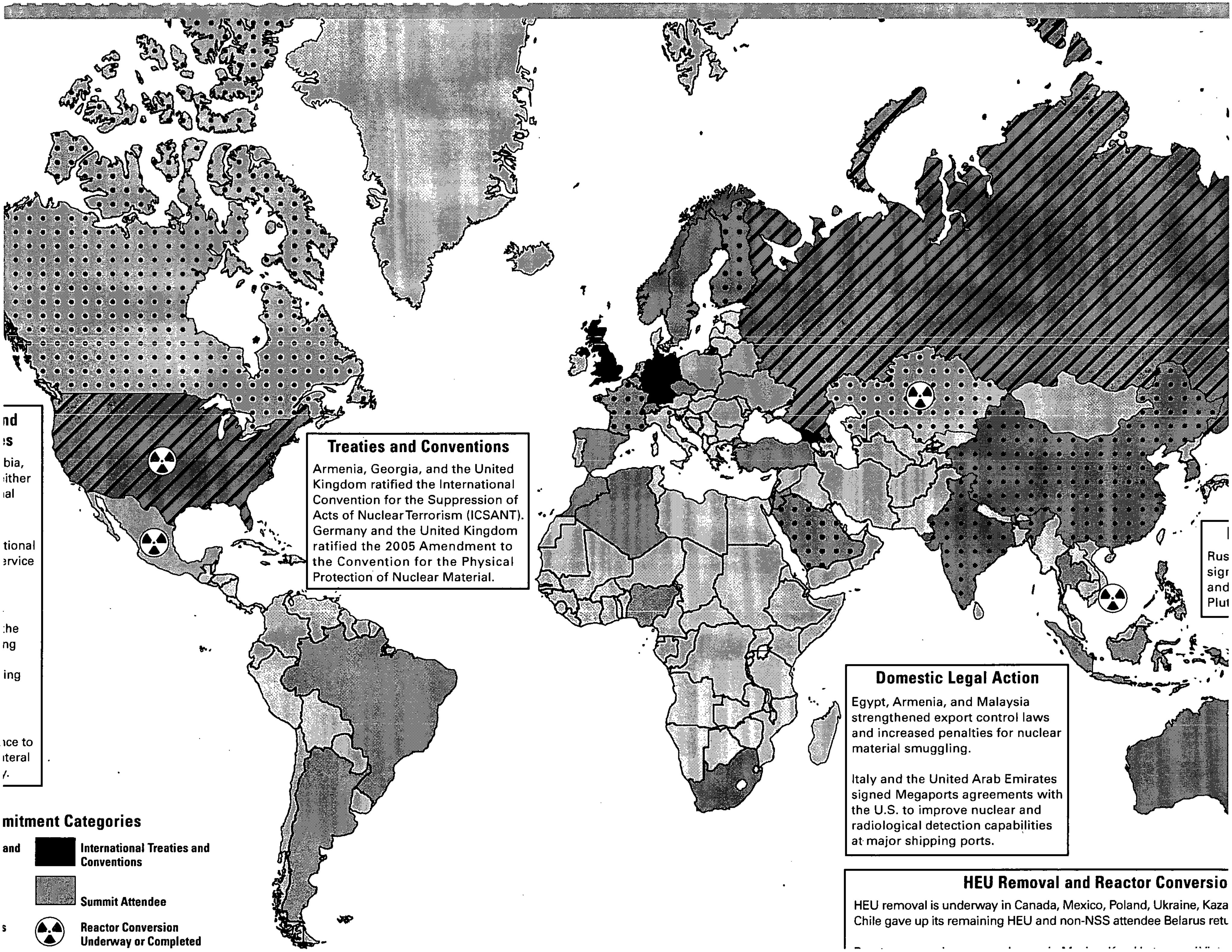
National Commitments Made at NSS

1. Converting a highly enriched uranium research reactor
   - Status: In progress. The reactor, located in Dalat, was partially converted from HEU to LEU in 2007. The United States and Vietnam reached an agreement "to complete the full conversion" of the reactor in December 2010.[181]

2. Joining the Global Initiative to Combat Nuclear Terrorism
   - Status: COMPLETED

International Instruments
CPPNM: No action
CPPNM 2005 Amendment: No action
ICSANT: No action

Fissile Material Holdings
HEU: 1-10 kg



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Treaties and Conventions

Armenia, Georgia, and the United Kingdom ratified the International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT). Germany and the United Kingdom ratified the 2005 Amendment to the Convention for the Physical Protection of Nuclear Material.

Domestic Legal Action

Egypt, Armenia, and Malaysia strengthened export control laws and increased penalties for nuclear material smuggling.

Italy and the United Arab Emirates signed Megaports agreements with the U.S. to improve nuclear and radiological detection capabilities at major shipping ports.

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HEU Removal and Reactor Conversio

HEU removal is underway in Canada, Mexico, Poland, Ukraine, Kaza
Chile gave up its remaining HEU and non-NSS attendee Belarus retu

Conclusion

One year after the 2010 Nuclear Security Summit, many countries have made considerable progress implementing their summit commitments. Notable completed national commitments include:

- Chile sent all of its highly enriched uranium (HEU) to the United States.
- Kazakhstan secured enough HEU and plutonium to make 775 nuclear weapons.
- Russia ended its plutonium production and signed a plutonium disposition protocol with the United States.

Countries that have made important progress implementing their commitments include:

- China signed a memorandum of understanding with the United States to work together on establishing a nuclear security Center of Excellence in China.
- Ukraine removed over half of its HEU, putting it on track to meet its pledge to eliminate all of its HEU by the 2012 summit.

Additionally, in fulfillment of their national commitments:

- Six countries hosted educational activities such as conferences and workshops.
- Three states passed new export control laws to protect nuclear materials against misuse.
- Three countries ratified the International Convention on the Suppression of Acts of Nuclear Terrorism.
- Two countries ratified the Amendment to the Convention on the Physical Protection of Nuclear Material.
- Four new countries joined the Global Initiative to Combat Nuclear Terrorism.
- Five countries implemented activities to prevent and interdict nuclear smuggling.
- Two countries initiated or completed an IAEA International Physical Protection Advisory Service mission.
- Six countries provided the IAEA with additional nuclear security funds.

In short, most participants are on their way to fulfilling their national pledges. In addition, South Africa stands out as having made commendable progress on the work plan objective of minimizing the use of HEU. After working with the NNSA to convert HEU reactors, the South African Nuclear Security Corporation (NECSA) shipped the first batch of Mo-99 produced with low-enriched uranium (LEU) to the United States in December 2010.[182] NESCA's subsidiary, NTP Radioisotopes, Ltd., is now the world's first and only large-scale LEU-based Mo-99 supplier in the global marketplace.

Less progress appears to have been made on some of the work plan's more ambitious objectives, such as the consolidation of national sites that hold nuclear materials. However, due to the sensitive nature of nuclear issues, complete information on all of the actions taken by countries may not be publicized or disclosed to those outside of government. While governments are likely to publicize actions such as

ratifying treaties and making funding commitments, they are less likely to discuss physical protection upgrades, for example, in open sources. Additionally, negotiations on bilateral or multilateral agreements may take years to yield results, and the status of ongoing negotiations is unlikely to be known until breakthroughs are achieved. As a result of these barriers, a transparent review of commitment implementation at the 2012 summit will be important to fully understand how the NSS process has advanced global nuclear security.

The countries participating in the NSS process are still finalizing their approach to tracking and reporting on the implementation of commitments made in Washington. Nevertheless, the scheduling of a second summit in 2012 is acting as a forcing mechanism to spur commitment implementation. Developing ways to demonstrate the progress that has been made—not only to summit participants but also to the public and countries outside the process—is crucial to building on the summit's momentum, making the process credible, and furthering the nuclear security agenda.

However, if the 2012 NSS focuses solely on achieving compliance with existing nuclear material security arrangements—as the Washington summit did—we will have missed an important opportunity to push the regime beyond its current limits to better address twenty-first century threats. The NSS process has brought high-level political attention to a previously obscure issue that was the domain of technical and policy experts. This attention through the summit process should be preserved and used as a vehicle for sustained nuclear security advancement. As the 2012 NSS approaches, countries should be considering what new initiatives, funding mechanisms, and collaborations could be initiated in 2012. Of course, such proposals are predicated on recognition among summit participants that more needs to be done at an international level over the long term to prevent nuclear terrorism.

A core achievement of the 2010 NSS was forging the consensus that nuclear terrorism is among the top global security challenges today and that strong nuclear security measures are the most effective way to prevent it. The objective for the 2012 NSS should be to gain international agreement that the current regime needs to be further fortified and harmonized to prevent nuclear terrorism. States will need to acknowledge that nuclear material security is an ongoing challenge, and international efforts to protect sensitive materials must continually improve and evolve to address new threats. The NSS process offers a unique vehicle with great potential for moving the agenda forward.

Glossary of Terms

Convention on the Physical Protection of Nuclear Material (CPPNM): The only international legally binding undertaking in the area of physical protection of nuclear material. Signed in Vienna and New York on March 3, 1980, it establishes measures related to the prevention, detection, and punishment of offenses relating to nuclear material. A diplomatic conference in July 2005 was convened to amend the convention and strengthen its provisions. The amended convention makes it legally binding for states-parties to protect nuclear facilities and material in peaceful domestic use and storage as well as transport. It provides for expanded cooperation between and among states regarding rapid measures to locate and recover stolen or smuggled nuclear material, mitigate any radiological consequences of sabotage, and prevent and combat related offenses. The amendments will take effect once they have been ratified by two-thirds of the states-parties of the convention.

Cooperative Threat Reduction (CTR / Nunn-Lugar): Since 1991, the CTR program has worked to secure and eliminate weapons of mass destruction and their related materials, especially in the states of the former Soviet Union. Initially seen as an immediate response to the chaos as the Soviet Union was collapsing, it later came to be seen as part of a broader effort to keep nuclear weapons and materials out of the hands of terrorists. The program is run by the Defense Threat Reduction Agency in the Department of Defense.

Enrichment: Uranium enrichment increases the percentage of fissile uranium-235 in a batch of nuclear fuel. Low levels of enrichment are suitable for use in civilian nuclear power reactors, while highly enriched uranium (HEU) can be used to build a nuclear weapon.

Fissile material: Material that contains elements whose nuclei are able to be split by neutrons of various speeds. Uranium-233, uranium-235, and plutonium-239 are all fissile materials. Fissile materials undergo fission more easily than other fissionable materials and are more desirable for most reactor types and essential for nuclear explosives.

Global Initiative to Combat Nuclear Terrorism (GICNT): A voluntary association of states, established in 2006, committed to sharing information and expertise in order to prevent nuclear terrorism. Eighty-two states currently participate in the initiative.

Global Partnership Against the Spread of Weapons and Materials of Mass Destruction: An initiative launched in 2002 at the Group of Eight summit in Kananaskis to prevent terrorists or those who harbor them from acquiring or developing nuclear, chemical, radiological, and biological weapons; missiles; and related materials, equipment, and technology.

Global Threat Reduction Initiative (GTRI): A collaborative program aimed at reducing and protecting vulnerable nuclear and radiological materials located at civilian sites worldwide. Launched in 2004, the GTRI helps the U.S. Department of Energy achieve its nuclear security goal to prevent the acquisition of nuclear and radiological materials for use in weapons of mass destruction and other acts of terrorism by repatriating or otherwise securing nuclear fuel and converting reactors to use new, more proliferation-resistant technology. Three key subprograms of the GTRI—convert, remove, and protect—provide a comprehensive approach to denying terrorists access to nuclear and radiological materials. The program is run by the National Nuclear Security Administration.

Highly Enriched Uranium (HEU): Uranium that has been processed to increase the proportion of the U-235 isotope to more than 20 percent. HEU is required for the construction of a gun-type nuclear device, the simplest type of nuclear weapon. The greater the proportion of U-235, i.e., the higher the enrichment level, the less material that is needed to cause a nuclear detonation. Weapons-grade uranium generally refers to uranium enriched to at least 90 percent, but material of far lower enrichment levels can be used to create a nuclear explosive device.

IAEA Nuclear Security Fund: A voluntary funding mechanism, to which International Atomic Energy Agency (IAEA) member states are called on to contribute. The fund was established to support, among others things, the implementation of nuclear security activities to prevent, detect, and respond to nuclear terrorism. The fund's lifetime has been extended twice; the current Nuclear Security Plan is scheduled to run through 2013.

International Atomic Energy Agency (IAEA): International organization based in Vienna charged with monitoring and safeguarding nuclear material and facilities under the nuclear Nonproliferation Treaty and with helping states pursue peaceful nuclear programs through technical cooperation. It was set up as the world's Atoms for Peace organization in 1957 within the UN structure. The IAEA Secretariat is a team of 2,200 multidisciplinary professional and support staff from more than 90 countries. The agency is led by Director-General Yukiya Amano and six deputy directors-general who head the major departments.

International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT): International agreement opened for signature in 2005 that criminalizes the planning, threatening, or implementation of acts of nuclear terrorism and requires states-parties to pass national legislation to that effect.

International Physical Protection Advisory Service (IPPAS): This service was created by the IAEA in order to assist states in strengthening nuclear security within their borders. During an IPPAS review, IAEA experts will examine facilities within a country where nuclear or radioactive materials are kept. They will compare the facilities' systems of physical protection with international guidelines and best practices, and make suggestions for follow-on activities or security upgrades.

Megaports Initiative: A U.S. government program that works with foreign partners to enhance security at ports around the world. The initiative helps equip major ports with radiation detection equipment, as well as provide training for foreign personnel. Foreign cooperation with the initiative is typically formalized by signing a bilateral "Megaports agreement." The program is run by the National Nuclear Security Administration.

2010 Nuclear Security Summit (NSS): A meeting of 47 national delegations and the European Union, the International Atomic Energy Agency (IAEA), and the United Nations held in Washington, DC, April 12–13, 2010, to enhance international cooperation in preventing nuclear terrorism. The participants agreed on a communiqué and a work plan. In their national statements, many states described specific steps they will take to advance nuclear security. The summit was first proposed by President Barack Obama in an April 2009 speech in Prague where he outlined his vision of a world free of nuclear weapons and nuclear threats.

Nuclear Smuggling Outreach Initiative (NSOI): A U.S. government program which collaborates with foreign governments to prevent, detect, and respond to incidents of nuclear smuggling. The program is housed in the State Department's Bureau of International Security and Nonproliferation.

Research reactor: Small nuclear reactors used for scientific research and the production of radioactive materials used in medicine and industry. Many utilize highly enriched uranium as a fuel, unlike larger civilian power reactors, which operate on low enriched uranium.

Resolution 1540: A UN Security Council resolution passed in 2004 mandating that states establish domestic controls to prevent nonstate actors from acquiring nuclear, chemical, and biological weapons or related materials.

World Institute for Nuclear Security (WINS): A nongovernmental body that aims to provide a forum for nuclear security professionals to discuss and exchange best security practices. As of August 2010, WINS has over 400 corporate and individual members from over 50 countries.

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The Arms Control Association (ACA), founded in 1971, is a national nonpartisan membership organization dedicated to promoting public understanding of and support for effective arms control policies. Through its public education and media programs and its magazine, *Arms Control Today (ACT)*, ACA provides policy-makers, the press and the interested public with authoritative information, analysis and commentary on arms control proposals, negotiations and agreements, and related national security issues. In addition to the regular press briefings ACA holds on major arms control developments, the Association's staff provides commentary and analysis on a broad spectrum of issues for journalists and scholars both in the United States and abroad.

The Partnership for Global Security (PGS) analyzes the convergence of the security, technological, and economic issues that are shaping the 21st century's global nuclear and biological challenges. Its focus is on creating the broad and integrated networks of private and public partnerships that are necessary to strengthen international security and fight transnational threats. Its global reputation and reach, focus on key emerging global security challenges and trends, and development of actionable policy initiatives and recommendations have resulted in the creation of new international security programs and increased by millions of dollars the funding for important global security initiatives.

Arms Control Association
1313 L Street, NW Suite 130
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1025 Connecticut Avenue, NW, Suite 506
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From: Droggitis, Spiros
Sent: Thursday, April 14, 2011 9:19 AM
To: Powell, Amy; Decker, David; Riley (OCA), Timothy
Subject: FW: DNDO News 4/14/2011
Attachments: DNDO NEWS 4-14-11.htm

From: Bolling, Lloyd [mailto:Lloyd.Bolling@dhs.gov]
Sent: Thursday, April 14, 2011 9:16 AM
To: Layton, Michael; Reis, Terrence; Jones, Cynthia; Wastler, Sandra; Jackson, Gerard
Cc: Droggitis, Spiros; Dembek, Stephen; Owens, Janice; Breskovic, Clarence; Casey, Timothy; Mike_Stephens@doh.state.fl.us
Subject: DNDO News 4/14/2011

Attached is the DNDO News for Thursday, April 14, 2011.

Summary of news items:

1. Under the FY 2011 budget compromise, funding for the UASI anti-terror program will be cut by almost twenty percent.
2. Nuclear security concerns are being reconsidered after the Fukushima event.

Today in Congress:
The **Senate** will convene at 9:30 a.m.
The **House** will convene at 10 a.m.

- House Armed Services will hold hearings on the fiscal 2012 national defense authorization budget request. 9:30 a.m., 2118 Rayburn
- House Select Intelligence will hold a closed hearing on the fiscal 2012 budget request for intelligence related operations of the Department of Homeland Security and Department of Justice. 10 a.m., HVC-304 Capitol
- House Oversight and Government Reform National Security, Homeland Defense and Foreign Operations Subcommittee will hold a hearing titled "Tsunami Warning, Preparedness and Interagency Cooperation: Lessons Learned." 1:30 p.m., 2154 Rayburn

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April 14, 2011 DNDO News Brief

Urban Area Antiterrorism Program Takes Big Budget Hit

Global Security Newswire - A federal program intended to protect high-risk U.S. cities from a potential terrorist attack saw its funding reduced by almost one-fifth in the budget comprise deal struck last week on Capitol Hill. The fiscal 2011 budget leaves the Urban Area Security Initiative with $725 million, down from the $887 million the program received in fiscal 2010. The budget deal did include monies for the Securing the Cities program, which primarily aims to protect New York City from a nuclear or radiological attack. Approximately $18.5 million of the total $20 million in fiscal 2011 program funding would go to the city. http://www.globalsecuritynewswire.org/gsn/nw_20110413_1476.php

Nuclear security after Fukushima

Toby Dalton, The Hill (blog) - The author encourages bipartisan congressional support for nuclear security programs such as the Global Initiative to Combat Nuclear Terrorism. The probability of nuclear terrorism, like any nuclear accident, is very low, but the consequences would be extremely grave. http://thehill.com/blogs/congress-blog/energy-a-environment/155845-nuclear-security-after-fukushima

From: Droggitis, Spiros
Sent: Monday, April 18, 2011 11:08 AM
To: Powell, Amy; Decker, David; Riley (OCA), Timothy
Subject: FW: DNDO News 4/18/2011
Attachments: DNDO NEWS 4-18-11.doc

From: Bolling, Lloyd [mailto:Lloyd.Bolling@dhs.gov]
Sent: Monday, April 18, 2011 10:53 AM
To: Layton, Michael; Reis, Terrence; Jones, Cynthia; Wastler, Sandra; Jackson, Gerard
Cc: Droggitis, Spiros; Dembek, Stephen; Owens, Janice; Breskovic, Clarence; Casey, Timothy
Subject: DNDO News 4/18/2011

Attached is the DNDO News for Monday, April 18, 2011.

Summary of news items:

1. DHS is working with other federal agencies to develop a radiological and nuclear terrorism risk assessment.
2. Illinois' Emergency Management Agency will donate 2,000 radiation detectors to assist the relief effort in Japan.
3. NNSA is conducting radiological training at the newly operational Megaport in Djibouti.
4. The 2010 Nuclear Security Summit has produced significant progress in nuclear nonproliferation and arms control.
5. India and Kazakhstan signed a nuclear power agreement.
6. DHS will receive $41.75 billion in FY 2011 funding, $700 million less than fiscal 2010 enacted levels.

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April 18, 2011 DNDO News Brief

DHS - Testimony of Chief Medical and Science Advisor Segaran Pillai, Ph.D., Science and Technology Directorate Chemical and Biological Defense Division, before the U.S. House Committee on Homeland Security, Subcommittee on Emergency Preparedness, Response, and Communications, "Taking Measure of Countermeasures (Part 1)"
ISRIA – The Radiological and Nuclear Terrorism Risk Assessment (RNTRA) is a collaborative effort led by DHS' Science & Technology Directorate and DNDO which strives to equip decision makers with tools for better assessing the significant risks that chemical, biological, radiological, and nuclear (CBRN) threats pose to the nation. This effort will have input from the DOE, NRC, HHS, DoD, the EPA, and many other federal agencies.
http://www.isria.com/pages/18_April_2011_17.php

State's Tech and Ag Resources to Help Japan
Champaign/Urbana News-Gazette - The Illinois Emergency Management Agency will donate 2,000 radiation detectors to assist the relief effort, and a collective response by the Illinois agricultural community will help supply agricultural products to Japan. The radiation detectors are part of the state's Preventive Radiological and Nuclear Detection program.
http://www.news-gazette.com/news/agriculture/2011-04-16/states-tech-and-ag-resources-help-japan.html

NNSA Conducts Radiological Training at Newly Operational Megaport in Djibouti
Your Nuclear News (press release) - This training builds upon the recent success of NNSA's Megaports Initiative to equip the Port of Djibouti with radiation detection equipment.
http://www.yournuclearnews.com/nnsa+conducts+radiological+training+at+newly+operational+megaport+in+djibouti_62055.html

Looking Back on Nuclear Progress
Ken Brill, The Hill (blog) - Confronting the 21st Century challenges posed by nuclear terrorism cannot be done alone and our international partners are working hard to achieve ambitious goals, as noted during the Nuclear Security Summit. In only a year's time, 90% of the national commitments made at the summit have been completed or had significant progress made, according to a new report by the nonpartisan Arms Control Association and Partnership for Global Security. http://thehill.com/blogs/congress-blog/homeland-security/156297-looking-back-on-nuclear-progress

India, Kazakhstan Sign Nuclear Power Deal
UPI.com - India signed seven trade agreements with Kazakhstan, including a deal involving nuclear material used for energy production. The deal involves sharing technology and allows for India to purchase 2,100 metric tons of uranium from Kazakhstan.
http://www.upi.com/Business_News/2011/04/16/India-Kazakhstan-sign-nuclear-power-deal/UPI-73891302963045/

Afternoon Take: Spending Package Passes with Homeland Reductions
Chad Brand, Congressional Quarterly Staff

This week, Congress finally wrapped up its work to fund the government over the next six months. Despite the defection of 59 Republicans, the House voted Thursday, 260-167, to pass a $1.36 trillion fiscal 2011 appropriations bill that would cut $39.9 billion from discretionary accounts, including significant reductions to homeland security activities.

The Senate quickly followed suit, voting 81-19 to move the spending measure (HR 1473) to President Obama's desk. Obama has endorsed the package and is expected to sign it.

In the run-up to the votes, White House and congressional negotiators agreed to provide the Department of Homeland Security with $41.75 billion in funding — $700 million less than fiscal 2010 enacted levels, according to the Senate Appropriations Committee. The cuts were imposed over a broad swath of programs that included the Coast Guard and Customs and Border Protection, but the Federal Emergency Management Agency's Disaster Relief Fund received a $1.05 billion boost.

From: OST01 HOC
Sent: Wednesday, April 13, 2011 3:56 PM
To: Dudek, Michael
Attachments: actions & calls.docx

000537

Transition Team Reoccurring Daily Actions and Calls

-Time (EDT)	Description	Lead Team (Will identify position lead for transition team)	Action/Purpose of the Call	Recommendation
0300	RST/PMT call with Japan Team	RST/PMT (arranged by the HOO) (b)(6)	Daily update for Site Team and HQ (convenient time for the Site Team)	
0600	One Pager ***(end of shift)***	ET Dir	Provide input to ET Coordinator	
0600	Congressional Update		Taken from Status Update *(Confirm w/OCA)*	
	Deputy Secretaries (as scheduled)	ET	White House lead (-***Chairman participates***) -Interagency discussion	
0830	ET call with Casto (Chairman to join call at approx 0845)	ET/Chairman/Casto (coordinate w/HOO)	Actions/Priorities for HQ Team	
0930	UK/Canada/France Call	RST/PMT ** (arranged by HOO) (b)(6)	Information Exchange. Focused on Operational issues ***(Combining PMT call from 1400 for Dose issues. Starting 3/28)***	Once a week
1000	Input to Status Update	All	Inputs due to EBT for Status Update	
1000	TAs & CAs briefing	ET ** (arranged by HOO) (b)(6)	ET Director lead -briefed Commission TAs and ODs	Tuesday and Thursday at 1000
1100	ESF8-(Public Health & Medical Services)	LT **(Conference number provided by HHS)**	HHS Secretarys Operations Center lead -Interagency discussion NOTE call will be held on Tuesdays only.	Reduced to 1/week (Tuesday)
1100	Technical Coordination with Industry Consortium	RST **(arranged by HOO)** (b)(6)	Technical discussion	Transfer to NRR
1100	Info Exchange: US Environmental Monitoring. Data	Arranged by NEI	"Radiological Status & Implications" call between NRC, NEI, EPA, DOE, OSTP. NEI or OSTP will set up the bridge line. ***(weekly after 4/5; next call to be April 12 at 11:00)***	Transfer to NRR

Transition Team Reoccurring Daily Actions and Calls

1230	NTAG teleconference (chaired by NSS)	PMT Director to lead	Nuclear Technical Advisory Group –email sent out daily with phone # and pass code	Transfer to NRR
1400	USAID Starting 4/5 call will be on Tuesdays only **877.334.8037 Password "JAPAN"**	LT/OCA	USAID lead NOTE- Starting 4/5 call will be on Tuesdays only. -Interagency discussion: Federal pre-coordination takes place at 1:45 and then the 2pm call with Congressional staff.	Transfer to OIP Tuesday only
1400	Advisory Team (A-Team)	White House/PMT	Call with the White House to help with coordination and ensure PMT/White House is aware of current information Call: 866-561-4509; Pin: (b)(6) 202-395-6392 Pin # (b)(6)	As-needed
1500	One Pager ***(end of shift)***	ET DIR	Provide Input to EBT Coordinator	
1500	Congressional call	OCA & NRC *Go-To Team* *(Leeds, M.Johnson, Sherron, B.Boger, etc)* (b)(6)	OCA lead -Audience is Congressional staff who have or are near a plant; Oversight committees; House &Senate leadership	Transfer to OCA
1545	Radiological Community of Interest VTC	Vince Holahan, Tony Ulses, Jim Whitney	Held in SCIF	Transfer to NSIR
1700	PACOM J2 call	RST/PMT	Occurs in SGT Room on Mon, Wed, Fri. PACOM will dial into 301-415-5393.	As-needed
1700	HHS call with 50 states and federal partners	LT/State Liaison	Meeting occurs each Tuesday and Thursday evening, as organized by HHS (N.Natarajan). HHS provides bridge line day of call	Transfer to FSME
1700	DOE Science Panel	RES	Brian Sheron and Richard Lee, out of the box solutions.	Transfer to RES
1700	RST/PMT call with Japan Team	RST/PMT (arranged by the HOO) (b)(6)	Daily update for Site Team and HQ (convenient time for the Site Team)	
1800	Status update/Sit Rep ***(BRIEFING ONLY-not a call)***	EST	EST developed agency briefing documents	Keep based on Feedback, make this primary 1 time daily

Transition Team Reoccurring Daily Actions and Calls

1900	Call with Vince Holahan PACOM	PMT	Status of Radiological Conditions Vince Direct Line – 808.477.9536, if no answer 808.477.9286 or SWO 808.477.8173 Cell (b)(6)	
2000	HHS Call with Pacific	PMT	Meeting occurs each Wed. evening. Call in 888-455-7847 (b)(6) is the pass code. PMT to participate	Once per week (Wednesday)
2000	Call with Industry Consortium (daily)	ET ***(arranged by HOO) (b)(6)	LT coordinates ET Led High-level discussions with industry and NRC Site Team	
2100	PMT call with Japan Team	PMT (arranged by the HOO) (b)(6)	Daily update for Site Team and HQ (convenient time for the Site Team)	
2200	One Pager ***(end of shift)***	ET	Provide Input to EBT Coordinator	
2200	Email One pager to Chairman	ET	Update chairman via email using one-pager	

From: ET02 Hoc
Sent: Wednesday, April 13, 2011 2:52 AM
To: OST01 HOC
Subject: FW: Question from Congressman Markey's staff
Attachments: Fukushima Daiichi Information as of 0230 EDT April 13 for Markey.doc

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From: ET01 Hoc
Sent: Wednesday, April 13, 2011 2:51:48 AM
To: ET02 Hoc
Subject: FW: Question from Congressman Markey's staff
Auto forwarded by a Rule

From: RST01 Hoc
Sent: Wednesday, April 13, 2011 2:51:46 AM
To: ET02 Hoc; ET01 Hoc
Subject: FW: Question from Congressman Markey's staff
Auto forwarded by a Rule

From: RST09 Hoc
Sent: Wednesday, April 13, 2011 2:50 AM
To: RST01 Hoc
Subject: FW: Question from Congressman Markey's staff

Updated wording of table for Rep. Markey's office.

Larry Criscione
RST Severe Accident Analyst

From: RST09 Hoc
Sent: Tuesday, April 12, 2011 6:02 PM
To: RST01 Hoc
Subject: RE: Question from Congressman Markey's staff

Information added qualifying table for Rep. Markey's office.

Antonios Zoulis
RST Severe Accident Analyst

From: RST01 Hoc
Sent: Tuesday, April 12, 2011 3:32 PM
To: RST09 Hoc; RST07 Hoc
Subject: FW: Question from Congressman Markey's staff

000/538

From: Riley (OCA), Timothy
Sent: Tuesday, April 12, 2011 3:31:32 PM
To: RST01 Hoc
Cc: Powell, Amy; Droggitis, Spiros
Subject: FW: Question from Congressman Markey's staff
Auto forwarded by a Rule

RST,
As I discussed over the phone with Mike Brown, OCA would like to provide the attached matrix of pressure and radiation readings from Fukushima to the staffer for Rep. Markey. However, OCA would also like to accompany the data with a statement explaining that the data does not lend itself readily to interpretation; that we cannot offer a comparison of Unit 1 to Unit 2 without relying overly on speculation.
So that I can send the data to Congressman Markey, can you provide me with approved language explaining this?

Timothy Riley
Congressional Affairs Officer
U. S. Nuclear Regulatory Commission
Office of Congressional Affairs
Phone: 301-415-8492
Blackberry: (b)(6)

From: RST09 Hoc
Sent: Tuesday, April 12, 2011 1:46 PM
To: Droggitis, Spiros
Cc: RST01 Hoc
Subject: FW: Question from Congressman Markey's staff

Spiros,

Attached are the pressure and radiation readings for Units 1, 2 and 3 as requested.

Ben Beasley
RST Accident Analyst

From: RST01 Hoc
Sent: Tuesday, April 12, 2011 10:49 AM
To: RST09 Hoc; RST08 Hoc
Subject: FW: Question from Congressman Markey's staff

From: Droggitis, Spiros
Sent: Tuesday, April 12, 2011 10:41 AM
To: RST01 Hoc
Cc: Riley (OCA), Timothy
Subject: Question from Congressman Markey's staff

A staffer from Congressman Markey's office has the following question:

She would like to know what the pressure and radiation readings are for Units 1 and 3 at Fukushima, and what can be inferred from those readings vis the readings at Unit 2.

Thanks

Fukushima Daiichi Information as of 0230 EDT 04/13/2011

	Reactor Vessel Pressure		Containment Status	Drywell Pressure (TEPCO 04/12/2011)	Drywell Radiation (TEPCO 04/12/2011)	Torus Pressure (TEPCO 04/12/2011)	Torus Radiation (TEPCO 04/12/2011)
	Channel A (TEPCO 04/12/2011)	Channel B (TEPCO 04/12/2011)					
Unit 1	60.3 psig	131.7 psig	Damage suspected, slow leakage, N_2 injection	12.9 psig	Uncertain	9.2 psig	1080 rem/hr
Unit 2	-3.3 psig	-3.6 psig	Damage suspected N_2 injection planned by 4/20	-1.6 psig	2810 rem/hr	Uncertain	68.1 rem/hr
Unit 3	-2.8 psig	-11.5 psig	Damage suspected,	0.6 psig	1740 rem/hr	9.8 psig	67.1 rem/hr

Considering the damage that has been done to the site, instruments may no longer be accurately calibrated, but instrument readings may be trusted for trends and approximate measurements. Comparison of Unit 1 to Unit 2 or 3 using the above information is speculative, but indicates Units 2 and 3 are not holding pressure. This may be due to an SRV remaining open on these units. The NRC Japan Team believes there is a stuck open SRV on the Unit 2 reactor. There are some NRC analysts who believe Unit 2 and possibly Unit 3 may have had a partial failure of one or more components of the lower vessel head and a release of some molten fuel into the drywell; GEH and TEPCo do not concur with this analysis. 5

Based on knowledge gained from several decades of analysis and research following the 1979 TMI-2 accident, the NRC has developed an understanding of potential severe accident progression paths (e.g. NUREG 1150, NUREG0933). The available instrument data is being evaluated by the NRC staff against the NRC's understanding of accident sequences. The NRC is making recommendations based on the best available information.

From:	Brenner, Eliot
To:	Hayden, Elizabeth; Strasma, Jan; Clark, Kenneth; Stuckle, Elizabeth; Akstulewicz, Brenda; Chandrathil, Prema; McIntyre, David; Screnci, Diane; Harrington, Holly; Couret, Ivonne; Janbergs, Holly; Ledford, Joey; Sheehan, Neil; Hannah, Roger; Burnell, Scott; Uselding, Lara; Shannon, Valerie; Dricks, Victor; Mitlyng, Viktoria
Subject:	more fire stuff
Date:	Thursday, April 14, 2011 10:39:52 AM
Attachments:	fire questions from Center for Public Integrity 4-13-11 .docx

Please read these as well, and I will ship the transcript of this interview shortly. Questions that roughly parallel the transcript (it was one side of the conversation) are below. I was able to record only Jaczko's side of the conversation with Susan Stranahan.

Eliot

Eliot: Because I want to make the most efficient use of Chairman Jaczko's time, here is a list of questions I would like to ask. Please understand this list is not cast in stone and I reserve the right to change it. But this should give you a sense of the areas of interest I have.

1. You have said that "the Nuclear Regulatory Commission has struggled since the Browns Ferry Fire in 1975 to develop a comprehensive set of fire protection regulations despite the fact that fire is one of the single most significant initiators of accident scenarios for operating reactors." Other industries seem to have dealt with fire safety. Why has this been a difficult issue for the NRC?

2. The nuclear industry points out there has been no major fire at a U.S. reactor since Browns Ferry. However, there have been a number of fires large and small. I'm thinking of the events at the Robinson reactor last year. How significant are even small fires in assessing the overall safety record of a nuclear facility?

3. To what extent is it time to re-evaluate the fire protection oversight, rules and practices at U.S. nuclear facilities and why?

4. Is NFPA 805 a better system of fire protection than Appendix and why will it enhance public health and safety?

000539

5. I covered the Three Mile Island accident and am struck that we're still worrying about the same thematic issues -- such as the "mindset" that we can predict what will happen. Why does this attitude seem to be so hard to shake off within the nuclear industry and within the NRC?

I can be reached at (207) 846-9378 and will be at my phone late this afternoon, looking forward to speaking with Chairman Jaczko. Thanks for you help.

Susan

Eliot Brenner
Director, Office of Public Affairs
Nuclear Regulatory Commission
Rockville, Md.
O: 301-415-8200
C: (b)(6)

From: Hayden, Elizabeth
To: McIntyre, David; Brenner, Eliot; Stuckle, Elizabeth; Harrington, Holly; Burnell, Scott; Anderson, Brian; Couret, Ivonne; Janbergs, Holly; Bonaccorso, Amy
Subject: RE: public call - note to file
Date: Thursday, April 14, 2011 4:17:56 PM

Damn those blogs! I knew they were trouble...

Beth

From: McIntyre, David
Sent: Thursday, April 14, 2011 4:04 PM
To: Brenner, Eliot; Stuckle, Elizabeth; Hayden, Elizabeth; Harrington, Holly; Burnell, Scott; Anderson, Brian; Couret, Ivonne; Janbergs, Holly; Bonaccorso, Amy
Subject: RE: public call - note to file

A quick Google search for "radiation from japan in us" calls up numerous news sites that say radiation detected, no health threat. Then click on "blogs" and it's a whole nuther story.

From: Brenner, Eliot
Sent: Thursday, April 14, 2011 3:20 PM
To: Stuckle, Elizabeth; Hayden, Elizabeth; Harrington, Holly; McIntyre, David; Burnell, Scott; Anderson, Brian; Couret, Ivonne; Janbergs, Holly; Bonaccorso, Amy
Subject: RE: public call - note to file

Thanks on two counts, for taking the call, and pointing out the issue.

From: Stuckle, Elizabeth
Sent: Thursday, April 14, 2011 2:51 PM
To: Brenner, Eliot; Hayden, Elizabeth; Harrington, Holly; McIntyre, David; Burnell, Scott; Anderson, Brian; Couret, Ivonne; Janbergs, Holly; Bonaccorso, Amy
Subject: public call - note to file

Note to file: Spent 35 minutes on a call with Joann Gibbs, a frantic ultra melodramatic woman from (b)(6) She was very frightened about radiation levels in (b)(6) in water, milk air, etc., as well as about some other issues. She cited numerous urls and news talk shows where she got scary misinformation. At the beginning of the call her frantic level was "10", and at the end of the call it was "3". Wonder how long it will take for her to spin herself up again. Relevant issue here is that there are numerous places on line and in the news where information is not factual and is dramatized to the point of unduly frightening naïve or gullible members of the public.

Elizabeth M. Stuckle
Office of Public Affairs
U.S. Nuclear Regulatory Commission
301-415-2169
elizabeth.stuckle@nrc.gov

000/540

Couret, Ivonne

From: Burnell, Scott
Sent: Tuesday, March 22, 2011 12:00 PM
To: Annette Heist
Cc: Brenner, Eliot
Subject: RE: Science Friday, March 2011 edition

Hi Annette;

Oh, later in April is practically New Year's at this point. OK, knowing the basic topic we'll see what's possible. Thanks once again for including us at this point in the conversation.

Scott

-----Original Message-----
From: Annette Heist [mailto:AHeist@npr.org]
Sent: Tuesday, March 22, 2011 11:57 AM
To: Burnell, Scott
Cc: Brenner, Eliot
Subject: RE: Science Friday, March 2011 edition

Hi there--
Thanks for your reply. (I had an underscore in your email address, that's why it bounced.) For the show, we'd like to talk about reactor design here in the US--how reactors are/ aren't different from the reactors in Japan, what the newest designs are, whether older designs need to be changed or retrofitted. We would also like to talk about the recent UCS report on power plant safety. We'd likely have someone from the UCS join the conversation as well.
We aren't looking for this Friday, but perhaps a Friday in April? Right now, any Friday in April except for the 8th would work for us.
If someone from the NRC can join us, I would schedule a preinterview with that person, to go over more specifically what we would like to talk about and to answer any questions that person might have about the show.
Thanks very much for your help Scott. Let me know if I can provide any more information.
Annette

Annette Heist
Senior Producer, NPR's Science Friday
M-Th 610.381.5653
Friday 1-4 PM Eastern (studio) 212.880.3520 cell (b)(6) sciencefriday.com

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From: Burnell, Scott [Scott.Burnell@nrc.gov]
Sent: Tuesday, March 22, 2011 11:44 AM
To: Annette Heist
Cc: Brenner, Eliot
Subject: Science Friday, March 2011 edition

Hi Annette;

I'm not sure why the e-mail bounced, and I greatly appreciate the invitation. Please let me know with as much specificity as possible what you're planning to discuss, as well as the time requirements, and we'll see what can be done. No promises, of course, given the level of effort in directly responding to events in Japan.

Scott

From: LIA03 Hoc
Sent: Thursday, April 14, 2011 2:57 PM
To: LIA08 Hoc; LIA02 Hoc; LIA10 Hoc
Subject: FW: Norwood Departure - 16 April (Saturday)

From: Kozal, Jason
Sent: Thursday, April 14, 2011 2:57 PM
To: Evans, Michele
Cc: Bloom, Steven; LIA02 Hoc; LIA03 Hoc; Norwood, Donald
Subject: FW: Norwood Departure - 16 April (Saturday)

Michele,

Due to the delays with Donald's passport USAID will not be able to get everything completed for travel by COB today. They have booked him to depart on Saturday and will complete the travel admin tomorrow.

V/r,

Jason Kozal
USNRC/NSIR/DPR/CB
301-415-6231

From: RMTPACTSU_AC [mailto:RMTPACTSU_AC@ofda.gov]
Sent: Thursday, April 14, 2011 2:08 PM
To: Bloom, Steven
Cc: Kozal, Jason; travel
Subject: Norwood Departure - 16 April (Saturday)

Mr. Norwoods departure will now be on Saturday, the 16th. Due to the delays caused by the passport issuance, we can't get the TA and everything else done by COB today.

Please confirm receipt.

From: Bloom, Steven [mailto:Steven.Bloom@nrc.gov]
Sent: Thursday, April 14, 2011 1:53 PM
To: RMTPACTSU_AC
Cc: Kozal, Jason
Subject: RE: Meighan - Erroneous Bank Routing Number - Please Correct

Thank you for all your help.

From: RMTPACTSU_AC [mailto:RMTPACTSU_AC@ofda.gov]
Sent: Thursday, April 14, 2011 1:51 PM
To: Bloom, Steven
Subject: RE: Meighan - Erroneous Bank Routing Number - Please Correct

000541

Received it.

From: Bloom, Steven [mailto:Steven.Bloom@nrc.gov]
Sent: Thursday, April 14, 2011 1:38 PM
To: Johnston, Katherine; Kozal, Jason; RMTPACTSU_AC
Cc: travel
Subject: RE: Meighan - Erroneous Bank Routing Number - Please Correct

I just faxed the sheet over with his information .

Steve Bloom

From: Johnston, Katherine [mailto:kjohnston@ofda.gov]
Sent: Thursday, April 14, 2011 1:27 PM
To: Bloom, Steven; Kozal, Jason; RMTPACTSU_AC
Cc: travel
Subject: RE: Meighan - Erroneous Bank Routing Number - Please Correct

We received Mr. Norwood's medical letter and will add it as an attachment in E2 for GC approval once we get all the necessary pieces to finish processing his TA. The letter alone doesn't get approved; it is referred to as proof when needed for the use of Business class.

Thanks,

Katie Johnston
Travel Coordinator
USAID | Office of US Foreign Disaster Assistance
529 14th St. NW, Suite 700
Washington, DC 20045
travel tel: 202.661.9388
tel:202.661.9363
(b)(6)
fax: 202.330.5452

From: Bloom, Steven [mailto:Steven.Bloom@nrc.gov]
Sent: Thursday, April 14, 2011 1:19 PM
To: Kozal, Jason; RMTPACTSU_AC
Cc: travel
Subject: RE: Meighan - Erroneous Bank Routing Number - Please Correct

What is status of medical letter?

From: Kozal, Jason
Sent: Thursday, April 14, 2011 12:52 PM
To: RMTPACTSU_AC
Cc: travel; Bloom, Steven
Subject: RE: Meighan - Erroneous Bank Routing Number - Please Correct

Will do

V/r,

Jason Kozal
USNRC/NSIR/DPR/CB
301-415-6231

From: RMTPACTSU_AC [mailto:RMTPACTSU_AC@ofda.gov]
Sent: Thursday, April 14, 2011 12:33 PM
To: Kozal, Jason
Cc: travel
Subject: RE: Meighan - Erroneous Bank Routing Number - Please Correct

Please get his passport info to me us as soon as possible and I will get the paperwork moving once I receive it. Until we have it, we are stuck.

Passport no:
Passport Type: (Diplomatic/Official/Personal)
Date of Issuance:
Expiration Date:

From: Kozal, Jason [mailto:Jason.Kozal@nrc.gov]
Sent: Thursday, April 14, 2011 12:28 PM
To: RMTPACTSU_AC; travel
Subject: RE: Meighan - Erroneous Bank Routing Number - Please Correct

Just got word that he is on his way to get his passport.

V/r,

Jason Kozal
USNRC/NSIR/DPR/CB
301-415-6231

From: RMTPACTSU_AC [mailto:RMTPACTSU_AC@ofda.gov]
Sent: Thursday, April 14, 2011 12:27 PM
To: travel
Cc: Kozal, Jason
Subject: Meighan - Erroneous Bank Routing Number - Please Correct

Hi Lisa, Ara and Katie,

See the e-mail below from Sean Meighan (bottom of this thread). The bank routing number provided was incorrect. He has provided the correct one.

Also, Jason is checking on Norwood and will get back to us.

Ron

From: Kozal, Jason [mailto:Jason.Kozal@nrc.gov]
Sent: Thursday, April 14, 2011 11:51 AM
To: RMTPACTSU_AC
Subject: Fw:

Ron,

Can you help with below.

I am checking on Norwood.

Sent from an NRC BlackBerry
Jason W Kozal
(b)(6)

From: Bloom, Steven
To: Kozal, Jason
Sent: Thu Apr 14 11:25:03 2011
Subject: Fw:

Can you help.

Sent from an NRC Blackberry
Steve Bloom
(b)(6)

From: Meighan, Sean
To: Bloom, Steven
Sent: Thu Apr 14 11:24:08 2011
Subject: Re:

Steve:

My bank (b)(6)

(b)(6)

(b)(6)

Sean

From: Meighan, Sean
To: Bloom, Steven
Sent: Wed Apr 13 10:00:36 2011
Subject:

From: Couret, Ivonne
To: Burnell, Scott
Subject: FW: CNN call for interview - May piece
Date: Friday, April 15, 2011 1:58:00 PM

Can you call. Ivonne

From: Brenner, Eliot
Sent: Friday, April 15, 2011 1:43 PM
To: Couret, Ivonne
Cc: Sheehan, Neil; Burnell, Scott
Subject: Re: CNN call for interview - May piece

Why don't you ask scott to talk with her. I would be interested in finding out if anyone has been whispering in her ear to pique her interest.
Eliot Brenner
Director, Office of Public Affairs
US Nuclear Regulatory Commission
Protecting People and the Environment
301 415 8200
(b)(6)
Sent from my Blackberry

From: Couret, Ivonne
To: Brenner, Eliot
Cc: Sheehan, Neil
Sent: Fri Apr 15 13:25:30 2011
Subject: CNN call for interview - May piece

Eliot - Dana Garrett for CNN called when I was on leave said she spoke to both Veronika and Neil about a story they are trying to do NOT about Japan but issues with safety at US nuclear plants, groundwater leaks and recent taskforce informational memo. Her phone number is 212-275-7983. Please advise how I should respond. Ivonne

Ivonne L. Couret
Public Affairs Officer
Office of Public Affairs
Media Desk
opa.resource@nrc.gov
301-415-8200

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

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

000542

From: Brenner, Eliot
To: Hayden, Elizabeth; Akstulewicz, Brenda; Chandrathil, Prema; McIntyre, David; Screnci, Diane; Harrington, Holly; Couret, Ivonne; Janbergs, Holly; Ledford, Joey; Sheehan, Neil; Hannah, Roger; Burnell, Scott; Uselding, Lara; Shannon, Valerie; Dricks, Victor; Mitlyng, Viktoria
Subject: japanese nuke recovery plan
Date: Monday, April 18, 2011 8:58:48 AM

We should decline comment on it. It's Japan's plan and it's a Japanese accident. If we ultimately get pushed into a corner and our assessment of the plan for the embassy gets out in the public domain, I have a couple of tap-dancing lines to use.

Eliot

Eliot Brenner
Director, Office of Public Affairs
Nuclear Regulatory Commission
Rockville, Md.
O: 301-415-8200
C: (b)(6)

0001543

Kock, Andrea

From: Nieh, Ho
Sent: Friday, April 15, 2011 9:56 AM
To: McCree, Victor
Subject: TVA article

Vic – came across this article on TVA's proactive steps in response to Japan. Link and full text below.

Arguably, going to dry casks is not be an upgrade per se, whereas additional diesels would be.

Point is action being taken absent regulatory direction.

Would be simple to explain – while we do not discourage such actions, any changes to regulatory requirements would be implemented through a systematic and thorough review, and that review that is underway. - Ho

http://www.nytimes.com/2011/04/15/science/earth/15nuclear.html?_r=1&ref=matthewlwald&pagewanted=print

April 14, 2011

T.V.A. Considers Improvements for 6 U.S. Nuclear Reactors

By MATTHEW L. WALD

WASHINGTON — The Tennessee Valley Authority said Thursday it was considering millions of dollars of improvements to protect its six nuclear reactors from earthquakes and floods.

It is the first American reactor operator to announce safety changes that it is weighing since an earthquake and tsunami set off a nuclear crisis at the Fukushima Daiichi plant in Japan last month. Other operators have said publicly that they might have to make changes, but they have avoided saying what those were.

The T.V.A. issued a fact sheet saying that it was considering reducing the amount of fuel in its spent fuel pools by transferring older fuel to passively cooled "dry casks" and adding additional backup diesel generators.

It also listed three changes that are less commonly discussed: improving electrical switchyards to make them more resistant to earthquakes, adding small generators to recharge cellphone batteries and keep the lights on, and reinforcing the pipes that provide cooling water to spent fuel pools.

Of the six reactors operated by the T.V.A., three are boiling water reactors that resemble the Fukushima reactors. The authority said that none of its reactors are in areas where an earthquake risk is high. But it said it was looking at "potential vulnerabilities from a chain of events, such as damage from a tornado or earthquake combined with flooding from a dam failure."

Nuclear critics have argued that all plants should be required to undertake such analyses of simultaneous events, although the Nuclear Regulatory Commission has generally rejected such hazards as too unlikely for such studies to be mandated. The commission's staff recently began a 90-day review of how prepared American reactors are for severe accidents, but the first progress report on that effort is not expected until early next month.

The spent fuel storage problem has been debated for years. After the attacks of Sept. 11, 2001, Congress asked the National Academy of Sciences to look into the problem, and in 2005 the academy reported that the pools might in fact be vulnerable to terrorism. It said the Nuclear Regulatory Commission should evaluate whether some of the fuel should be moved to dry casks.

000/544

Lately some members of Congress have suggested more use of dry casks.

When spent fuel is removed from a reactor, it continues to generate heat and must be kept submerged for about five years. But after that it can be sealed inside a steel can that is filled with inert gas to prevent rust; the can is then loaded into a small concrete silo with air vents. Air circulating around the can keeps the fuel well below the melting point.

American reactor operators have so far resorted to that technique only when their pools have reached capacity. The pools were designed in an era when nuclear engineers thought the fuel would be hauled away from reactors after a few years for recycling or burial and are therefore quite small; most reactors have installed new equipment in their pools to be able to squeeze in more than was originally intended. But some engineers say that this raises the risk that if the pool were emptied, the fuel could heat to the point that the metal it contains is ignited.

Thinning out the pools by removing old fuel would still leave the hottest materials in place but would reduce the chance of fire.

Robert Alvarez, a former Energy Department official, calculated recently that removing the backlog of fuel older than five years from the spent fuel pools of all 104 operating reactors would cost $3.5 billion to $7 billion and take several years to accomplish.

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

Kock, Andrea

From: Nouri, Ali (Webb) [Ali_Nouri@webb.senate.gov]
Sent: Friday, April 15, 2011 4:11 PM
To: Nieh, Ho
Subject: Re: letter regarding 50 mile evacuation zone in Fukushima

Yes, the weather is fantastic. I'm looking forward to riding this weekend. Also, we are happy to see the White House's intent to renominate the Commissioner and look forward to his Senate confirmation.

Best wishes,

Ali

On Apr 15, 2011, at 10:03 AM, Nieh, Ho wrote:

Dear Ali,

Hope all is well with you – looks like good motorcycle weather today!

Yes, read the letter this morning. Very insightful questions.

Ho

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

From: Nouri, Ali (Webb) [mailto:Ali_Nouri@webb.senate.gov]
Sent: Friday, April 15, 2011 9:43 AM
To: Nieh, Ho
Subject: letter regarding 50 mile evacuation zone in Fukushima

Dear Ho-
I wanted to make sure you see Senator Webb's letter to the Chairman regarding the 50 mile radius evacuation issue.
Best wishes, Ali

Ali Nouri
Legislative Assistant
Office of U.S. Senator Jim Webb

000/545

202-224-4024

From: OST01 HOC
Sent: Saturday, April 16, 2011 1:26 PM
To: Hoc, PMT12; (b)(6)
Subject: RE: turnover
Attachments: Watchbill Apr 16-23.pdf

Attached is the current watchbill that was provided to us by the Response Program Managers. Thanks!

From: Hoc, PMT12
Sent: Saturday, April 16, 2011 1:19 PM
To: OST01 HOC
Cc: (b)(6)
Subject: RE: turnover

John was not aware that he is on duty Monday, Tuesday, Wednesday. Would you please email the current watch bill to John's personal email address.

Thanks.

Kimberly Gambone
PMT12

From: OST01 HOC
Sent: Saturday, April 16, 2011 1:08 PM
To: Hoc, PMT12
Subject: turnover

Hi Kimberly,

John Parillo is on 11-7 on M,T & W. Thanks!

Jeff

0001546

Japan Earthquake ERO Staffing Roster
April 17-23, 2011
Pay Period 9 - Week 2

Position	Date	Time	Staff
Executive Team - Director			
Sat-Sun	4/16-4/17	11pm - 7am	Glenn Tracy
Sun	4/17	7am - 3pm	Roy Zimmerman
Sun	4/17	3pm-11pm	Bruce Boger
Sun-Mon	4/17-4/18	11pm - 7am	Jim Wiggins
Mon	4/18	7am - 3pm	Roy Zimmerman
Mon	4/18	3pm-11pm	Bruce Boger
Mon-Tue	4/18-4/19	11pm - 7am	Jennifer Uhle
Tue	4/19	7am - 3pm	Roy Zimmerman
Tue	4/19	3pm-11pm	Bruce Boger
Tue-Wed	4/19-4/20	11pm - 7am	Jennifer Uhle
Wed	4/20	7am - 3pm	Roy Zimmerman
Wed	4/20	3pm-11pm	Glenn Tracy
Wed-Thur	4/20-4/21	11pm - 7am	Jennifer Uhle
Thur	4/21	7am - 3pm	Roy Zimmerman
Thur	4/21	3pm-11pm	Glenn Tracy
Thur-Fri	4/21-4/22	11pm - 7am	Jennifer Uhle
Fri	4/22	7am - 3pm	Lawrence Kokajko
Fri	4/22	3pm-11pm	Glenn Tracy
Fri-Sat	4/22-4/23	11pm-7am	Mike Johnson
Sat	4/23	7am - 3pm	Jennifer Uhle
Sat	4/23	3pm-11pm	Cynthia Carpenter
Sat	4/23-4/24	11pm - 7am	Mike Johnson
Executive Support Team			
Sat-Sun	4/16-4/17	11pm - 7am	Emily Larson
Sun	4/17	7am - 3pm	Kelly Riner
Sun	4/17	3pm-11pm	Cynthia Dorsey
Sun-Mon	4/17-4/18	11pm - 7am	T. Rowe
Mon	4/18	7am - 3pm	Clyde Ragland
Mon	4/18	3pm-11pm	Annette Stang
Mon-Tue	4/18-4/19	11pm - 7am	T. Rowe
Tue	4/19	7am - 3pm	Emily Larson
Tue	4/19	3pm-11pm	Cynthia Dorsey
Tue-Wed	4/19-4/20	11pm - 7am	Tia Pope
Wed	4/20	7am - 3pm	Tabitha Howard
Wed	4/20	3pm-11pm	Emily Larson
Wed-Thur	4/20-4/21	11pm - 7am	T. Rowe
Thur	4/21	7am - 3pm	Christine Steger
Thur	4/21	3pm-11pm	Cynthia Dorsey
Thur-Fri	4/21-4/22	11pm - 7am	Tia Pope
Fri	4/22	7am - 3pm	Tabitha Howard
Fri	4/22	3pm-11pm	
Fri-Sat	4/22-4/23	11pm-7am	T. Rowe
Sat	4/23	7am - 3pm	Cynthia Dorsey
Sat	4/23	3pm-11pm	Clyde Ragland
Sat	4/23-4/24	11pm - 7am	T. Rowe

Liaison Team - Coordinator			
Sat-Sun	4/16-4/17	11pm - 7am	Milt Murray
Sun	4/17	7am - 3pm	Jake Zimmerman
Sun	4/17	3pm-11pm	Jeff Temple
Sun-Mon	4/17-4/18	11pm - 7am	Milt Murray
Mon	4/18	7am - 3pm	Jake Zimmerman
Mon	4/18	3pm-11pm	Jeff Temple
Mon-Tue	4/18-4/19	11pm - 7am	Milt Murray
Tue	4/19	7am - 3pm	Jake Zimmerman
Tue	4/19	3pm-11pm	Jeff Temple
Tue-Wed	4/19-4/20	11pm - 7am	Milt Murray
Wed	4/20	7am - 3pm	Jeff Temple
Wed	4/20	3pm-11pm	Janelle Jesse
Wed-Thur	4/20-4/21	11pm - 7am	Joe Rivers
Thur	4/21	7am - 3pm	Clyde Ragland
Thur	4/21	3pm-11pm	Janelle Jesse
Thur-Fri	4/21-4/22	11pm - 7am	Joe Rivers
Fri	4/22	7am - 3pm	Clyde Ragland
Fri	4/22	3pm-11pm	Ned Wright
Fri-Sat	4/22-4/23	11pm-7am	Rani Franovich
Sat	4/23	7am - 3pm	Lisa Wright
Sat	4/23	3pm-11pm	Ned Wright
Sat	4/23-4/24	11pm - 7am	Rani Franovich
Protective Measures Team - PAAD			
Sat-Sun	4/16-4/17	11pm - 7am	John Parillo
Sun	4/17	7am - 3pm	Casper Sun
Sun	4/17	3pm-11pm	Michelle Hart
Sun-Mon	4/17-4/18	11pm - 7am	John Parillo
Mon	4/18	7am - 3pm	Kimberly Gambone
Mon	4/18	3pm-11pm	Michelle Hart
Mon-Tue	4/18-4/19	11pm - 7am	John Parillo
Tue	4/19	7am - 3pm	Kimberly Gambone
Tue	4/19	3pm-11pm	Michelle Hart
Tue-Wed	4/19-4/20	11pm - 7am	John Parillo
Wed	4/20	7am - 3pm	Kimberly Gambone
Wed	4/20	3pm-11pm	Casper Sun
Wed-Thur	4/20-4/21	11pm - 7am	Jessica Kratchman
Thur	4/21	7am - 3pm	Kimberly Gambone
Thur	4/21	3pm-11pm	Casper Sun
Thur-Fri	4/21-4/22	11pm - 7am	Jessica Kratchman
Fri	4/22	7am - 3pm	Kimberly Gambone
Fri	4/22	3pm-11pm	Casper Sun
Fri-Sat	4/22-4/23	11pm-7am	Jessica Kratchman
Sat	4/23	7am - 3pm	Jack Foster
Sat	4/23	3pm-11pm	Casper Sun
Sat	4/23-4/24	11pm - 7am	Lou Brandon

Reactor Safety Team			
Severe Accident/PRA			
Sat-Sun	4/16-4/17	11pm - 7am	See-Meng Wong
Sun	4/17	7am - 3pm	Larry Criscione
Sun	4/17	3pm-11pm	Raj Iyengar
Sun-Mon	4/17-4/18	11pm - 7am	Steven Arndt
Mon	4/18	7am - 3pm	Larry Criscione
Mon	4/18	3pm-11pm	Antonios Zoulis
Mon-Tue	4/18-4/19	11pm - 7am	Steven Arndt
Tue	4/19	7am - 3pm	Larry Criscione
Tue	4/19	3pm-11pm	Antonios Zoulis
Tue-Wed	4/19-4/20	11pm - 7am	Steven Arndt
Wed	4/20	7am - 3pm	Mirela Gavrilas
Wed	4/20	3pm-11pm	Antonios Zoulis
Wed-Thur	4/20-4/21	11pm - 7am	Steven Arndt
Thur	4/21	7am - 3pm	Mirela Gavrilas
Thur	4/21	3pm-11pm	Antonios Zoulis
Thur-Fri	4/21-4/22	11pm - 7am	See-Meng Wong
Fri	4/22	7am - 3pm	
Fri	4/22	3pm-11pm	
Fri-Sat	4/22-4/23	11pm-7am	
Sat	4/23	7am - 3pm	Raj Iyengar
Sat	4/23	3pm-11pm	
Sat	4/23-4/24	11pm - 7am	See-Meng Wong
BWR Expertise			
Sat-Sun	4/16-4/17	11pm - 7am	Eva Brown
Sun	4/17	7am - 3pm	Larry Vick
Sun	4/17	3pm-11pm	Chuck Norton
Sun-Mon	4/17-4/18	11pm - 7am	Eva Brown
Mon	4/18	7am - 3pm	Tim Kolb
Mon	4/18	3pm-11pm	Chuck Norton
Mon-Tue	4/18-4/19	11pm - 7am	Jim Shea
Tue	4/19	7am - 3pm	Tim Kolb
Tue	4/19	3pm-11pm	Chuck Norton
Tue-Wed	4/19-4/20	11pm - 7am	Jim Shea
Wed	4/20	7am - 3pm	Mike Brown
Wed	4/20	3pm-11pm	
Wed-Thur	4/20-4/21	11pm - 7am	Jim Shea
Thur	4/21	7am - 3pm	Mike Brown
Thur	4/21	3pm-11pm	
Thur-Fri	4/21-4/22	11pm - 7am	Jim Shea
Fri	4/22	7am - 3pm	Tim Kolb
Fri	4/22	3pm-11pm	
Fri-Sat	4/22-4/23	11pm-7am	Jim Shea