From: PMT09 Hoc
Sent: Monday, March 14, 2011 6:38 AM
To: Hoc, PMT12
Subject: below

From randy Sullivan

Thumbnail analysis of direct exposure rate reading on the Regan Aircraft Carrier. This is only an order of magnitude analysis, based on very limited data and calculation, but it seems to indicate an important consistency.

NRC performed a Rascal calculation for 40% core damage (melt) and design leakage (1%). NARAC indicated they thought our calculation was a factor of 500 low based on a 0.6 mrem/hr reading on the aircraft carrier about 100 nautical miles away. Cs-137 has been found in offsite contamination swipes.

A back of the envelope calculation shows that a 20% release per hour is about a factor of 500 less than 1% per day... So, if one assumes that containment venting approximates a 20%/hr release, it would appear that the Regan measurement is not inconsistent with significant fuel melt and venting.

We understand they are venting when pressure reaches twice design (90 pounds in one case U1?) Termination pressure is unknown, but would likely be below design. We have not figured out volume, curies, etc. but perhaps could be done.

There is no hardened vent, Tepco used SBGTS for venting.

From: PMT09 Hoc
Sent: Monday, March 14, 2011 6:25 AM
To: LIA07 Hoc
Subject: attached
Attachments: Sen Boxer response.doc

Randy Sullivan pmt

3/14/11 6:00 AM

Sen. Boxer Questions regarding nuclear accident in Japan

(b)(5)

(b)(5)

/

From: PMT09 Hoc
Sent: Monday, March 14, 2011 6:25 AM
To: RST01 Hoc
Subject: boxer response
Attachments: Sen Boxer response.doc

Attached I hope

Randy Sullivan PMT

From: Destin, Tony R., MSgt USAF <(b)(6)>
Sent: Monday, March 14, 2011 4:39 AM
To: (b)(6)
Cc:

(b)(6)

Subject: FW: RFI 216 Slides for OSSJ
Attachments: RFI_216U_0600Z_14MAR2011_OSSJ.PPT

Current time is 14 Mar/0838Z. The times are slightly off for the 8 and 12 hour plots that was requested.

V/r,

TONY R. DESTIN, MSgt, USAF
Defense Threat Reduction Agency
START Nuclear Division Detachment Japan
Superintendent, Logistics
DSN 315-225-8638
Comm 011-81-31175-58638

-----Original Message-----
From: Klein, Kevin CONTRACTOR
Sent: Monday, March 14, 2011 5:33 PM
To: OSSJ
Subject: RFI 216 Slides for OSSJ

All,

Attached are the slides from Reachback you requested. Thanks.

Kevin J. Klein
SAIC/DTRA Operations Center
(703)767-2116

(b)(6)

From: Klein, Kevin CONTRACTOR <(b)(6)> on behalf of DTRA Operations Center <(b)(6)>

Sent: Monday, March 14, 2011 4:10 AM

To: (b)(6)

Subject: RFI 216 Update

Attachments: RFI_216U_0600Z_14MAR2011_rev1.PPT

All,

Attached is the latest update for 216. Thanks.

Kevin J. Klein
SAIC/DTRA Operations Center
(703)767-2116
(b)(6)

Ops:

Here is a new revision to the latest update to RFI_0216U. Please forward.

Respectfully,

Defense Threat Reduction Agency
(703) 767-3448, (DSN 427-)
Unclass: (b)(6)
SIPR: (b)(6)
JWICS: (b)(6)

R&D Enterprise
Innovation & Systems Engineering Office
Reachback Division

Planning: Model of a Nuclear Reactor Incident in Japan as a result of an earthquake – Preliminary Update

RFI – 216U

13MAR2011

Requestor: USFJ

As of 140801ZMAR11

R&D Enterprise
Innovation & Systems Engineering Office
Reachback Division
(703) 767-3448, DSN 427-

Distribution: ~~Limited to DoD and authorized contractors. Further distribution contact DTRA.~~
Derived From: Navy
Reason: E.O. 12958 sections 1.4 (e), (g) and (h).

Request Summary

- ~~(FOUO)~~ Request data
  - Requestor: (b)(6)
  - Contact: (b)(6)
  - Request: A model of a nuclear incident at the Fukushima Daiichi – 1 and -3 nuclear power plant in Japan.

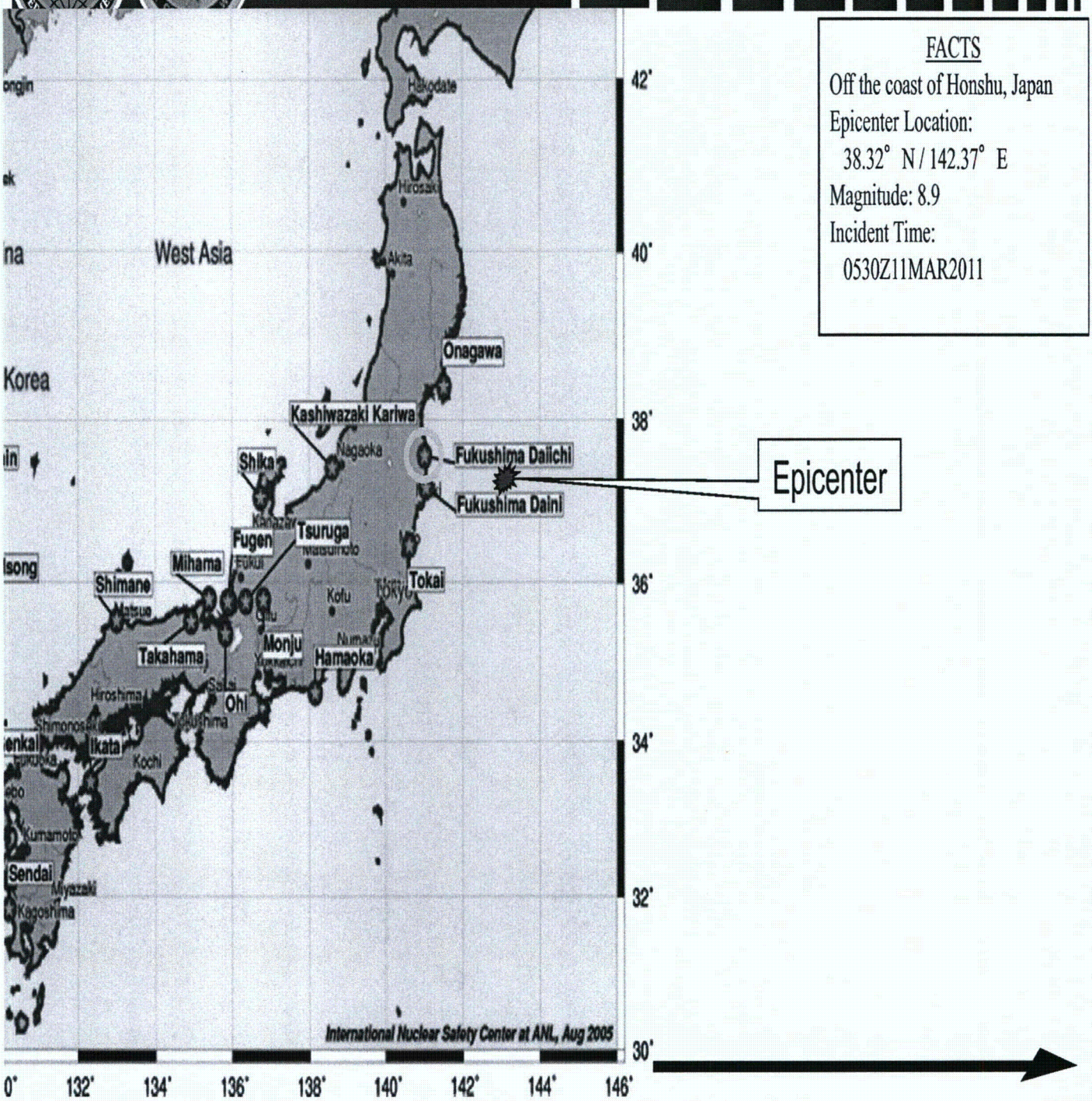
Location: Fukushima Daiichi, Japan Latitude: 37.42139° N Longitude: 141.0325° E
Time: 0530Z Date: 12MAR2011
Hazard: Accident at nuclear facility in Japan
Weather: Global Numerical Weather Prediction: 0.5° × 0.5° resolution GFS from NCEP
Comments: **This is a preliminary update. Additional details and model results will be provided in a final updated product.**

- ~~(FOUO)~~ Solution
  - Summary: Integrated dose plots provided on the following slides
  - Employment: Real World
  - Reachback: Team

Possible Release – Situational Details Unknown

Nuclear Power Plants

SCOPING PURPOSES ONLY



FACTS

Off the coast of Honshu, Japan

Epicenter Location:

38.32° N / 142.37° E

Magnitude: 8.9

Incident Time:

0530Z11MAR2011

As of 140801ZMAR11

Fukushima Daiichi-1 Status

- The reactor is shut down. No offsite power, no diesel electric generators working
- Explosion occurred at Unit 1 following 12MAR2011 0636Z earthquake. The secondary containment was damaged
- At 1120Z 12 MAR2011, operators began injecting sea water and boric acid into the reactor core. The combination acts to cool the reactor and absorb neutrons, helping to stabilize the core.
- Sea water is also being used to provide external cooling to the torus
- Water level in the reactor is out of measuring range, but at least 170 cm below the top of the core
- The national government has instructed the evacuation for those locals residents within 20 km radius of the site. An estimated 170,000 people have been evacuated. Full evacuation is not complete
- Radiation levels at the boundary of the site have been reported to be above background. Radiation monitoring at 0520Z 13MAR2011 indicates highest level is at measuring point MP4 of 47.1 uSv/hour (4.7 mrem/hour). The Japan Nuclear and Industrial Safety Agency (NISA) confirmed presence of cesium-137 and iodine-131 in the vicinity of the site.Radiation levels at the boundary of the site have been reported to be above background. confirmed the presence of Cs-137 and I-131 in the vicinity of the site.

Source: USNRC Emergency Operations Center Status Update, 0200Z 14MAR2011

Fukushima Daiichi-3 Status

- The reactor is shut down. No offsite power, no diesel electric generators working
- Tokyo Electric Power Company (TEPCO) is working with the Japanese national government to reduce the pressure in the reactor containment. Containment remains intact.
- TEPCO informed Japanese Cabinet that Unit-3 water injection stopped and water level decreased exposing fuel. Reactor water level decreased to -150 to -200 cm below the top of the core
- Efforts to restart the Reactor Core Isolation Cooling System failed at 2010Z 12MAR2011. Emergency Core Cooling System flow could not be confirmed. *Core Damage Likely.*
- Alternate methods to inject water into the core are being investigated.
- Containment sprays used to lower the pressure within the reactor containment have been cancelled
- A reactor pressure vessel manual safety valve was opened to lower the reactor pressure. The valve opening procedure ended at 0220Z 13MAR2011. This procedure was immediately followed by injection of sea water and boric acid into the reactor core.
- TEPCO does not believe there is any reactor coolant leakage inside the reactor containment vessel.
- At 0200Z 14MAR2011, a hydrogen explosion has occurred. Explosion is believed at this time to not compromise primary containment.

Source: USNRC Emergency Operations Center Status Update, 0200Z 14MAR2011

Possible Release – Situational Details Unknown

Fukushima Daiichi DTRA Modeling Assumptions Most Likely

- **Scenario: some core damage; primary containment building integrity intact; venting occurring to reduce core temperature and pressure**

- Continuous Release – Steam released for decay heat removal
- HPAC –Release Assumptions:
  - ✓ Shut down time of reactor concurrent with earthquake
  - ✓ Release time concurrent with explosion
  - ✓ NFAC Reactor Accident
    - ✓ Containment monitor reading: 10 Rem/hr (unconfirmed)
    - ✓ Sprayers: Off (unconfirmed)
    - ✓ Filters: On (unconfirmed)
  - ✓ Weather 40 km GFS

Fukushima Daiichi DTRA Modeling

- **Summary of Models Provided in this Briefing**

- Assumption 1 – Fukushima Daiichi #1 suffers moderate release incident at time 12 Mar 2011 0530 Z. This release was 12 hours in duration. With this modeling assumption, as of 1800 Z 13 March, there would be minimal airborne radionuclides. Fukushima Daiichi #3 had a controlled release from 12MAR2011 from 2100Z-2341Z, which HPAC modeled as a 12-hour release.

- Assumption 2 (Most Dangerous)– A continuous release at Fukushima Daiichi #1 (see next slide – **no longer being updated; included for reference only)**

Possible Release – Situational Details Unknown

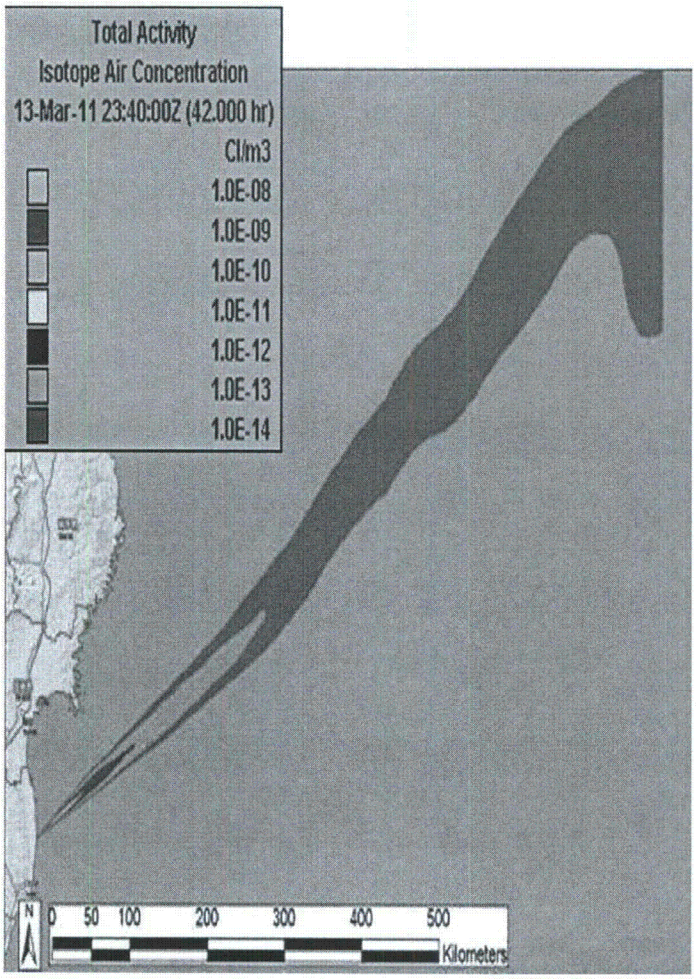
Fukushima Daiichi (Impacts) – Most Likely

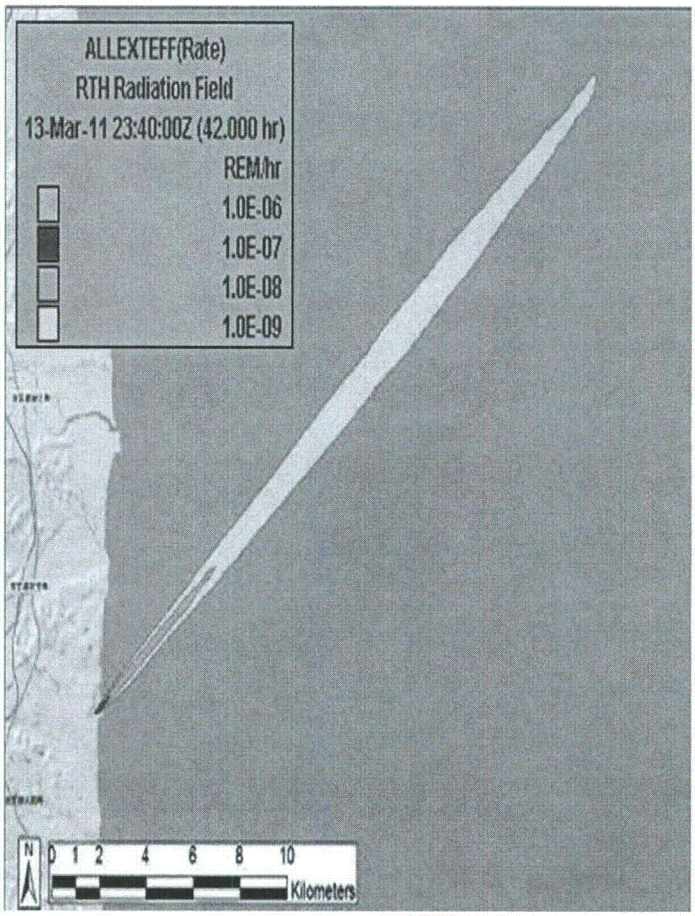
Assumed Core Damage & Venting

- Weather
  - NW winds (offshore) will becoming northerly (along shore Monday night (14MAR). By Tuesday morning (15MAR) winds will becoming northeasterly (onshore) with increasing chance of precipitation (rain). NE winds are expected through Wednesday morning (16MAR).
- Japan has evacuated out to 20 km around site; ground operations should carefully monitor conditions within this zone.
- Operations in the area of the facility should include monitoring equipment.
- Air operations minimally impacted, but coordination with local authorities recommended
- Radiation hazard is above background. Level of concern is 0.1 Rem integrated dose (see next slides)
- As core pressure and temperature lower and stabilize, radiation levels will lower accordingly.

Possible Release – Situational Details Unknown

Fukushima Daiichi – 0000Z 14MAR2011 (Far)



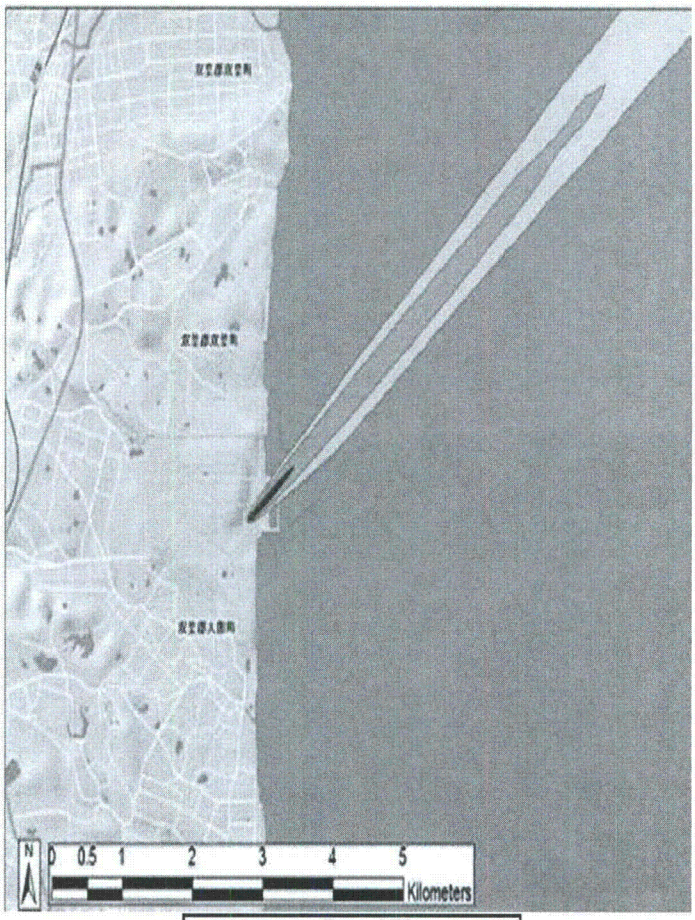


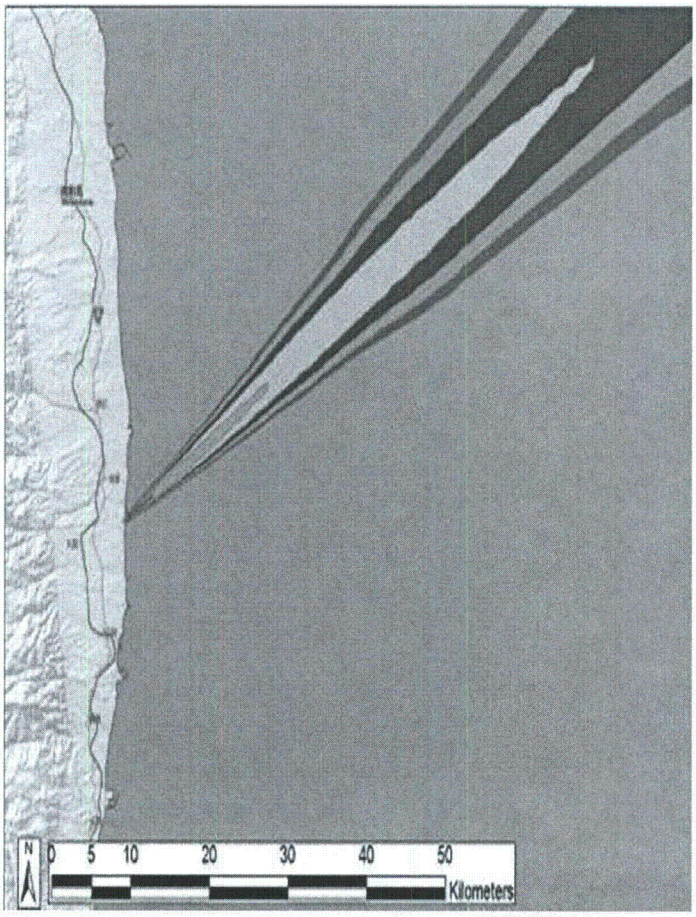
FACTS

Fukushima Daiichi
37.42139° N/ 141.0325° E
0530Z 12MAR2011
Type: Nuclear Facility Accident
Weather: 15 km WRF
Model: HPAC 5.0 SP1
Static Population Estimates:
LandScan 2009

Possible Release – Situational Details Unknown

Fukushima Daiichi – 0000Z 14MAR2011 (Near)





FACTS

Fukushima Daiichi

37.42139° N/ 141.0325° E

0530Z 12MAR2011

Type: Nuclear Facility Accident

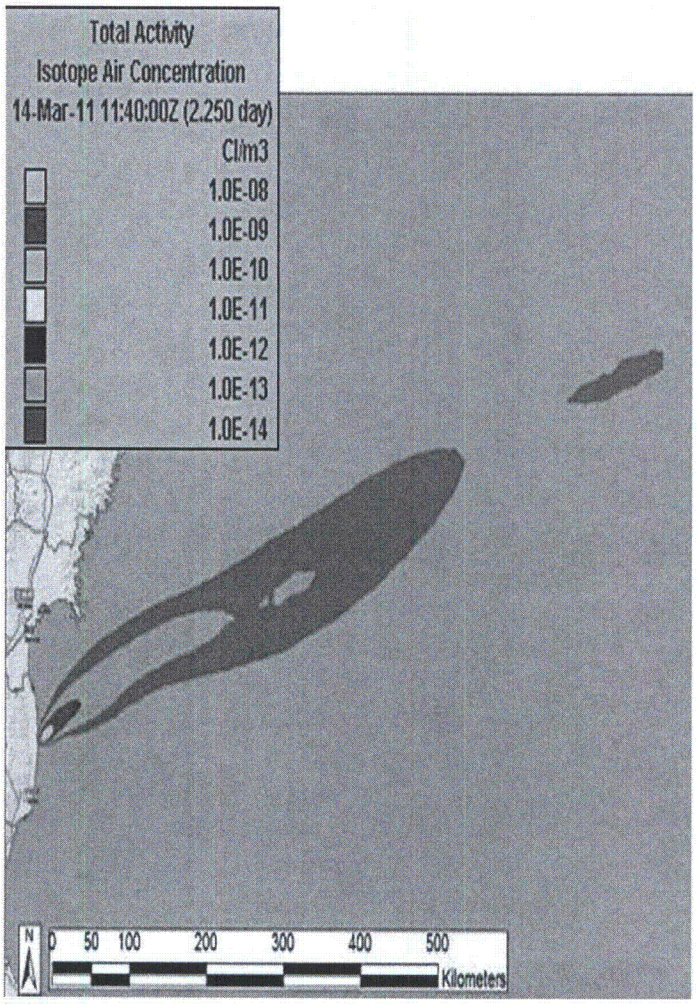
Weather: 15 km WRF

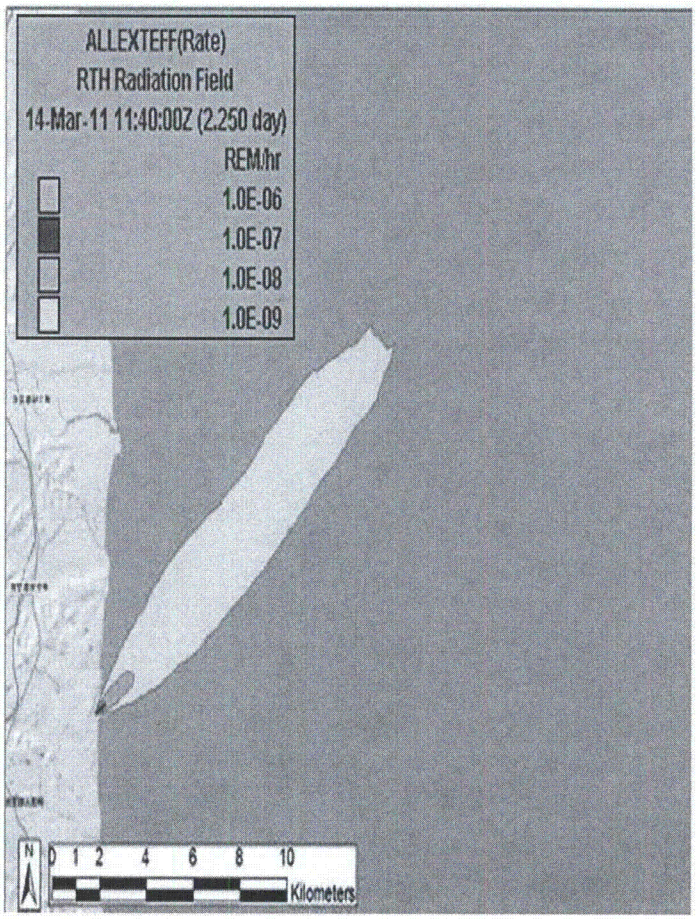
Model: HPAC 5.0 SP1

Static Population Estimates:
LandScan 2009

Possible Release – Situational Details Unknown

Fukushima Daiichi – 0000Z 14MAR2011 (Far)





FACTS

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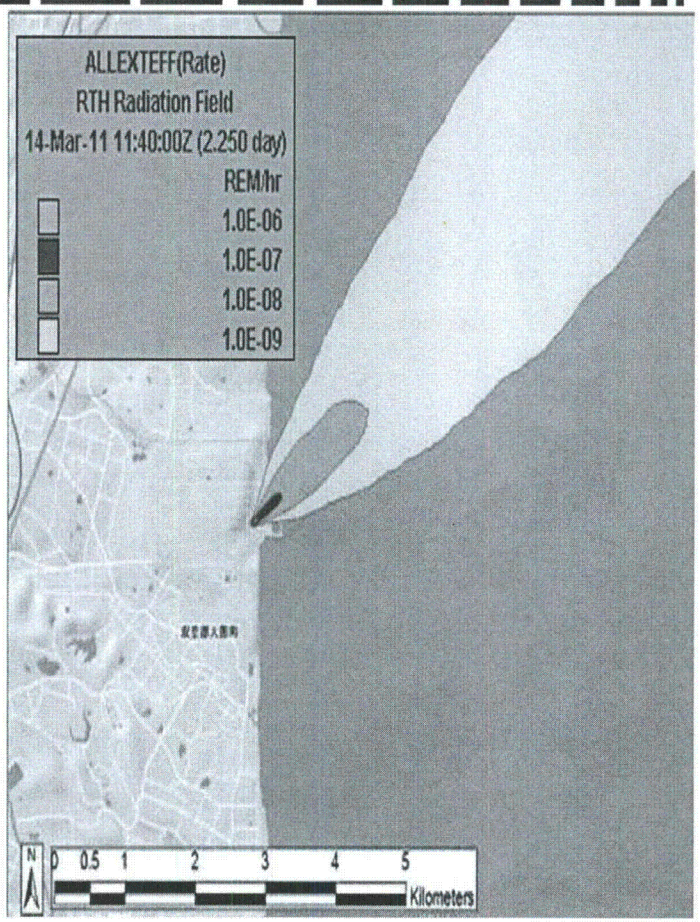
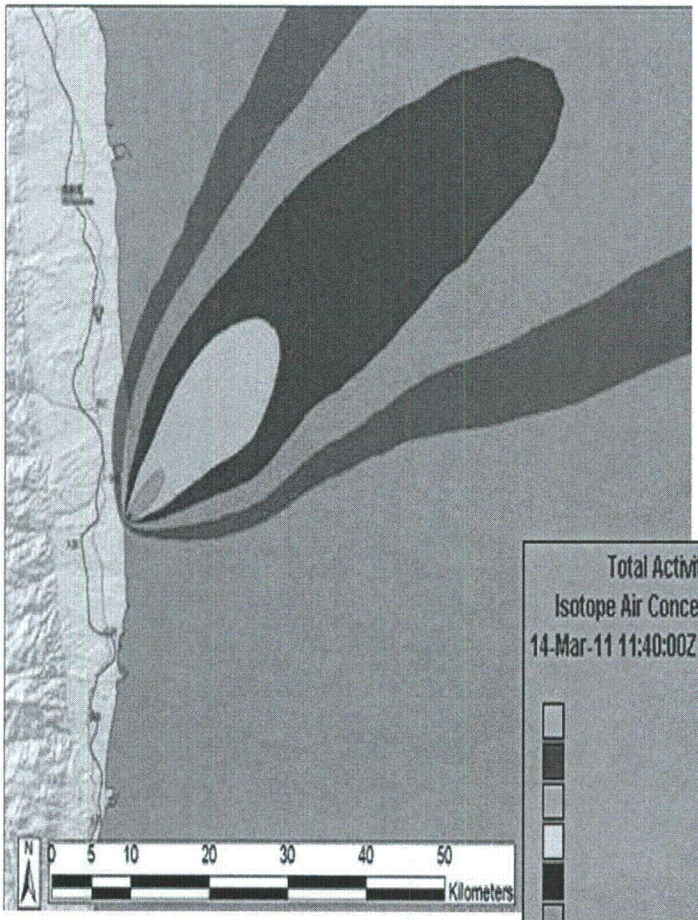
37.42139° N/ 141.0325° E
0530Z 12MAR2011
Type: Nuclear Facility Accident
Weather: 15 km WRF
Model: HPAC 5.0 SP1
Static Population Estimates:
LandScan 2009

Possible Release – Situational Details Unknown

Fukushima Daiichi – 0000Z 14MAR2011 (Near)





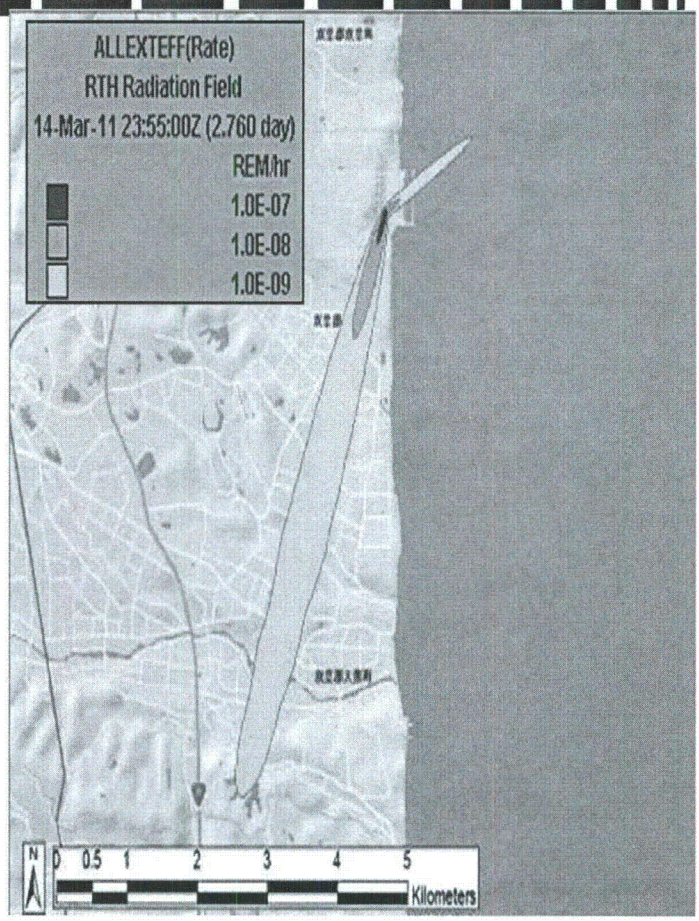
Total Activity
Isotope Air Concentration
14-Mar-11 11:40:00Z (2.250 day)
Ci/m3
1.0E-08
1.0E-09
1.0E-10
1.0E-11
1.0E-12
1.0E-13
1.0E-14

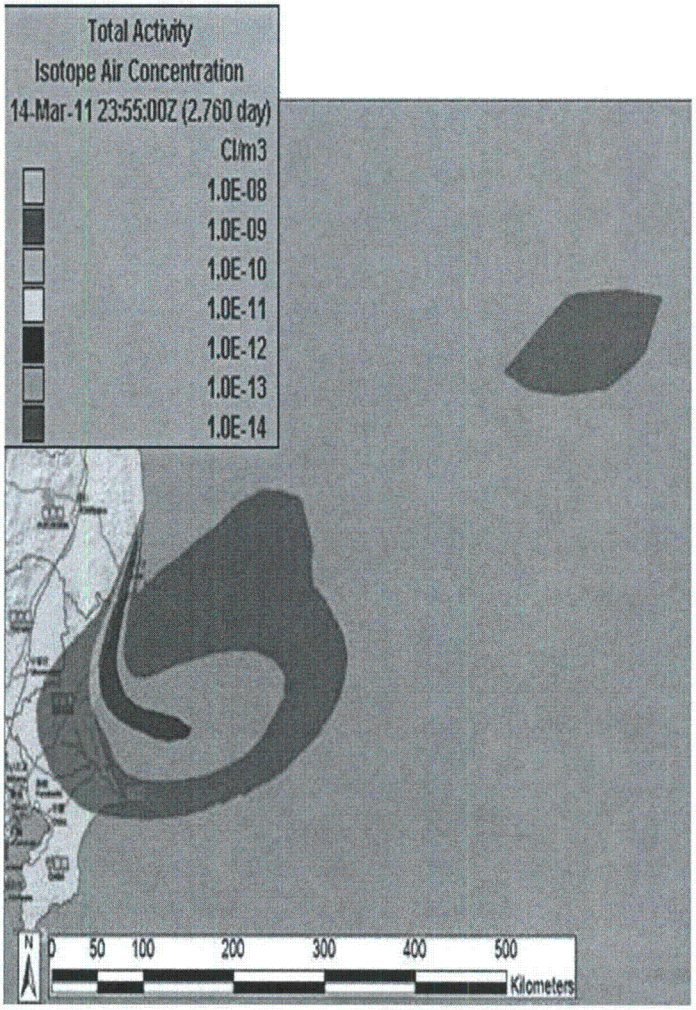
FACTS

Fukushima Daiichi
37.42139° N/ 141.0325° E
0530Z 12MAR2011
Type: Nuclear Facility Accident
Weather: 15 km WRF
Model: HPAC 5.0 SP1
Static Population Estimates:
LandScan 2009

Possible Release – Situational Details Unknown

Fukushima Daiichi – 0000Z 14MAR2011 (Far)



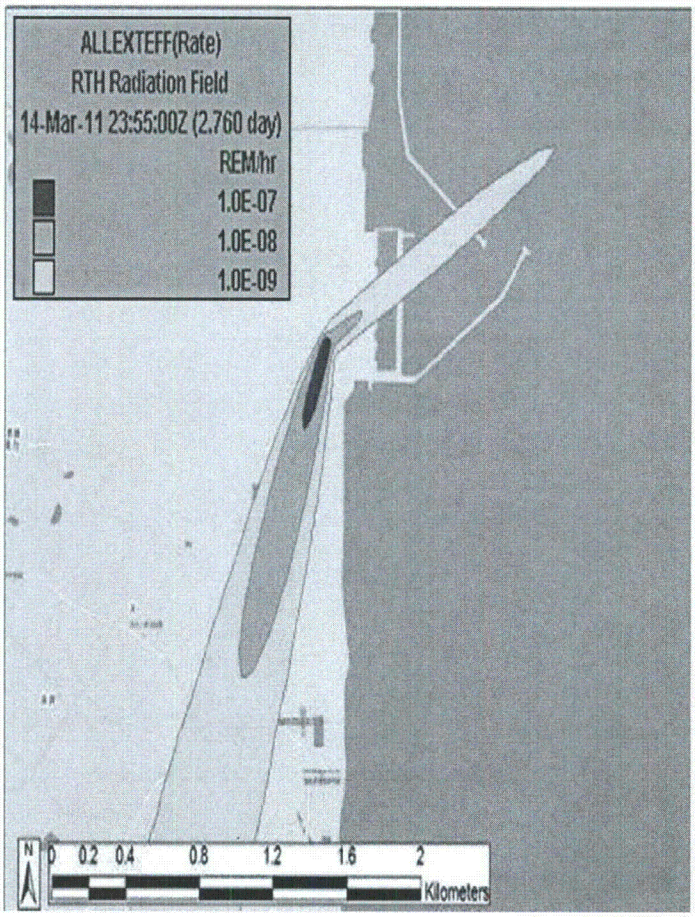


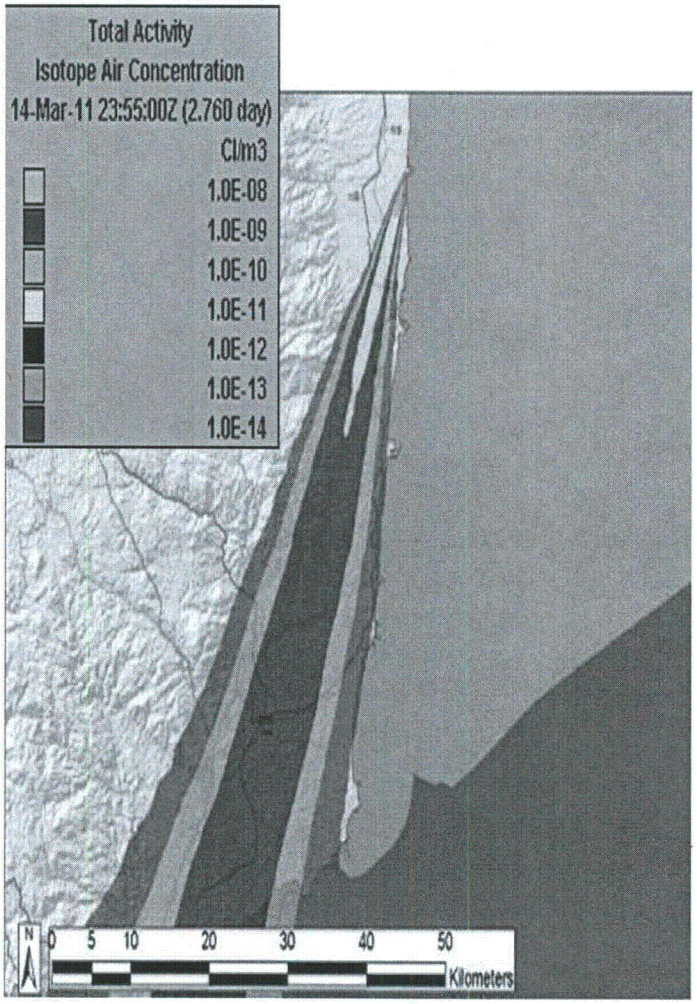
FACTS

Fukushima Daiichi
37.42139° N/ 141.0325° E
0530Z 12MAR2011
Type: Nuclear Facility Accident
Weather: 15 km WRF
Model: HPAC 5.0 SP1
Static Population Estimates:
LandScan 2009

Possible Release – Situational Details Unknown

Fukushima Daiichi – 0000Z 14MAR2011 (Near)





FACTS

Fukushima Daiichi

37.42139° N/ 141.0325° E

0540Z 12MAR2011

Type: Nuclear Facility Accident

Weather: 15 km WRF

Model: HPAC 5.0 SP1

Static Population Estimates:
LandScan 2009

Possible Release – Situational Details Unknown

Fukushima Daiichi-1 DTRA Modeling Assumptions – Most Dangerous

- **Scenario:** Modeled as a moderate reactor accident. The source terms mainly involve the noble gas components of the reactor inventory. **(There is no evidence this scenario has occurred)**
- Partial Core Melt – Heat Induced Fuel Element Failure (Core was Uncovered)
- Continuing Release – Steam released for decay heat removal
- HPAC –Release Assumptions:
  - ✓ Shut down time of reactor concurrent with earthquake
  - ✓ Release time concurrent with explosion
  - ✓ NFAC Reactor Accident (moderate pre-defined for plant)
  - ✓ Weather 15 km WRF – Mesoscale Numerical Weather Prediction (FNMOC)

Possible Release – Situational Details Unknown

Fukushima Daiichi-1 (Ground Impact)

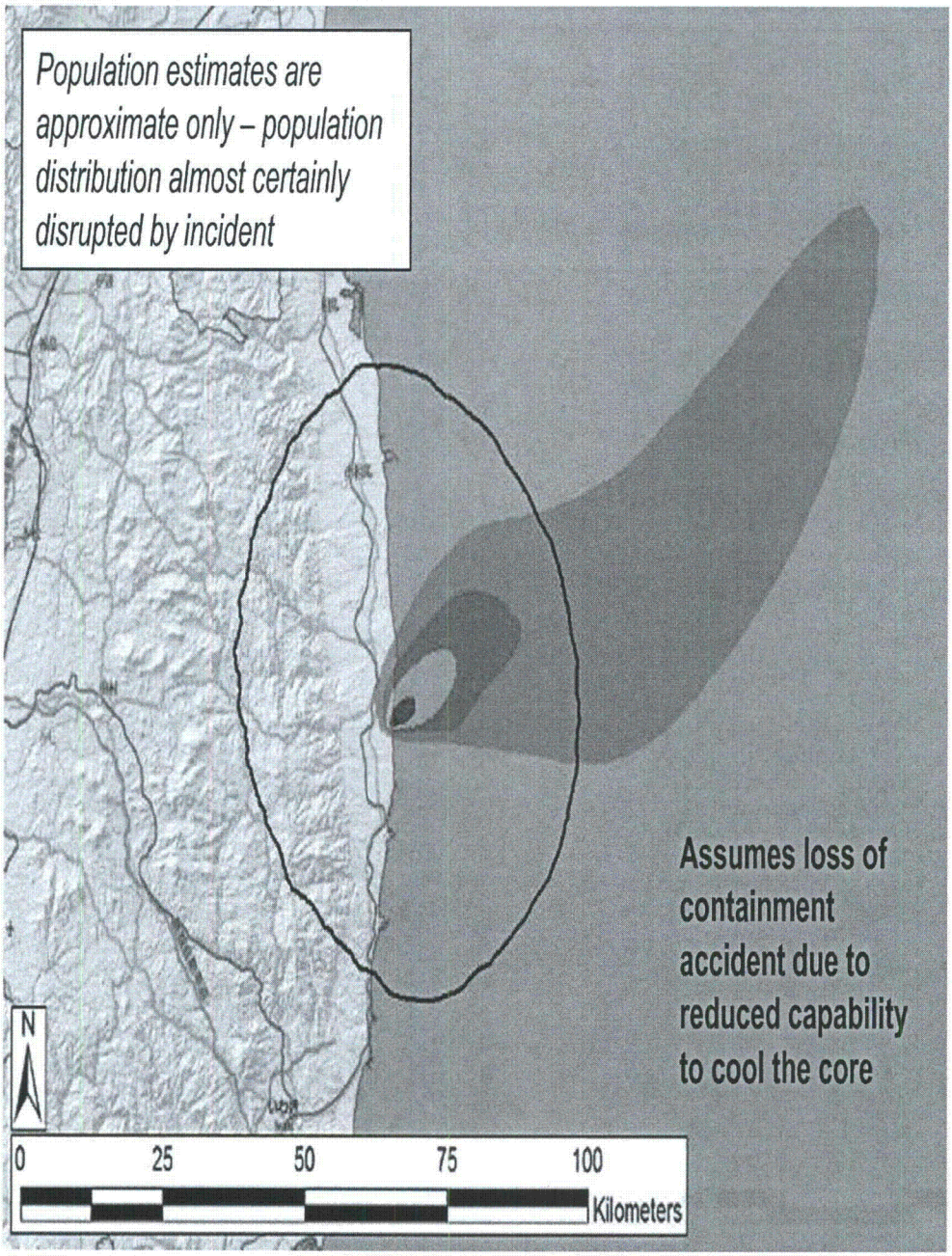
Assumed Core Damage & Containment Bypass – Most Dangerous

- Weather
  - NW winds (offshore) will becoming northerly (along shore Monday night (14MAR). By Tuesday morning (15MAR) winds will becoming northeasterly (onshore) with increasing chance of precipitation (rain). NE winds are expected through Wednesday morning (16MAR).
- Japan has evacuated out to 12 miles around site; ground operations should carefully monitor conditions within this zone.
- Operations in the area of the facility should include monitoring equipment.
- 1.0 rem level for shelter and 5.0 rem level for evacuation on next slide are based on US Protective Action Guidelines (PAG).
- Best protection is time (minimize exposure), distance (away from site), and shielding.

Possible Release – Situational Details Unknown

Fukushima Daiichi-1 (Effect at Ground Level)

Moderate Reactor Incident –Most Dangerous



Combined HPAC Integrated Radiation Dose
"Best Estimate" - Mean Contours
14-Mar-11 06:00:00Z (24.000 hr)

Protective Action Regions
50 Year TEDE Dose

	cSv (Rem)	In contour population
Emer Life Saving	25.0	1,095
Evacuate	5.0	2,577
Shelter	1.0	4,257
Monitor	0.1	10,512

Exceedance Contour
50 Year TEDE Dose

	cSv (Rem)	In contour population
10%	1.0	141,271

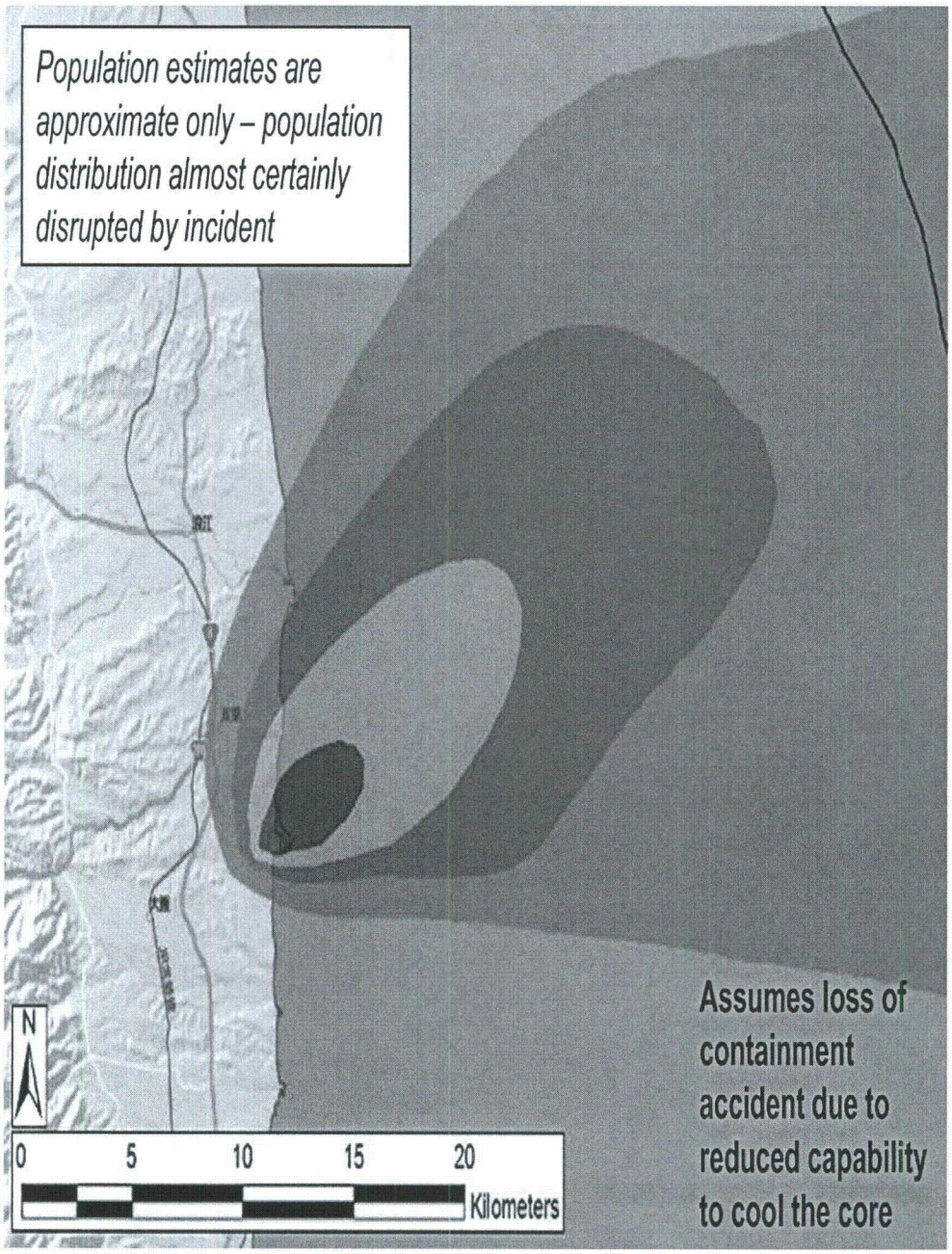
FACTS

Fukushima Daiichi
37.42139° N/ 141.0325° E
0530Z 12MAR2011
Type: Nuclear Facility Accident
Weather: 15 km WRF
Model: HPAC 5.0 SP1
Static Population Estimates:
LandScan 2009

Possible Release – Situational Details Unknown

Fukushima Daiichi-1 (Effect at Ground Level)

Moderate Reactor Incident –Most Dangerous



Combined HPAC Integrated Radiation Dose
"Best Estimate" - Mean Contours
14-Mar-11 06:00:00Z (24.000 hr)

Protective Action Regions
50 Year TEDE Dose

	cSv (Rem)	In contour population
Emer Life Saving	25.0	1,095
Evacuate	5.0	2,577
Shelter	1.0	4,257
Monitor	0.1	10,512

Exceedance Contour
50 Year TEDE Dose

	cSv (Rem)	In contour population
10%	1.0	141,271

FACTS

Fukushima Daiichi
37.42139° N/ 141.0325° E
0530Z 12MAR2011
Type: Nuclear Facility Accident
Weather: 15 km WRF
Model: HPAC 5.0 SP1
Static Population Estimates:
LandScan 2009

Possible Release – Situational Details Unknown

Fukushima Daiichi-1 (Air Operations Impacts)

Moderate Reactor Incident –Most Dangerous

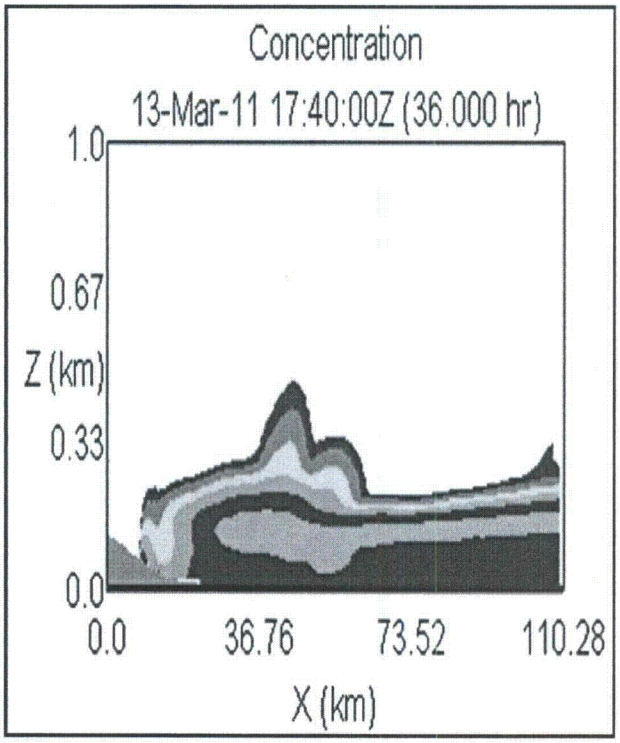
- The vertical extent of the radiation hazard is based on our worse case scenario.
- Based on our forecasted winds, radioactive cloud extends to a height of 3,500 ft, and ~35 miles downwind.
- Higher radiation levels may be encountered closer to the facility and the plume centerline.
- Recommend aircraft stay above 3,500 ft in the vicinity of the plume.
- Operations close to the facility should include monitoring equipment.

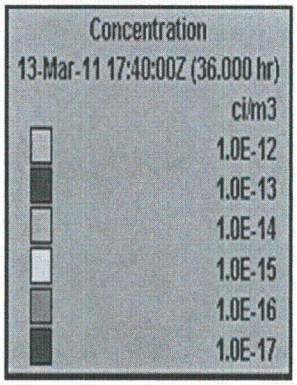
Possible Release – Situational Details Unknown

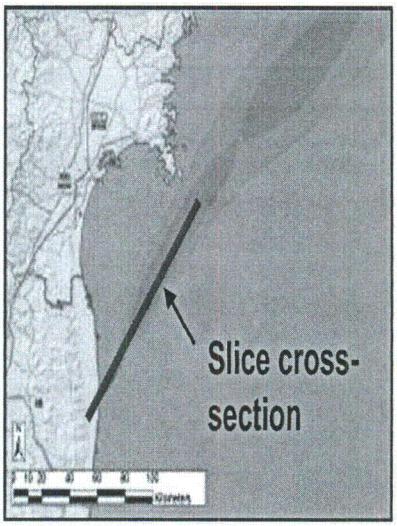
Fukushima Daiichi-1

Most Likely Release Scenario

Vertical Slice @ 1740Z 13 March







Assumes loss of containment accident due to reduced capability to cool the core

Note: The plume will change shape and structure as a function of time – slices at other times were similar or smaller. Higher concentrations were generally at or below 0.5 km elevation, lower concentrations up to approx 1 km.

FACTS

Fukushima Daiichi
37.42139° N/ 141.0325° E
0530Z 12MAR2011
Type: Nuclear Facility Accident
Weather: 15 km WRF
Model: HPAC 5.0 SP1
Static Population Estimates:
LandScan 2009

Backup: Radiation Human Effects – Military Application

Human Effects Contours (Integrated): These holistic effects are designed to facilitate Warfighter decisions and application.

50% expected mortality within 60 days for the population in the contour
50% of the population in the contour may experience nausea and vomiting
5% of the population in the contour may experience nausea and vomiting
Maximum dose allowed for life saving (25 cSv (Rem))
Personnel within the 5.0 cSv (Rem) contour may need to be evacuated
Personnel within the 1.0 cSv (Rem) contour may need to shelter
Personnel within the 0.1 cSv (Rem) contour may need to be monitored
90% confidence level that 1.0 Rem exposure is possible. Accounts for atmospheric uncertainties

Combined HPAC Integrated Radiation Dose

Probable Acute Effects
All External Effective Dose

	cSv (Rem)	In contour population
50% Fatalities (LD50/60)	410.0	Values Vary
50% Vomiting	240.0	
5% Vomiting	75.0	

Protective Action Regions
50 Year TEDE Dose

	cSv (Rem)	In contour population
Emer Life Saving	25.0	Values Vary
Evacuate	5.0	
Shelter	1.0	
Monitor	0.1	

Exceedance Contour
50 Year TEDE Dose

	cSv (Rem)	In contour population
10%	1.0	Values Vary

Notes: Casualty numerical figures are based upon a population database (LandScan). LandScan is based on the 2000 census for the U.S. (other nations vary), overhead imagery, geo-economic, and other observable data and was updated in 2009. Population is assumed static for calculations. The population numbers next to associated hazard levels are the people contained within the entire contour based upon LandScan 2009 or otherwise noted. For planning purposes, estimates are assumed to be accurate within +10/-5%. Validation testing indicates agreement within 20% for select examined areas. The population data will not predict major shifts in personnel such as relocations (i.e.: religious pilgrimages, refuges, evacuations), events (i.e.: inaugurations, Olympics), or other population shifts. In such cases the population database needs to be updated to reflect actual conditions.

Backup: Radiation Unit Conversions

- Activity
  - 1 Curie (Ci) = 3.7×10^{10} Becquerels (Bq) = 3.7×10^{10} disintegrations/sec
  - Activity is a measure of atomic disintegrations per second.
  - Exponentially decays with age and is relative to specific radio-nuclide and age.
- Exposure or Dose Rate
  - 1 Gray (Gy) = 100 centi-Gray (cGy)
  - 1 centi-Gray (cGy) = 1 radiation absorbed dose unit (rad)
  - Dose is a measure of the energy deposited into a given mass.
  - Exposure when integrated over a time combined with an estimate of human tissue damage yields dose. Radiation detectors usually display instantaneous dose rate (e.g., cGy/hr, rad/hr).
- Dose Equivalent
  - 1 Sievert (Sv) = 100 centi-Sievert (cSv)
  - 1 centi-Sievert (cSv) = 1 Roentgen Equivalent to Man (REM)
  - An equivalent measurement or estimation of possible damage from ionizing radiation to human tissue. Dose Equivalent varies with type of human tissue exposed, ingestion, shielding, time, radiation type and energy.
- Exposure
  - 1 roentgen (R) = 2.58 * 10^-4 Coulombs (C) per kg (in air)
  - Used to measure x and gamma ray radiation. 1 R ~ 1 rad ~ 1 rem for x and gamma.

Possible Release – Situational Details Unknown

Backup: Radiation Exposure Reference

Exposure	cGy / Rad / REM / cSv	Reference
Cross Country Civilian Flight (cosmic radiation)	0.004	
Medical X-Ray (Chest)	0.01	Mettler FA, et al: Effective Doses in Radiology and Diagnostic Nuclear Medicine, 2008
Mammogram	0.4	Mettler FA, et al: Effective Doses in Radiology and Diagnostic Nuclear Medicine, 2008
CT (Chest, Abdomen, and Pelvis)	1.8	Mettler FA, et al: Effective Doses in Radiology and Diagnostic Nuclear Medicine, 2008
Chernobyl Evacuation Zone	10	
Hiroshima Survivor Inside Structure	78	
Nagasaki Survivor Inside Structure	156	
Average Background Annual Exposure in U.S. (Total)	0.62	NCRP No. 160 (2006)

U.S. Civilian Standards	cGy / Rad / REM / cSv	
Maximum Annual Public Exposure	0.1	(10 CFR 20.1301)
Maximum Radiation Worker Annual Dose	5	(10 CFR 20.1201)
General Emergency	1	(NUREG-0654/FEMA REP 1)
Protective Actions (shelter or evacuate)	1.0-5.0	(EPA 400-R-92-001, 1992)
Evacuation required	5	(EPA 400-R-92-001, 1992)
1st Responder Dose Protecting valuable property 1	10	(EPA 400-R-92-001, 1992)
1st Responder Dose Lifesaving or protection of large populations 1	25	(EPA 400-R-92-001, 1992)
Maximum 1st Responder Dose	25	(EPA 400-R-92-001, 1992)

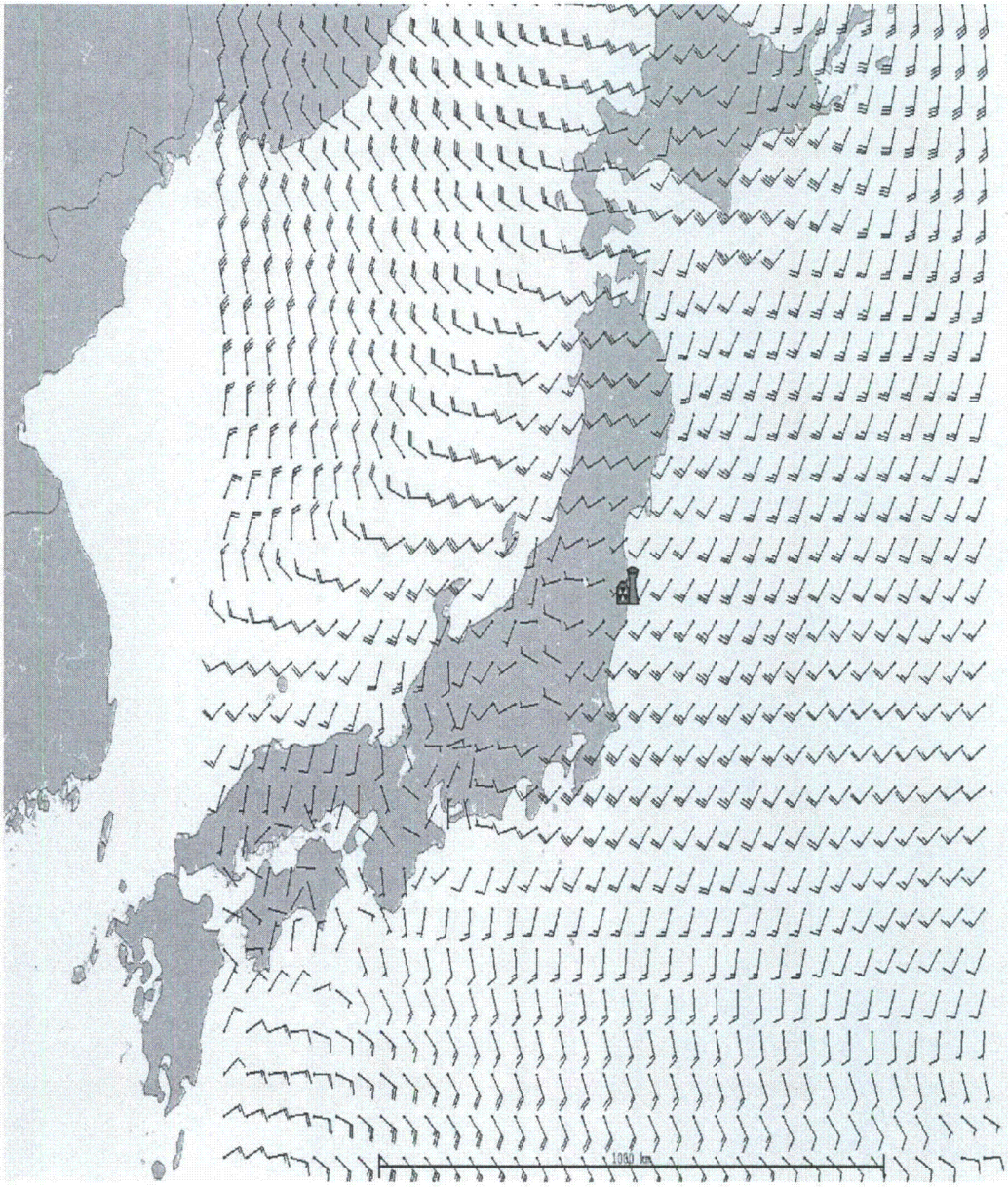
Military OEG*	cGy / Rad / REM / cSv	
Wartime high-priority missions, to include life-saving	125	NATO STANAG-2473, 3 May 2000; USAFRRI, SP 03-1, April 2003
Operations other than war based on mission priorities and risk analysis	75	NATO STANAG-2473, 3 May 2000; USAFRRI, SP 03-1, April 2003

Note: Sieverts=Grays and Rad=REM for beta and gamma radiation as the Quality Factor is one.

[1]FEMA: Planning Guidance for Protection and Recovery Following Radiological Dispersal Device (RDD) and Improvised Nuclear Device (IND) Incidents

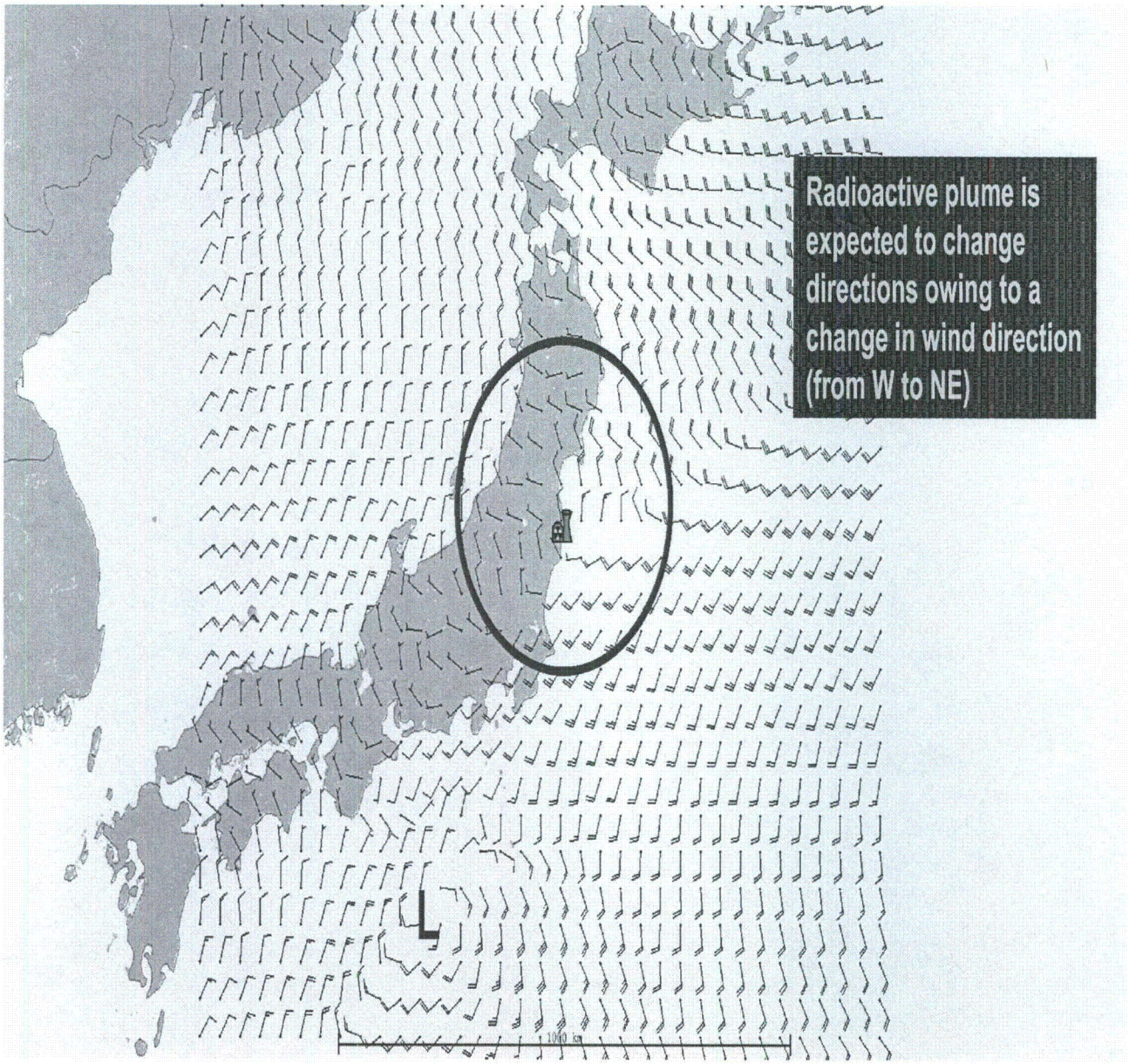
Possible Release – Situational Details Unknown

10 m Forecasted Winds– 0000Z 14MAR2011



Possible Release – Situational Details Unknown

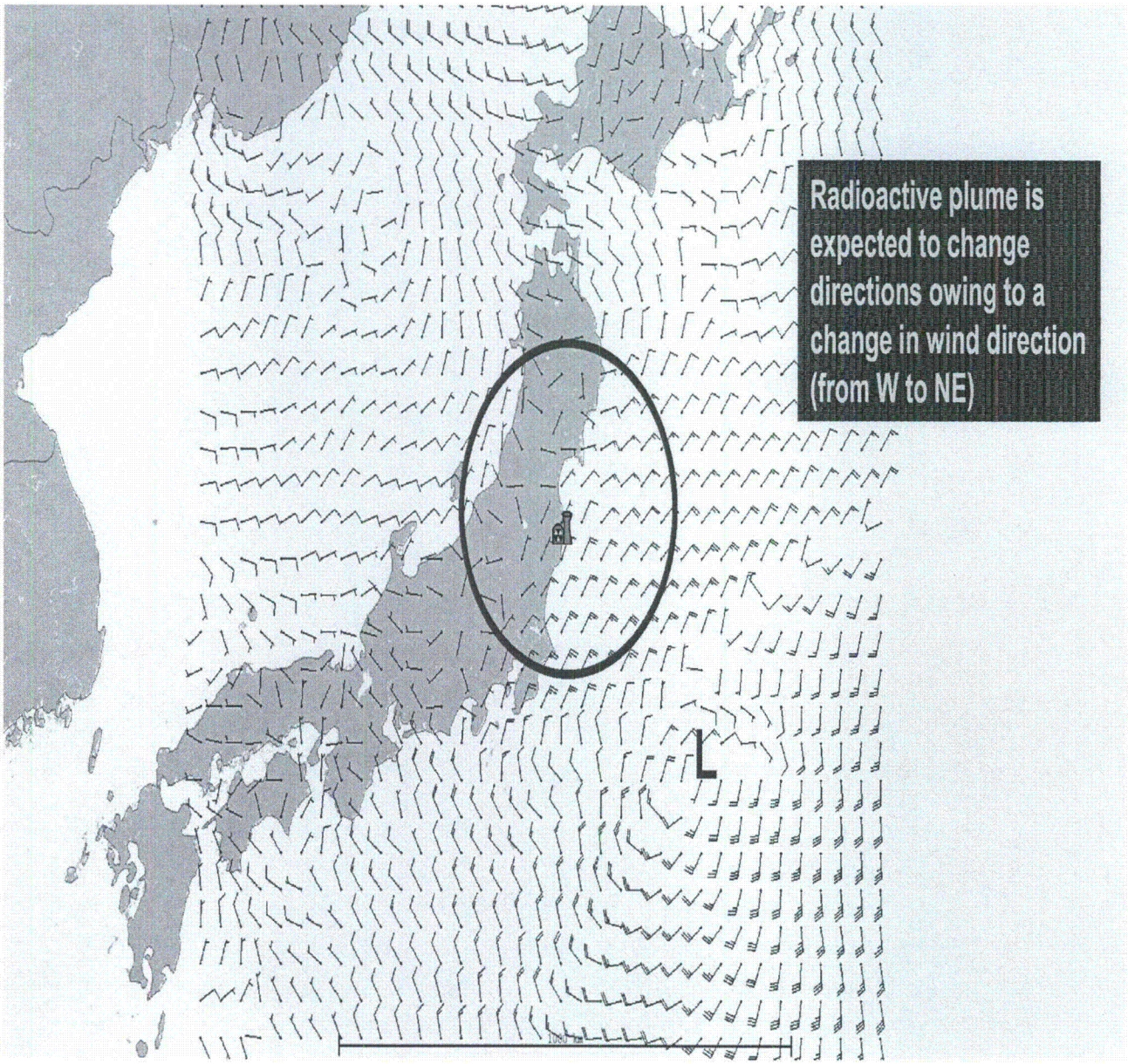
10 m Forecasted Winds– 1200Z 14MAR2011



As of 140801ZMAR11

Possible Release – Situational Details Unknown

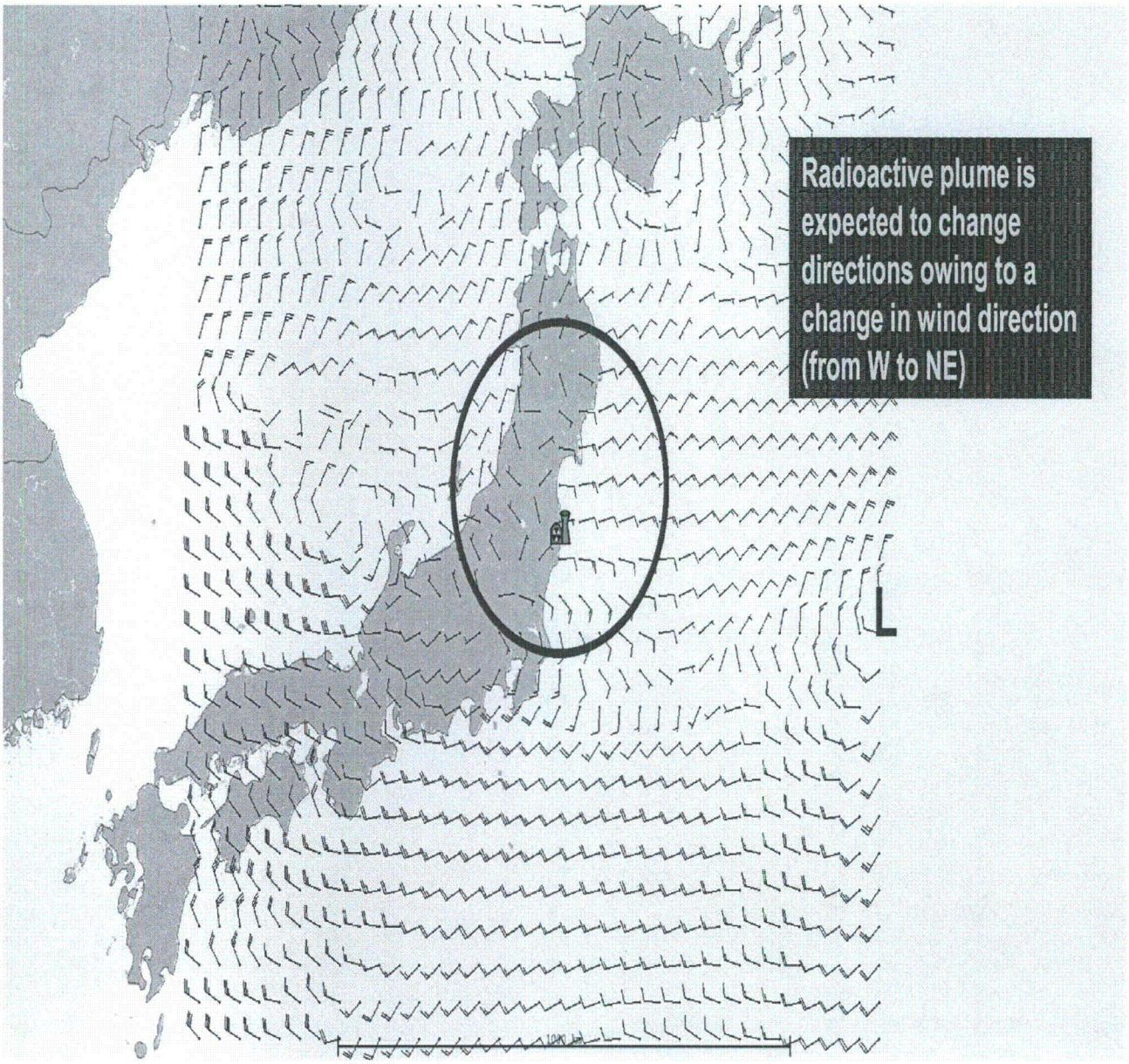
10 m Forecasted Winds– 0000Z 15MAR2011



As of 140801ZMAR11

Possible Release – Situational Details Unknown

10 m Forecasted Winds– 1200Z 15MAR2011



Possible Release – Situational Details Unknown

10 m Forecasted Winds– 0000Z 16MAR2011

As of 140801ZMAR11

From: Klein, Kevin CONTRACTOR <(b)(6)>
Sent: Monday, March 14, 2011 3:20 AM
To: (b)(6)

Subject: ~~(FOUO)~~ RFI-216U - Preliminary Update
Attachments: RFI_216U_0600Z_14MAR2011_short_rev1.PPT

All,

Attached is the latest update for RFI 216. Thanks.

<<...>>

Kevin J. Klein
SAIC/DTRA Operations Center
(703)767-2116
(b)(6)

Attached is a preliminary update for RFI-216U. We are still working on finalizing the HPAC model to provide correct representation of wind change. This preliminary update is to provide a snapshot of the future plume direction

Very Respectfully,

Defense Threat Reduction Agency

(703) 767-3448, (DSN 427-)

Unclass: (b)(6)

SIPR: (b)(6)

JWICS: (b)(6)

R&D Enterprise

Innovation & Systems Engineering Office

Reachback Division

From: Hoc, PMT12
Sent: Sunday, March 13, 2011 8:44 PM
To: PMT09 Hoc
Subject: FW: NOC Phase 1 - Awareness 0330-11 Update Report 12 Earthquake - Tsunami - Japan (1800 EDT 13 Mar 11)
Attachments: image001.jpg; Senior Leadership Brief Earthquake - Tsunami - Japan (1800 EST 13 Mar 11).doc; NOC Phase 1 - Awareness 0330-11 Update Report 12 Earthquake - Tsunami - Japan (1800 EDT 13 Mar 11).ppt; image002.jpg

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From: PMT02 Hoc
Sent: Sunday, March 13, 2011 8:41 PM
To: Hoc, PMT12
Subject: FW: NOC Phase 1 - Awareness 0330-11 Update Report 12 Earthquake - Tsunami - Japan (1800 EDT 13 Mar 11)

From: HOO Hoc
Sent: Sunday, March 13, 2011 7:54 PM
To: PMT02 Hoc
Subject: FW: NOC Phase 1 - Awareness 0330-11 Update Report 12 Earthquake - Tsunami - Japan (1800 EDT 13 Mar 11)

FYI

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: NOC.SWO.Restricted [mailto:NOC.SWO.Restricted@dhs.gov]
Sent: Sunday, March 13, 2011 6:15 PM
Cc: NOC.SWO.Restricted
Subject: NOC Phase 1 - Awareness 0330-11 Update Report 12 Earthquake - Tsunami - Japan (1800 EDT 13 Mar 11)

NOC Phase 1 - Awareness 0330-11 Update Report 12 Earthquake - Tsunami - Japan

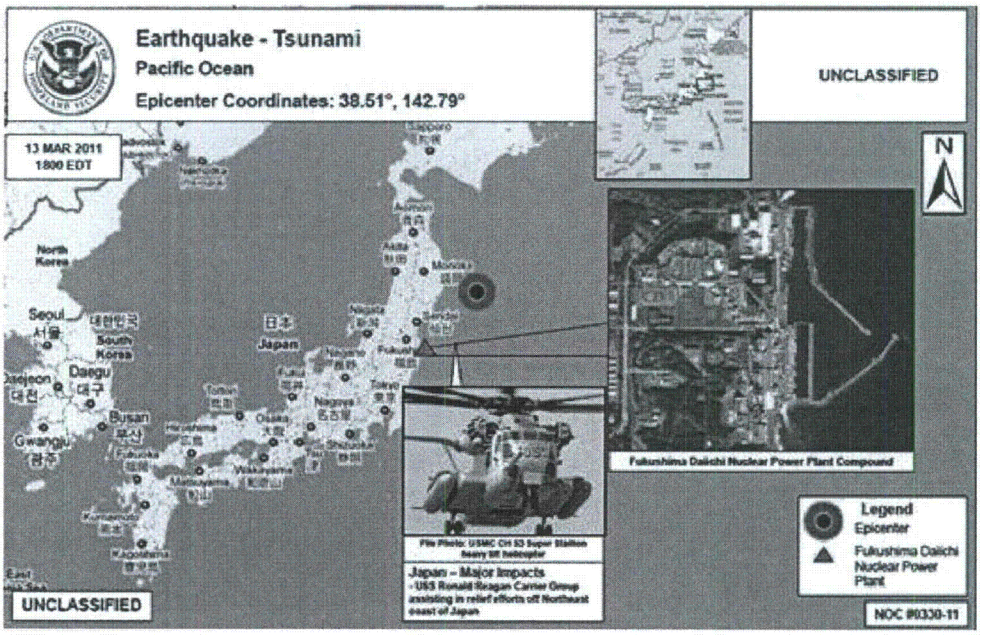
Current: The Government of Japan (GOJ) made six official requests for US assistance: 1. Nuclear Incident Response; 2. US helicopter "water bucket" operations to cool Fukushima reactors; 3. Urban Search and Rescue (US&R) Teams and rescue dogs (California Task Force 2 and Virginia Task Force 1 US&R Teams have arrived in Misawa), and Department of Defense to take responsibility for US&R along the coast line and in coastal waters); 4. Use of US Air Force bases in Japan; 5. GOJ helicopter landing authorization, medical assistance and refueling on USS RONALD REAGAN; and 6. USS TORTUGA support for transportation of Japan Ground Self-Defense Force (JGSDF) Northern

Army from Otaru to Akita. In response to the Fukushima Daiichi Nuclear Power Plant explosion, the GOJ is distributing potassium iodine tablets to impacted population in hopes of reducing health risks. Authorities are attempting to cool the reactor core using chemicals and seawater injection directly into the primary containment vessel. Japan's Nuclear and Industrial Safety Agency reported 160 people exposed to radiation; 170,000 people have been evacuated. US Agency for International Development's (USAID) Response Management Team is working with Disaster Assistance Response Team (DART) to provide clarification on exact meals ready to eat (MRE) requirement. US Customs and Border Protection is sending one attaché to Japan on 15 Mar. Two Nuclear Regulatory Commission (NRC) senior experts have arrived in Japan and are coordinating transfer of information from GOJ to the US Government. NRC is also coordinating with the International Atomic Energy Agency (IAEA). The USS GERMANTOWN, USS TORTUGA, and USS BLUE RIDGE are relocating to Japan with expected arrivals on13 Mar, 14 Mar, and 18 Mar respectively.

Future: The Department of Homeland Security National Operations Center will continue to monitor this event and update as warranted. The next scheduled update report will be published at 0600 EDT, 14 Mar 11.

Other: US Geological Survey reported the earthquake moved Japan's main island by about 8 feet.

Background: At approximately 0046 EDT, Mar 11, the USGS reported an 8.9 magnitude earthquake occurred off the eastern coast of Honshu, Japan at a depth of 6.2 miles. Tsunami Watches and Warnings were issued for the Pacific region including the west coast of the US.



DHS Senior Leadership Brief: Earthquake-Tsunami-Japan 1800 EDT 13 Mar 2011

Current Situation

- 11 Mar, an 8.9 magnitude earthquake occurred 80 miles east of Sendai, Honshu Island, Japan; multiple aftershocks magnitude have been reported.

- **US Geological Survey reported the earthquake moved Japan's main island by about 8 feet.**
- Fukushima 1 or Daiichi Nuclear Power Plant(160 miles north of Tokyo):
  - **The Government of Japan (GOJ) is distributing potassium iodine tablets to the population around the impacted site to help prevent radiation sickness and reduce risks for thyroid disease and cancers.**
  - An explosion occurred in unit 1 at 0136 on 12 Mar.
    - The explosion destroyed the secondary containment building but the reactor pressure vessel and primary containment structure are intact.
    - **Radiation levels outside the reactor are no higher than before the explosion.**
    - **Authorities are attempting to cool the reactor core using chemicals and seawater injection directly into the primary containment vessel.**
    - **Additional water operation measures are underway.**
    - **Containment remains intact; however, radiation levels at the boundary of the site have been reported to be above background.**
    - **Japans' Atomic Energy Agency classified the event as a Level 4 "Accident with Local Consequences" on the International Nuclear and Radiological Event Scale (INES).**
    - **Japan's Nuclear and Industrial Safety Agency reported 160 people were exposed to radiation around the Fukushima nuclear power plant.**
    - The previous evacuation order was extended to a 12-mile (20km) radius of the plant; **170,000 people have been evacuated.**
  - **6 total reactors; 3 are of concern and 3 were shut down prior to the earthquake.**
  - Daiichi Unit 1:
    - **Fuel cladding likely partially melted.**
    - **Reactor pressure vessel and Primary containment structure intact.**
    - **Secondary containment building is breached based on the hydrogen explosion at 0136 EST 12 Mar.**
  - Daiichi Unit 2:
    - The reactor is being maintained shutdown.
    - **Reactor Core Isolation Cooling System is injecting water.**
    - **Reactor water level is lower than normal, but above the top of active fuel and the water level is steady.**
    - **Loss of power resulted in emergency cooling system failure.**
  - Daiichi Unit 3:
    - The reactor is being maintained shutdown; **no offsite power, no emergency diesel generators working.**
    - **Efforts to restart the Reactor Core Isolation Cooling System failed; emergency Core Cooling System flow could not be confirmed.**
    - **Alternative methods to inject water into the core are being investigated.**
    - **Containment sprays used to lower pressure within the reactor containment have been cancelled.**
    - **A reactor pressure vessel manual safety valve was opened to lower the reactor pressure and immediately followed by injection of sea water and boric acid into the reactor core.**
    - **No reactor coolant leakage inside the reactor containment vessel.**
  - Daiichi Unit 4, 5, 6:
    - **These units were shut down prior to the earthquake, and all containments are in tact.**
    - The reactor is being maintained shutdown.
    - **Sufficient level of reactor coolant to ensure safety is maintained.**
  - A mobile power generator has arrived at the power plant.
- Fukushima 2 or Daini Nuclear Power Plant(150 miles north of Tokyo):
  - **Daini Units 1, 2, 3, 4 shut down.**
  - **Primary containment and secondary containment building are intact.**
  - **A sufficient level of reactor coolant to ensure safety is maintained.**
- **Onagawa:**
  - **IAEA is reporting the lowest state of emergency has been reported at the Onagawa Nuclear Power Plant.**

        - **Alert was declared as a consequence of radioactivity readings exceeding allowed levels in the area surrounding the plant.**
- Government of Japan (GOJ) has made **6** official requests for assistance:
    - **Nuclear Incident Response.**
    - **US helicopter "water bucket" operations to cool Fukushima reactors.**
        - **Haul water via sling load to support alternate reactor cooling measures.**
    - Search and Rescue Teams and rescue dogs.
        - **California Task Force 2 and Virginia Task Force 1 Urban Search and Rescue (US&R) Teams have arrived in Minsawa.**
        - **1 cargo flight arrived 12 Mar with enough equipment to support the teams.**
        - **A second cargo flight is expected later on 13 Mar.**
    - Usage of US Air Force bases in Japan.
    - **GOJ helicopter landing authorization, medical assistance and refueling on USS RONALD REAGAN; offshore Miyagi coast.**
    - **USS TORTUGA support for transportation of the Japan Ground Self-Defense Force (JGSDF) Northern Army from Otaru to Akita.**

<u>Federal Agencies/Departments</u>

- **Federal Emergency Management Agency (FEMA)**
    - Coordinating with US Agency for International Development (USAID) to assist in rescue/life saving efforts.
    - **NRCC deactivated at 1000 EST, 12 March.**

- **Customs and Border Protection (CBP)**
    - **Working if there are plans to initiate evacuation flights or any requests for assistance.**
    - Personnel in the region:
        - **Sending 1 attaché to Japan on 15 Mar.**
        - All personnel in the region accounted for.

- **Immigration and Customs Enforcement (ICE)**
    - All personnel in the region accounted for.

- **National Programs and Protectorate Directorate (NPPD)**
    - **National Cybersecurity & Communications Integration Center**
        - Japan
            - No reports of confirmed breaks on the Asia Pacific Cable Network -2 (APCN-2), Japan-US (JUS), East Asia Crossing (EAC), China to China (C2C) and Southeast Asia/Middle East/Western Europe -3 (SeMeWe-3) undersea cables at this time.
                - **Severe degradation to power production and transmission may cut power to networking equipment resulting in severe congestion due to reduced ability to move traffic.**
                - **DHS OneNet is experiencing degradation of service in various locations in Japan.**
    - **National Infrastructure Coordinating Center (NICC)**
        - **National Communications System industry partners report minimal damage to their networks within Japan.**
        - **Various undersea cable systems impacted; owners are inspecting.**
        - **Members of the consortiums for the undersea cables are reporting continued congestion and blocked traffic on undersea cables into Japan.**
            - **Carriers are applying restrictive controls to manage traffic flow in order to maximize call completions.**
        - **Infrastructure Protection is at Phase 1 (awareness).**
        - The Office of Infrastructure Protection continues to monitor the earthquake effects and reach out to Critical Infrastructure Partners.

- **Transportation Security Administration (TSA)**

- Personnel in the region:
  - 1 Transportation Security Officer on vacation in Japan is unaccounted for; all other personnel accounted for.

- **US Citizenship and Immigration Services (USCIS)**
  - All personnel in the region accounted for.

- **United States Secret Service (USSS)**
  - All personnel in the region accounted for.

- **United States Coast Guard (USCG)**
  - All personnel in the region accounted for.
- **Department of Energy (DOE)**
  - Nuclear Incident Team (NIT) stood up to monitor and create modeling support.

- **Department of Defense (DoD)**
  - (b)(5)

- **Department of State (DOS)**
  - **USAID Response Management Team is working with Disaster Assistance Response Team (DART) to provide clarification on exact meals ready to eat (MRE) requirement.**
  - **773 fatalities and 1,442 people missing in Japan; no confirmed fatalities of US citizens.**
  - **An Australian SAR team will arrive 13 Mar at Yokota Air Force Base.**
  - **15 Chinese civilian officials arrived in Japan to conduct SAR operations.**
  - **United Kingdom SAR team, with 63 members, is en route to Misawa.**
  - **Updated Warden Message issued to inform U.S. citizens residing or traveling in Japan that they should notify family and friends of their status.**

- **United States Nuclear Regulatory Commission**
  - **Deployed 2 nuclear specialists to assist in monitoring and stabilization efforts.**
    - **The 1 senior expert supporting USAID response efforts arrived, the second is expected 13 Mar.**
  - **Coordinating with the International Atomic Energy Agency.**

National Operations Center

- Current Posture: Phase 1 - Awareness.

VR,

(b)(6)

Assistant Senior Watch Officer
National Operations Center
U.S. Department of Homeland Security

Unclassified: (b)(6)
Secure: (b)(6)

From: PMT09 Hoc
Sent: Sunday, March 13, 2011 7:02 PM
To: Kahler, Robert
Subject: IRC staffing

Bob

I worked 2300 Fri -0700 Sat, and 1500-2300 Sun in the IRC.

I am scheduled to work 1500-2300 on Tuesday and Wednesday in the IRC unless they decide to secure from monitoring. On those days, I will work that shift ([redacted] (b)(6)).

Steve LaVie

From: PMT09 Hoc
Sent: Sunday, March 13, 2011 6:57 PM
To: PMT03 Hoc
Subject: Test

From: PMT09 Hoc
Sent: Sunday, March 13, 2011 6:38 PM
To: Henderson, Karen
Subject: Data to send to Jim Trapp
Attachments: Navy Measurements.doc

(b)(5)

From: Mroz (Sahm), Sara
Sent: Sunday, March 13, 2011 3:48 PM
To: PMT09 Hoc
Subject: RE: USS Reagan Dose Evaluation

Thank you.
-Sara

From: PMT09 Hoc
Sent: Sunday, March 13, 2011 3:26 PM
To: Mroz (Sahm), Sara
Subject: USS Reagan Dose Evaluation

Sara,

Attached is the revised evaluation of the USS Reagan measurements.

Nima Ashkeboussi (PMT)

NRC Evaluation of Radiation Measurements from the USS Ronald Reagan

On the morning of March 13, 2011, Naval Reactors notified the NRC that dose rates were being measured from the flight deck of the USS Reagan that was ~130 nautical miles off the Japanese coast. Dose rates from the overhead "plume" were approximately 0.6 mrem per hour gamma with no measurable activity on the ship surfaces. The NRC had received an IAEA report showing dose rates of 100 mrem/hr at the site boundary measured ~ 20 hours earlier and press reports for the previous day of plant venting. Given the metrological conditions; wind speed of 3-5 mph and the calm 'Class D and E' weather stability for the 20-24 hour time period, a plume with low dose rates from the venting is credible at this location.

The NRC staff determined that the measurable radioactivity was consistent with the venting of the Fukushima Unit 1 reactor. The Navy also collected air samples having activity above background from the "plume." The NRC staff determined that the "plume" was most likely a puff from the venting that contained long lived noble gases, Xe-133, Xe-135 and Kr-85.

The Navy is expediting the air samples to a base in Japan which can perform an isotopic analysis to determine the actual radio-nuclides. The NRC will be able to better determine the status of the reactor based on the nuclides found in the sample.

From: PMT09 Hoc
Sent: Sunday, March 13, 2011 3:20 PM
To: nima.ashkeboussi@nrc.gov
Subject: USS Reagan Dose Measurement Assessment.doc
Attachments: USS Reagan Dose Measurement Assessment.doc