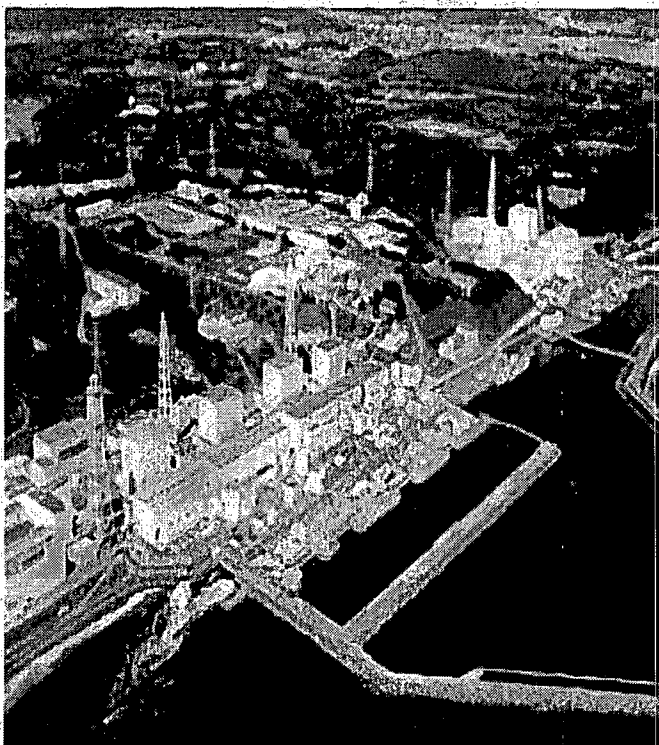
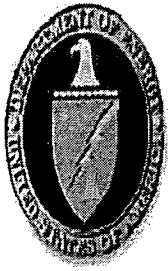


# Japan Earthquake Response

April 23, 2011 // 0600 EDT



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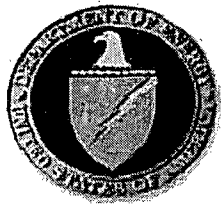


**This information is for limited distribution to  
those with a  
NEED TO KNOW  
and should not be forwarded outside your  
agency or organization without prior  
clearance from U.S. DOE**

**Contact: DOE/NNSA Nuclear Incident Team**

(b)(6)

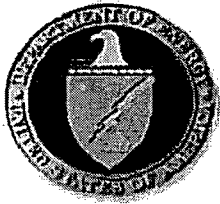




## DOE/NNSA Objective

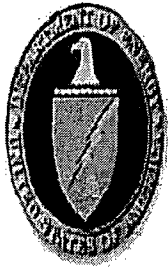
- **Objective: Collect data and provide measurement results and technical advice on radioactive contamination and radiation exposure:**
  - In support of the State Department in advising American citizens on protective action and evacuation guidelines
  - In support of DoD in its efforts to safely conduct humanitarian assistance/disaster relief operations and advice on departure/return of military dependents
  - In support of the Government of Japan (GOJ) in producing guidelines on relocation and use of agricultural lands

***Desired End-state:** Successful transfer of supplementary equipment and expertise to GOJ to facilitate large-scale, long-term monitoring and sampling efforts; DOE/NNSA provides intermediate assistance in the form of reachback and laboratory analysis support to GOJ and DoD*



## Current Status

- TEPCO continued Friday to pump water out of a tunnel linked to the No. 2 reactor, the 4th day of the operation. By 0700 JST Friday, the level in the tunnel had dropped by 5 centimeters.
- TEPCO plans to begin spraying a chemical hardening agent on top of debris near the reactor buildings on April 26.
- TEPCO had planned to inject nitrogen into Unit 2 on April 20. Nitrogen injection into Unit 3 delayed due to problems accessing equipment.
- Units 1, 2, 3 and 4 reactor buildings and spent fuel pools generally stable and continue to receive fresh water injections.
- Remote controlled robot investigated Unit 1 and 3 Reactor Buildings, radiation readings as high as 57 millisieverts (5.7 Rem/hr).



# DOE/NNSA Emergency Response

- **Command, Control, Coordination:**

- *Nuclear Incident Team (NIT)*: Coordinating overall response
- *Policy Working Group (PWG)*: Coordinating overall policy
- *Senior Energy Official*: Primary Manager of deployed field teams
- *Liaisons*: DART

- **Modeling and Assessment**

- *National Atmospheric Release Advisory Center (NARAC)*: Conducting predictive radioactive atmospheric dispersion modeling
- *Consequence Management Home Team (CMHT)\*\**: Providing scientific assessment of ground measurements and AMS flights

- **Field Monitoring**

- *Consequence Management Response Team (CMRT)\*\**: Conducting ground monitoring, air sampling and initial results analysis
- *Aerial Measuring System (AMS)*: Conducting aerial detection for mapping radiological ground material deposits. Currently 2 platforms: 1 Fixed, 1 Rotary

- **Sampling and Lab Analysis**

- *Lawrence Livermore and Los Alamos National Labs (LLNL & LANL)*: Conducting airborne contamination monitor filter analysis
- *Savannah River Site (SRS)\*\**: Conducting radionuclide analysis of soil samples

- **Medical Consultation**

- *Radiation Emergency Assistance Center/Training Site (REAC/TS)*: Providing medical advice about radiological exposure

## Deployed\* (39)

### Yokota AB

- (1) SEO
- (1) SEO Staff
- (35) Field Monitoring

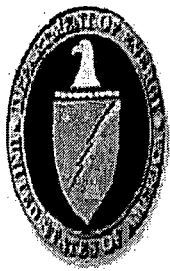
### US Embassy Tokyo

- (2) DART LNO

*\*The number deployed does not currently reflect DOE/NNSA personnel assisting in nuclear energy (NE) aspects of the response.*

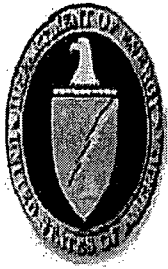
**\*\*Augmented by personnel from the DOE/NNSA Radiological Assistance Program (RAP)**

**— OFFICIAL USE ONLY —**



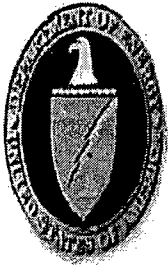
## Significant Events: Past 24 Hrs

- **Bilateral Coordination**
  - Provided briefing to the Japanese Minister of Defense on Aerial Measuring System
  - Provided requested products to MEXT from Friday (22 Apr) meeting



## Significant Events: Past 24 Hrs

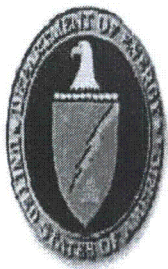
- **Aerial Monitoring Operations**
  - AMS C-12: Scheduled down time
  - AMS UH-1: Scheduled flight (Complete the UH-1 Flight 2 box west of Kitiabaraki at 1000ft AGL and 2000 foot line spacing) canceled due to weather
- **Field Monitoring Operations**
  - Continue beta/gamma surveys, PIC surveys, and in-situ measurements in the 60km to 80 km ring (Sector 4) near Fukushima.
  - Two teams conducted surveys (in Sector 1) south of the plant. One team conducted RSI, exposure rate, in-situ surveys, and swipes in the 30 to 60km arc. The second team conducted RSI, exposure rate surveys, and swipes in the 60 to 80km arc.
  - Continue monitoring activities at the CMOC TOC at Yokota AB.



## Significant Events: Past 24 Hrs

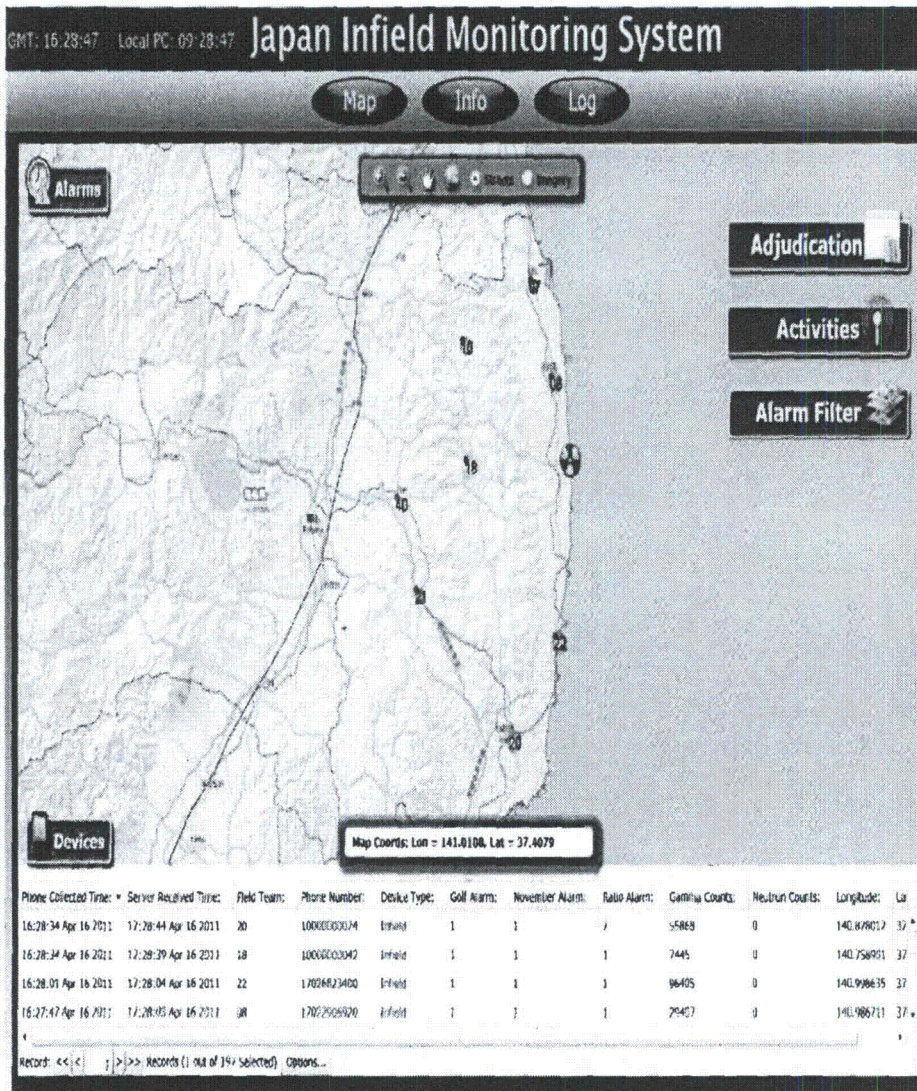
- **Modeling and Assessment**
  - NARAC continued to normalize models to field measurements, assess time correlated deposition, conduct trend analysis, and correlate dose rate measurements with actual weather patterns
- **Sampling and Analysis**
  - Continued CMHT analysis of air samples processed at GEL Laboratory
  - Prioritized soil samples for analysis at Savannah River Site
- **Medical Consult**
  - Nothing substantive to report
- **Nuclear Incident Team**
  - Provided ground monitoring and aerial measuring data spreadsheets to CDC, FDA, HHS, USDA, EPA, NRC, DHS, NR, DIA, NCMI, and WH





# Infield Monitoring System

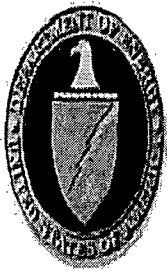
## Live Status Board



### Infield Monitoring System

- ♦ An array of sodium iodide radiation detectors placed at key locations, as identified by the green dots, around Fukushima Daiichi
- ♦ The Infield Monitoring System detects changes in radiation levels
- ♦ IMS is continuously monitored in real time





# Data Inputs

- **Monitoring**

- 402 hours total flying time for Aerial Measuring System (AMS) fixed and rotary-wing
- Over 191,000 total field measurements taken by DOE, DoD, and GOJ fixed stations and deployed teams

- **Sampling**

- 588 total air samples taken at US facilities throughout Japan for lab analysis in US
- 80 total insitu ground spectra taken throughout Japan for lab analysis in US
- 96 Japan soil samples received, in-processed, and being prepared by SRS Environmental Lab for analysis

## Organizations Providing Data

- **Consequence Management Response Team**

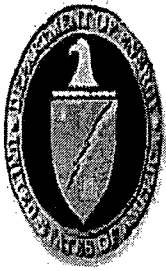
- CMRT
- AMS
- AFRAT

- **External US**

- Japan Emergency Command Center, US Embassy, Tokyo
- USAF, BSC Commander
- USAF, WC-135 Constant Phoenix
- Futenma Marine Corps Air Station
- Nuclear Regulatory Commission
- Naval Reactors

- **Japan**

- Ministry of Foreign Affairs (MOFA)
- Nuclear Safety Technology Center (NUSTEC)
- Tokyo Electric Power Company (TEPCO)
- Ministry of Agriculture, Forestry and Fisheries (MAFF)
- Ministry of Education, Culture, Sports, Science, and Technology (MEXT)
- Ministry of Health, Welfare and Labor
- Nuclear and Industrial Safety Agency (NISA)
- Nuclear Safety Commission



# Guide to Interpretation

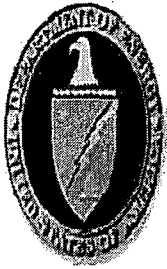
## Areas at Risk for Agricultural Contamination

- Aerial measurements can indicate areas where agricultural monitoring and sampling should occur, although they cannot directly determine the amount of contamination of agricultural products grown in these areas.
- AMS monitoring results in areas beyond 25 miles from the Fukushima Daiichi reactors show areas where dose rates are many times higher than historical background.
- The measured external dose rates in these areas are not high enough to warrant evacuation or relocation of the population, however, lower levels of radioactive contamination in agricultural products provide more of a risk because the radioactive material can be ingested into the body. Agricultural monitoring in these areas may be warranted.

◆ Areas 10 to 100 times historical background are indicated by green.

◆ Areas 2 to 10 times historical background are indicated by light blue.

◆ Areas at or near historical background are indicated by dark blue.



# Guide to Interpretation

## US EPA Derived Response Levels (DRLs) for Evacuation and Relocation

### ■ Early Phase DRL

If a person is in danger of receiving an external radiation dose of 1 Rem over 4 days, the EPA recommends evacuation until radiation levels decrease. This area is indicated by red.

### ■ First Year DRL

If a person is in danger of receiving an external radiation dose greater than 2 Rem during the first year, the EPA recommends relocation until radiation levels decrease. This is not an urgent action because the dose is received over a full year. This area is indicated by orange.

### ■ Fifty Year DRL

If a person is in danger of receiving an external radiation dose greater than 5 Rem over 50 years, the EPA recommends relocation until radiation levels decrease. This is not an urgent action because the dose is received over fifty years. This area falls within the second year DRL.

### ■ Second Year DRL

If a person is in danger of receiving an external radiation dose of greater than 0.5 Rem in the second year (or any subsequent year), the EPA recommends relocation until radiation levels decrease. This area is indicated by yellow.

*These calculations account for multiple variables. For instance, radiation is most intense in the first days following its release therefore dose reduction may be met by evacuating early in the response.*

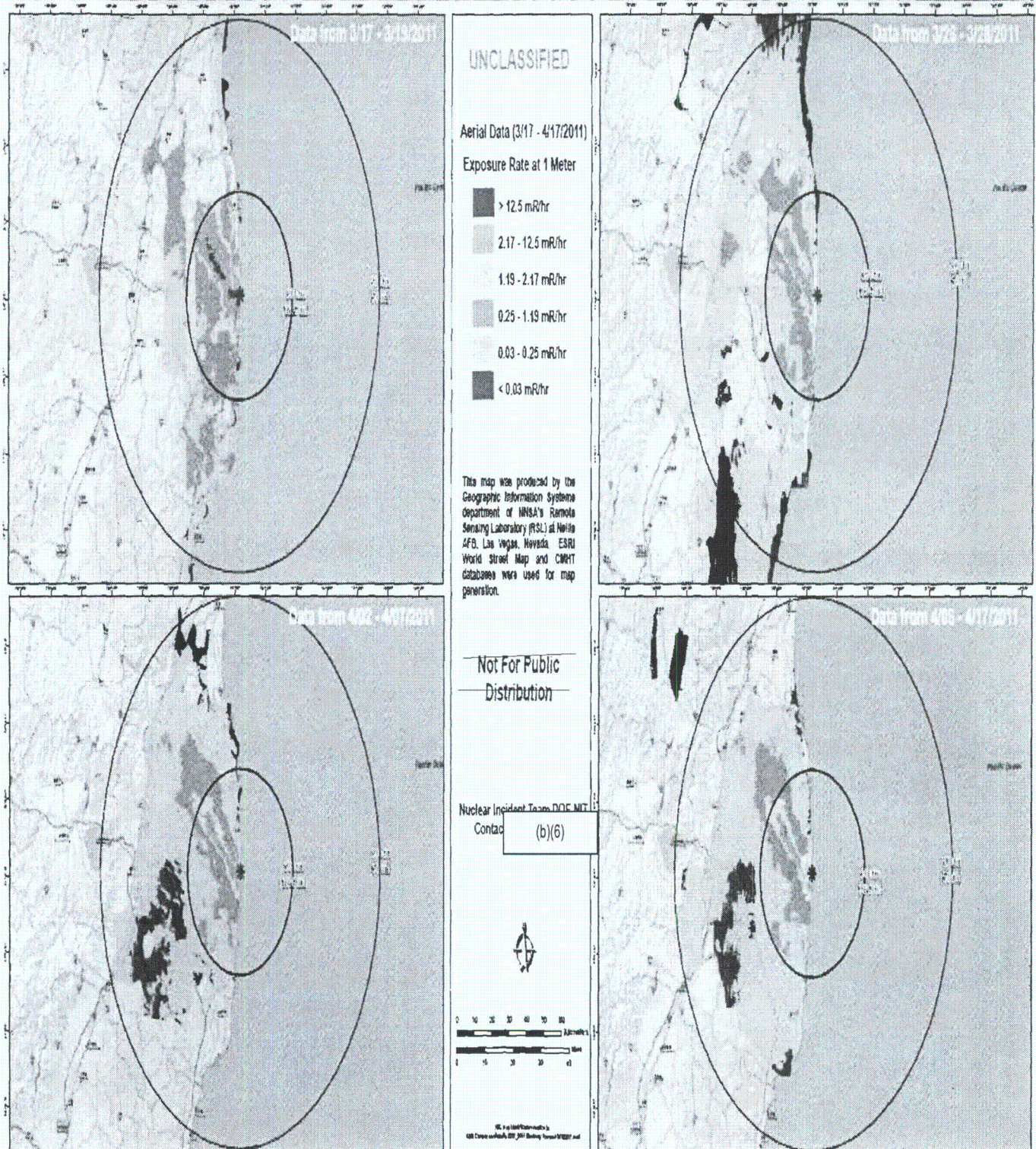
*Protective actions are frequently expressed in dose rates. The dose rate is an indicator that residents would accumulate the threshold dose if they stayed in the area the entire time expressed (e.g. 1 year, 2 years, 50 years).*



# Aerial Monitoring Survey Areas

## Overview Aerial Monitoring Contoured Results (3/17 - 04/17/2011)

FUKUSHIMA DAIICHI  
JAPAN



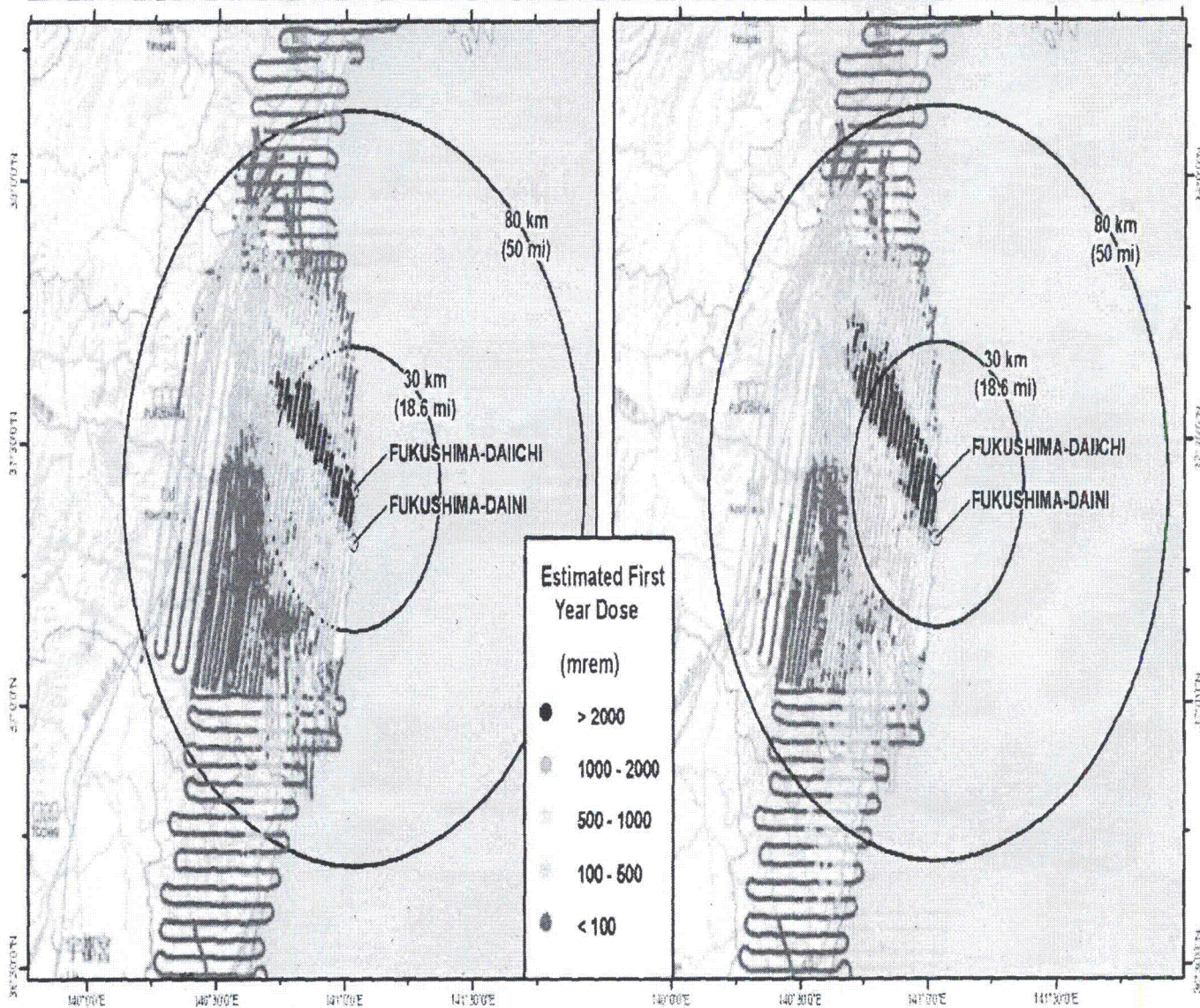




# Sheltering Effects Comparison

Dose Commencing March 16, 2011 for 365 Days

FUKUSHIMA DAIICHI  
JAPAN



## Sheltering Assumptions

- 40% dose reduction factor for spending 16 hours a day inside a wooden house and 8 hours outside
- takes into account radioactive decay of the source material
- includes the effects of external radiation due to material deposited on the ground and inhalation of resuspended radioactive particles

## No Sheltering Assumptions

- no dose reduction factor for time spent indoors
- takes into account radioactive decay of the source material
- includes the effects of external radiation due to material deposited on the ground and inhalation of resuspended radioactive particles



Map created on 04182011 1822 JST

Name: CMHT ShelteringEffectsComparison 18Apr2011

UNCLASSIFIED

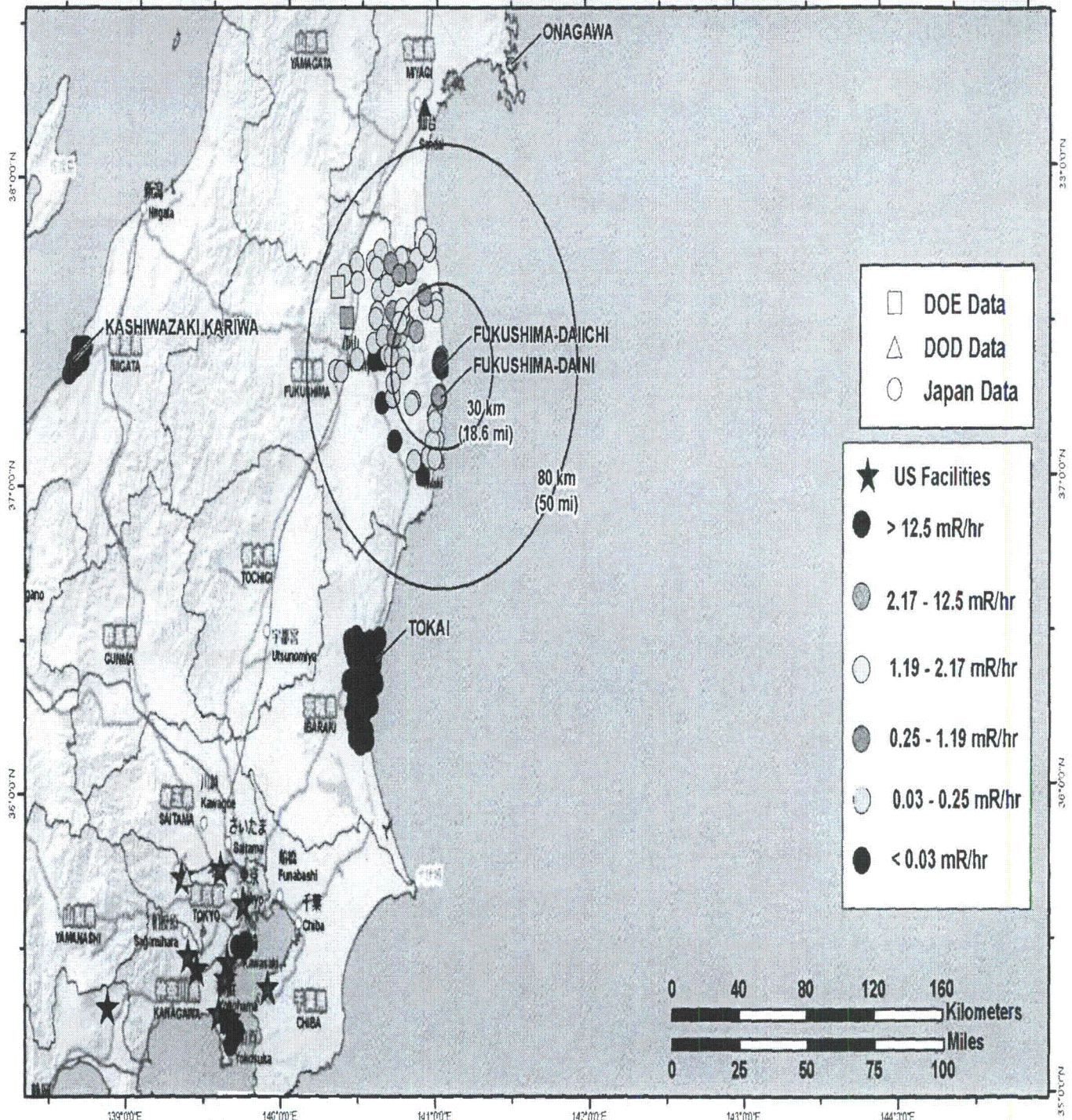
Nuclear Incident Team DOE NIT  
Contact (b)(6)





# Field Monitoring Results April 22 00:00 to 24:00 JST

## FUKUSHIMA DAIICHI JAPAN



Map created on 04232011 1400 JST  
Name: NIT 24hrsMonitoringResults22Apr2011 1600JST

UNCLASSIFIED

Nuclear Incident Team DOE NIT

Contact

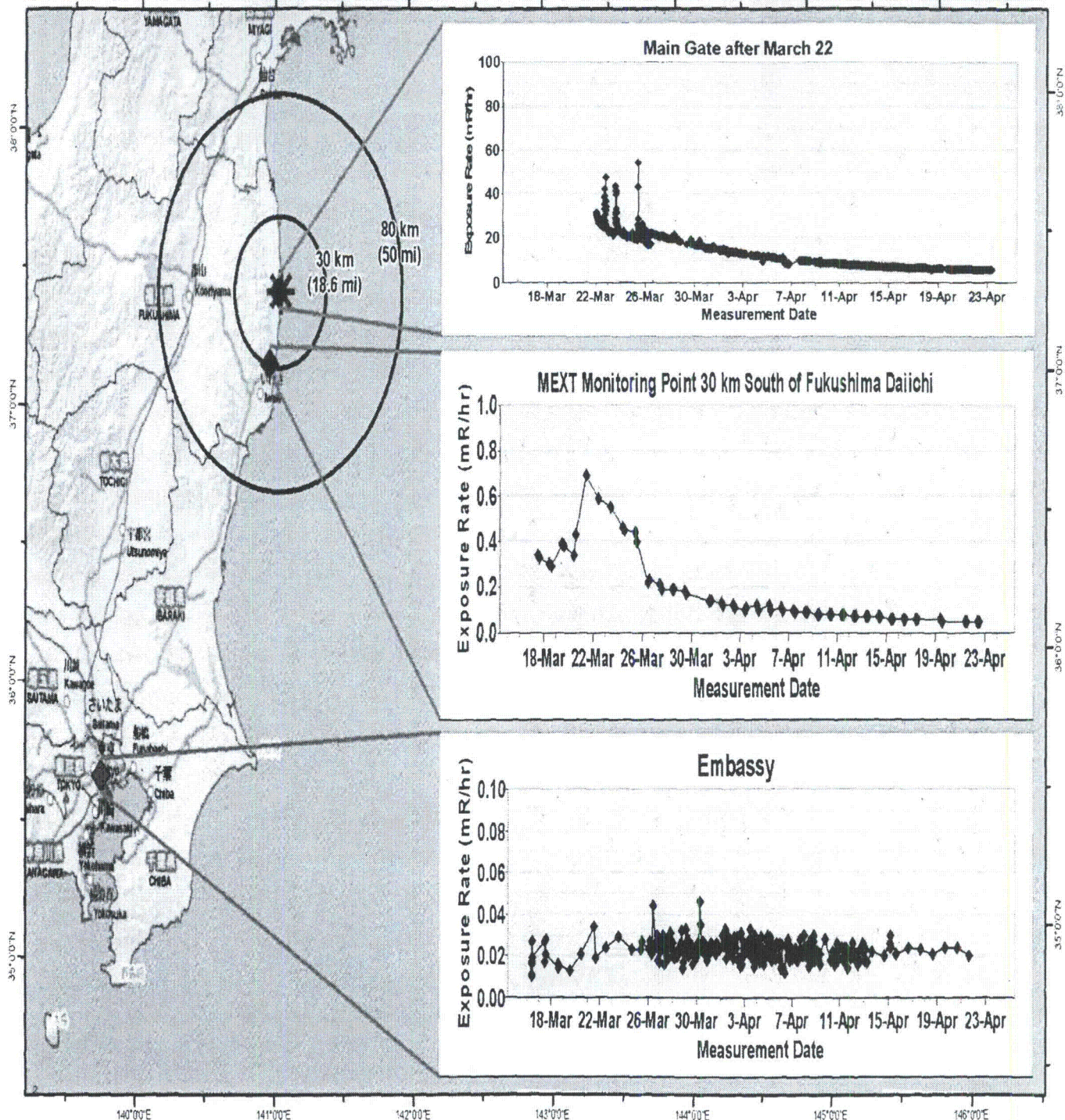
(b)(6)





# Exposure Rate Trends From Fukushima South to the U.S. Embassy

FUKUSHIMA DAIICHI  
JAPAN



Map created on 04232011 1400 JST

Name: CMHT MonTrend 22Apr2011 Simplified

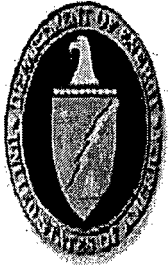
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Nuclear Incident Team DOE NIT

Contact

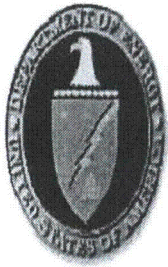
(b)(6)





# **Aerial and Ground Monitoring Data Assessment**

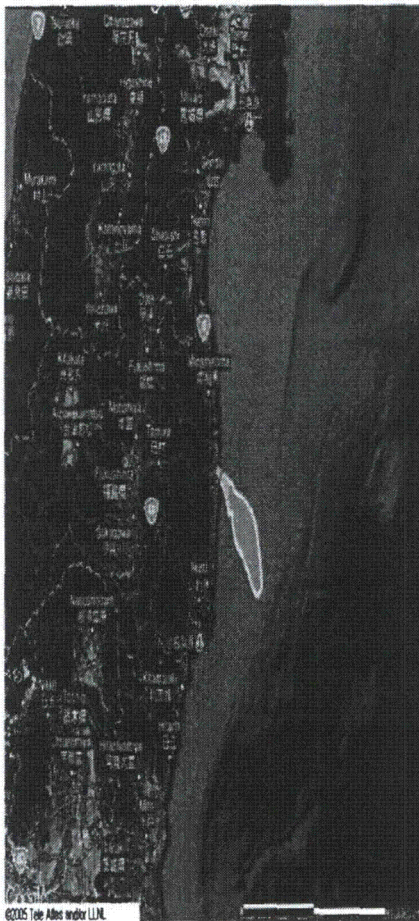
- **An assessment of measurements gathered through 20 April continues to show:**
  - Radiation levels consistently below actionable levels for evacuation or relocation outside of 25 miles
  - Radiological material has not deposited in significant quantities since 20 March
- **An assessment of measurements gathered at US military installations in the Tokyo area through 20 April shows:**
  - Radiation levels far below actionable levels for evacuation or relocation
  - All aerial measurements at US facilities were less than 32  $\mu\text{R/hr}$  - a level that poses no known health risk
  - Monitoring of these locations will continue although no increases in deposited radiation are anticipated



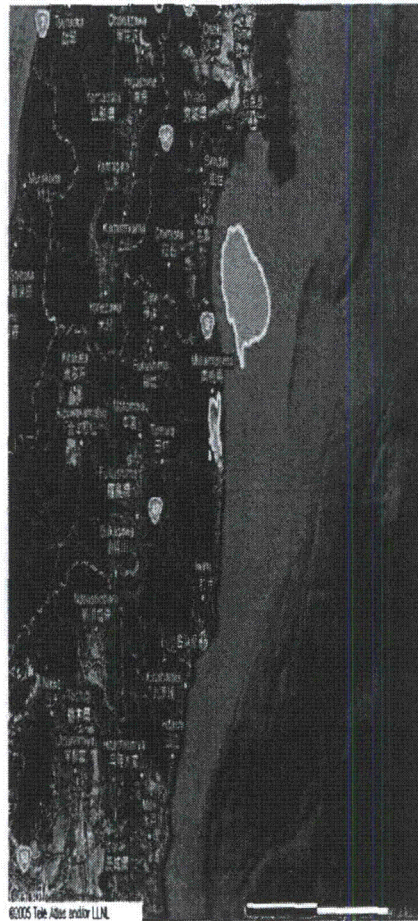
# Forecast Weather

## April 24, 2011 (JST)

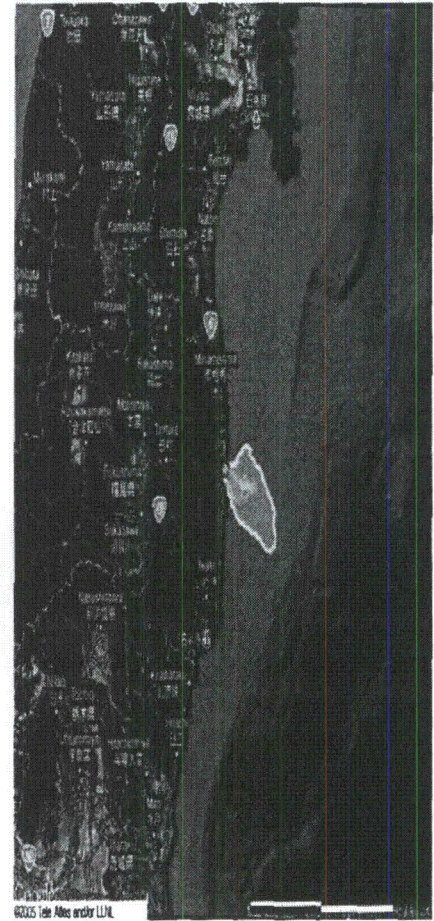
04/24/11 04:00 JST



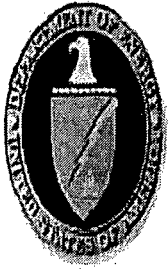
04/24/11 12:00 JST



04/24/11 20:00 JST



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# Planned Operations: Next 24 Hrs

- **Field Monitoring (Aerial)**




- AMS C-12: Weather and winds permitting, re-fly the area northwest of the plant to allow weathering analysis
- AMS UH-1: Weather and winds permitting, will complete the UH-1 Flight 2 box west of Kitiabaraki at 1000ft AGL and 2000 foot line spacing

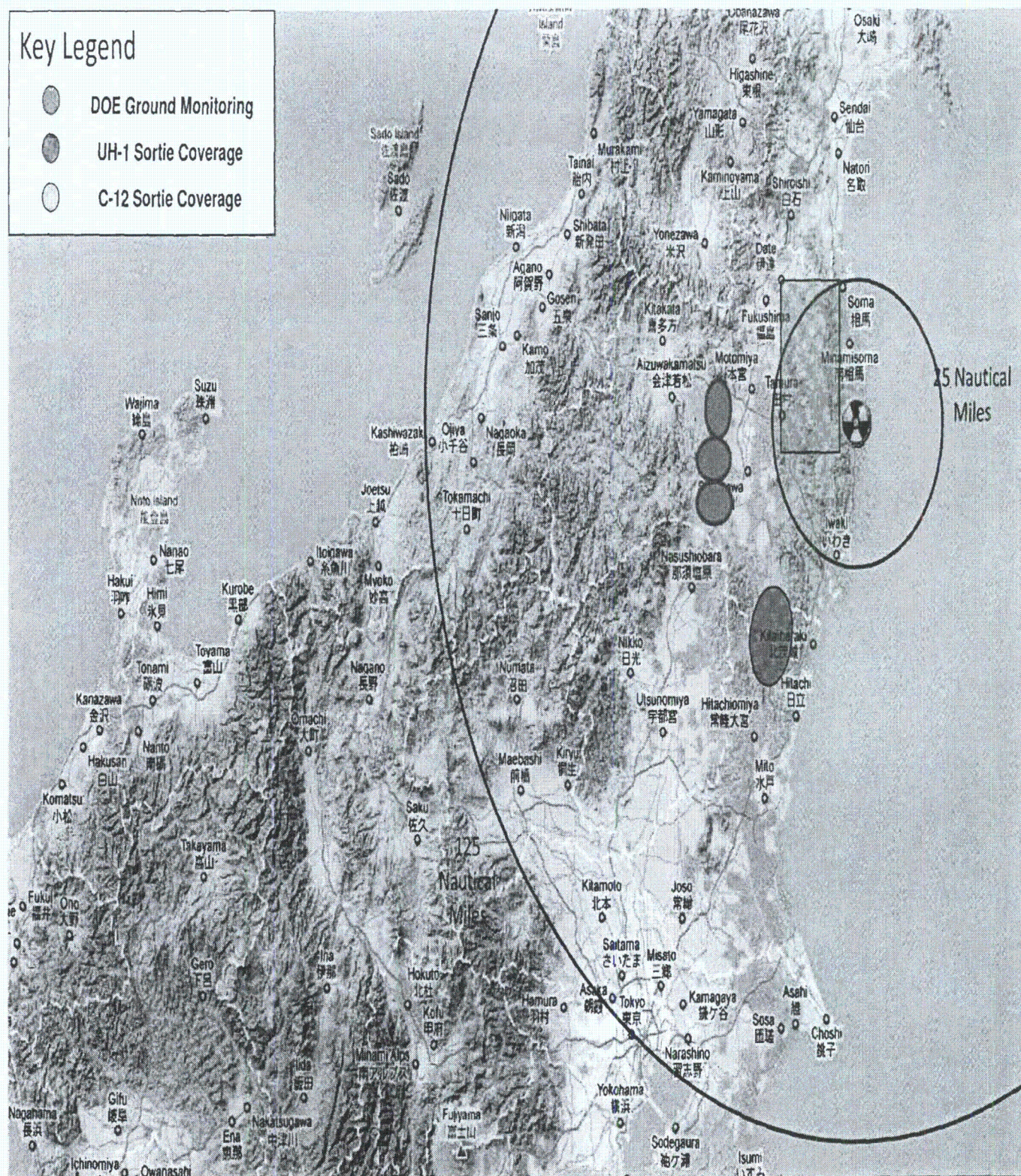
- **Field Monitoring (Ground)**

- Conduct beta/gamma surveys, RSI survey, PIC surveys, and in-situ measurements around the Test Line in the Joint U.S. and Japan Flight Area.
- Conduct beta/gamma surveys, RSI survey, and in-situ measurements in the southern portion of the Joint U.S. and Japan Flight Area.
- Conduct beta/gamma and RSI surveys, 600 second spectra, and soil samples in the southern portion of the Joint U.S. and Japan Flight Area.



## Key Legend

-  DOE Ground Monitoring
-  UH-1 Sortie Coverage
-  C-12 Sortie Coverage



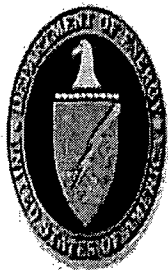
## Planned Aerial/Field Monitoring Operations

April 24, 2011 Operational Period



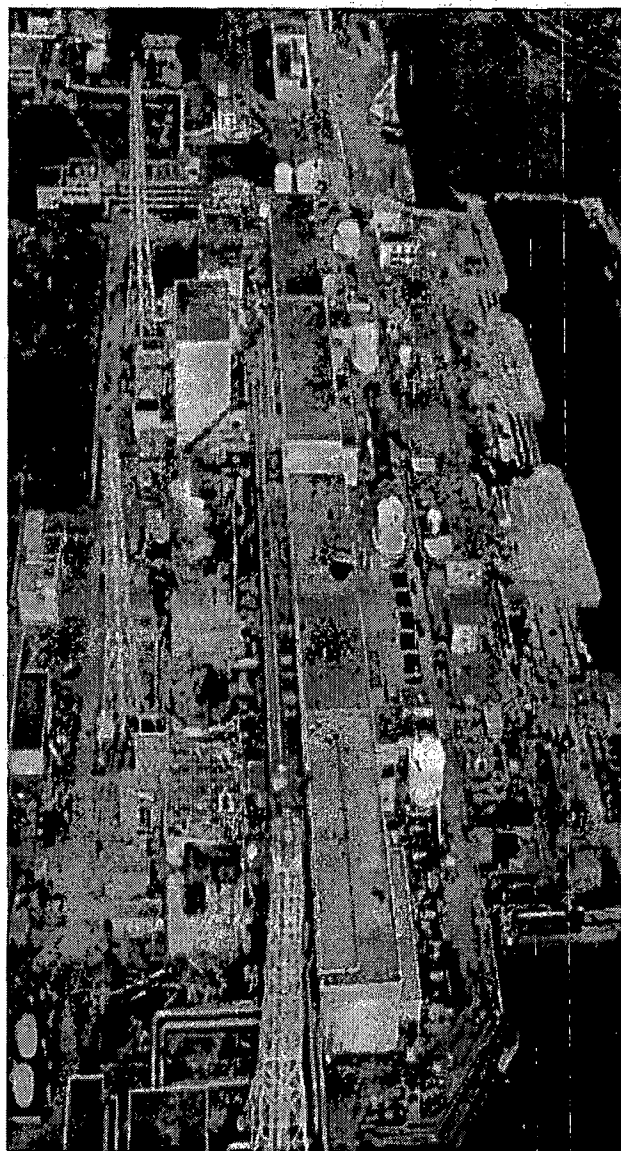
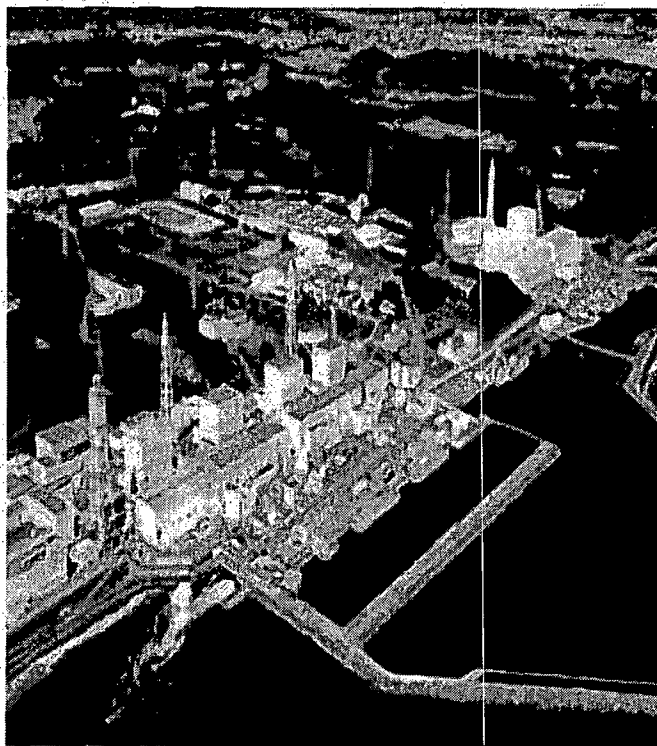
**NNSA**  
National Nuclear Security Administration

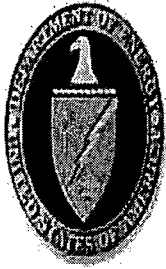




# Japan Earthquake Response

## April 24, 2011 // 0600 EDT

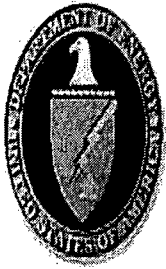




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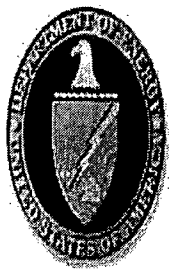


## DOE/NNSA Objective

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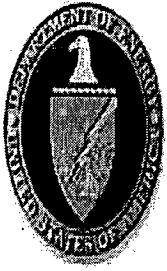
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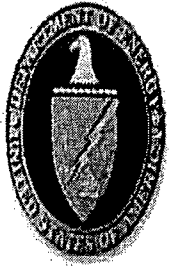
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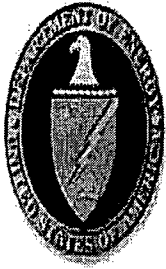
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## Significant Events: Past 24 Hrs

- **Bilateral Coordination**
  - Nothing significant to report

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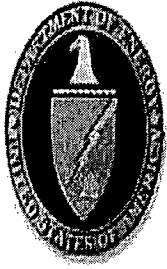
# Significant Events: Past 24 Hrs

- **Aerial Monitoring Operations**

- AMS C-12: 2247 to 0130EDT -- Re-flew the deposition area northwest of the plant to allow weathering analysis.
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- **Field Monitoring Operations**

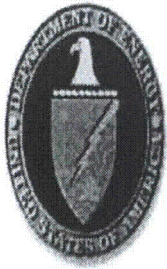
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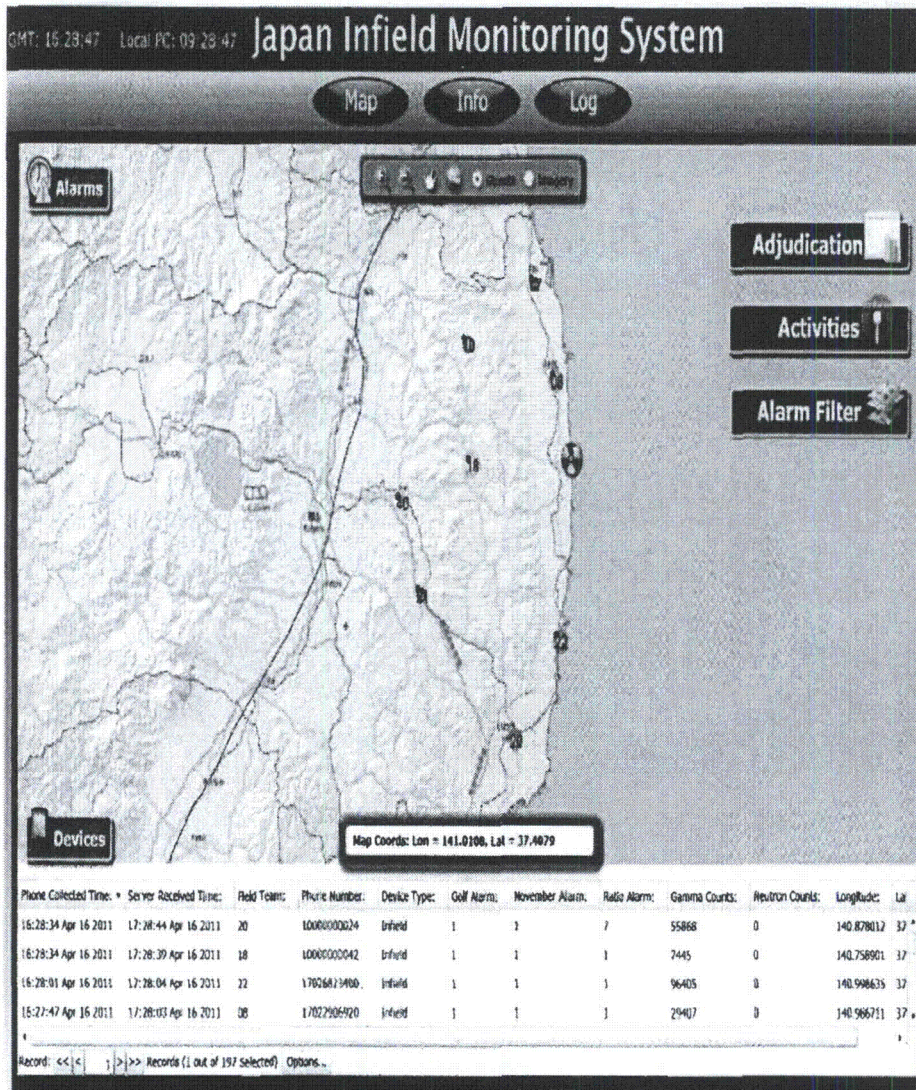
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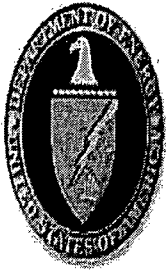
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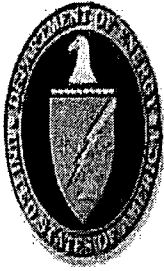
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  - 196,965 total field measurements taken by DOE, DoD, and GOJ fixed stations and deployed teams
- **Sampling**
  - 589 total air samples taken at US facilities throughout Japan for lab analysis in US
  - 93 total in-situ ground spectra taken throughout Japan for lab analysis in US
  - 96 Japan soil samples received, in-processed, and being prepared by SRS Environmental Lab for analysis
  - Four soil samples are expected to get shipped out on Monday.

## Organizations Providing Data

- **Consequence Management Response Team**
  - CMRT
  - AMS
  - AFRAT (departing Japan mid-May)
- **External US**
  - Japan Emergency Command Center, US Embassy, Tokyo
  - USAF, BSC Commander
  - USAF, WC-135 Constant Phoenix
  - Futenma Marine Corps Air Station
  - Nuclear Regulatory Commission
  - Naval Reactors
- **Japan**
  - Ministry of Foreign Affairs (MOFA)
  - Nuclear Safety Technology Center (NUSTEC)
  - Tokyo Electric Power Company (TEPCO)
  - Ministry of Agriculture, Forestry and Fisheries (MAFF)
  - Ministry of Education, Culture, Sports, Science, and Technology (MEXT)
  - Ministry of Health, Welfare and Labor
  - Nuclear and Industrial Safety Agency (NISA)
  - Nuclear Safety Commission





# Guide to Interpretation

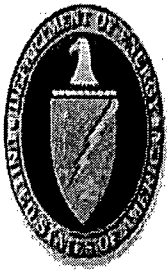
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- Aerial measurements can indicate areas where agricultural monitoring and sampling should occur, although they cannot directly determine the amount of contamination of agricultural products grown in these areas.
- AMS monitoring results in areas beyond 25 miles from the Fukushima Daiichi reactors show areas where dose rates are many times higher than historical background.
- The measured external dose rates in these areas are not high enough to warrant evacuation or relocation of the population, however, lower levels of radioactive contamination in agricultural products provide more of a risk because the radioactive material can be ingested into the body. Agricultural monitoring in these areas may be warranted.

◆ Areas 10 to 100 times historical background are indicated by green.

◆ Areas 2 to 10 times historical background are indicated by light blue.

◆ Areas at or near historical background are indicated by dark blue.



# Guide to Interpretation

## US EPA Derived Response Levels (DRLs) for Evacuation and Relocation

### ■ Early Phase DRL

If a person is in danger of receiving an external radiation dose of 1 Rem over 4 days, the EPA recommends evacuation until radiation levels decrease. This area is indicated by red.

### ■ First Year DRL

If a person is in danger of receiving an external radiation dose greater than 2 Rem during the first year, the EPA recommends relocation until radiation levels decrease. This is not an urgent action because the dose is received over a full year. This area is indicated by orange.

### ■ Fifty Year DRL

If a person is in danger of receiving an external radiation dose greater than 5 Rem over 50 years, the EPA recommends relocation until radiation levels decrease. This is not an urgent action because the dose is received over fifty years. This area falls within the second year DRL.

### ■ Second Year DRL

If a person is in danger of receiving an external radiation dose of greater than 0.5 Rem in the second year (or any subsequent year), the EPA recommends relocation until radiation levels decrease. This area is indicated by yellow.

*These calculations account for multiple variables. For instance, radiation is most intense in the first days following its release therefore dose reduction may be met by evacuating early in the response.*

*Protective actions are frequently expressed in dose rates. The dose rate is an indicator that residents would accumulate the threshold dose if they stayed in the area the entire time expressed (e.g. 1 year, 2 years, 50 years).*



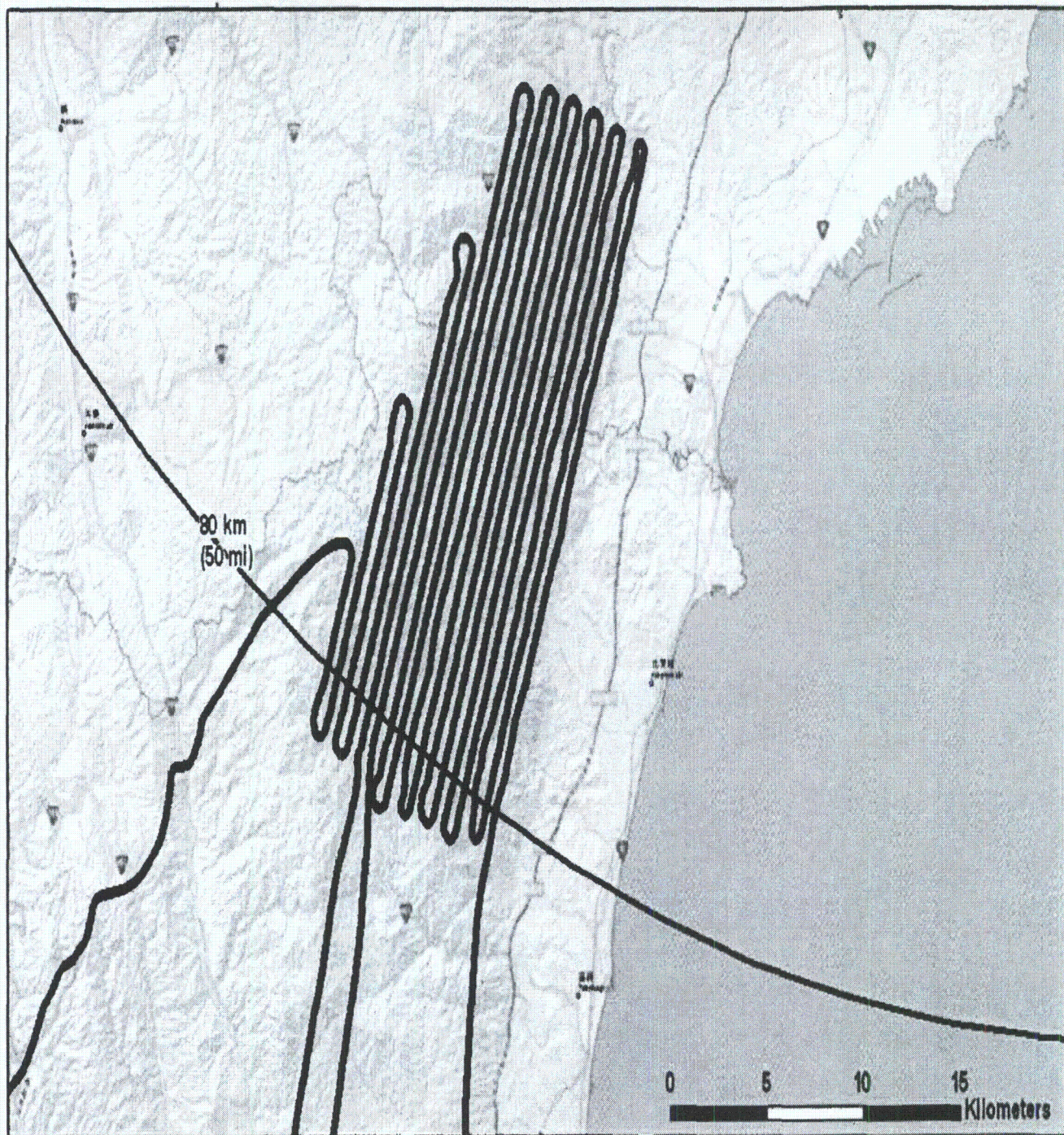


# Aerial Monitoring Path UH-1

April 24, 2011

FUKUSHIMA DAIICHI

JAPAN



Map created on 04242011 1640 JST

Name: NIT UH-1 Path 04242011

UNCLASSIFIED

Nuclear Incident Team DOE NT

Contact

(b)(6)

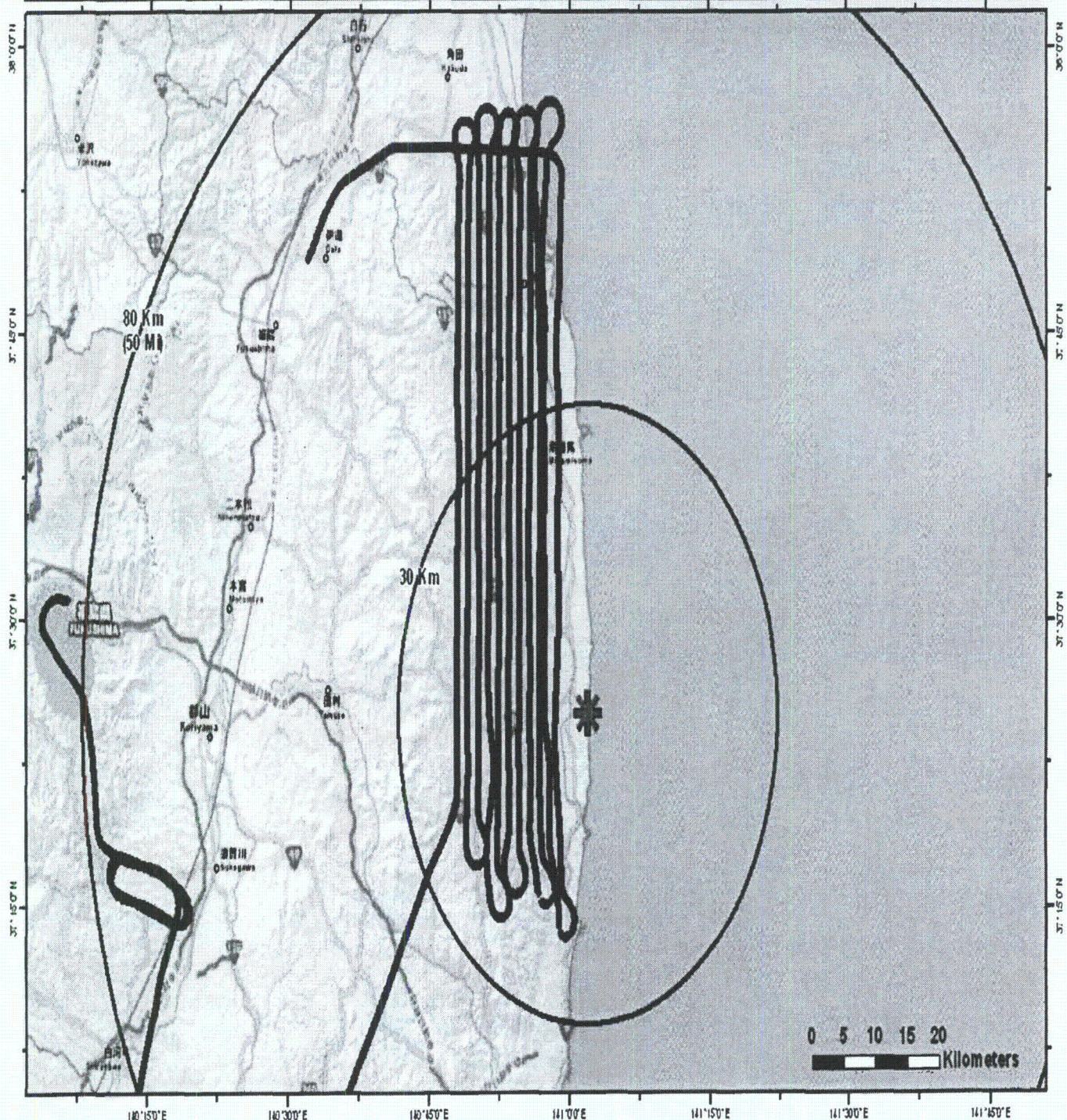




# Aerial Monitoring Path C-12

April 24, 2011

FUKUSHIMA DAIICHI  
JAPAN



Map created on 04242011 1620 JST  
Name: NIT C-12 Path 04242011

UNCLASSIFIED

Nuclear Incident Team DOE NIT

Contact

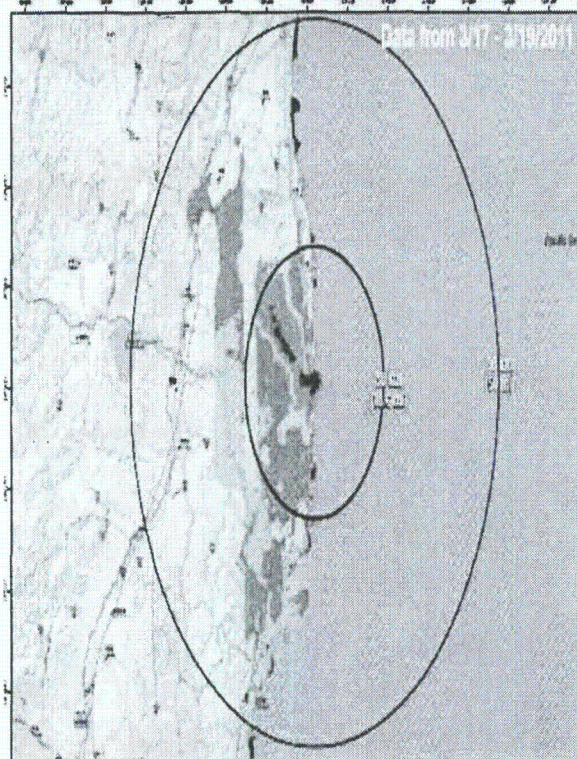
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# Aerial Monitoring Survey Areas

## Overview Aerial Monitoring Contoured Results (3/17 - 04/17/2011)

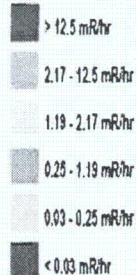
FUKUSHIMA DAIICHI  
JAPAN



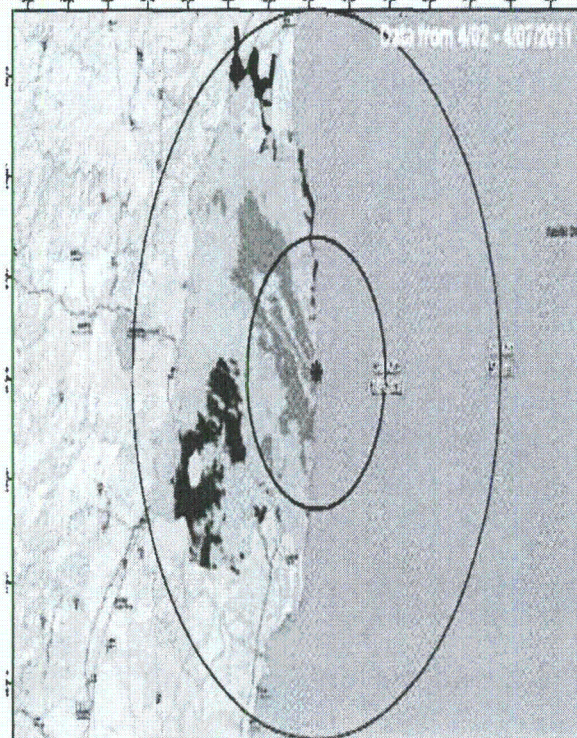
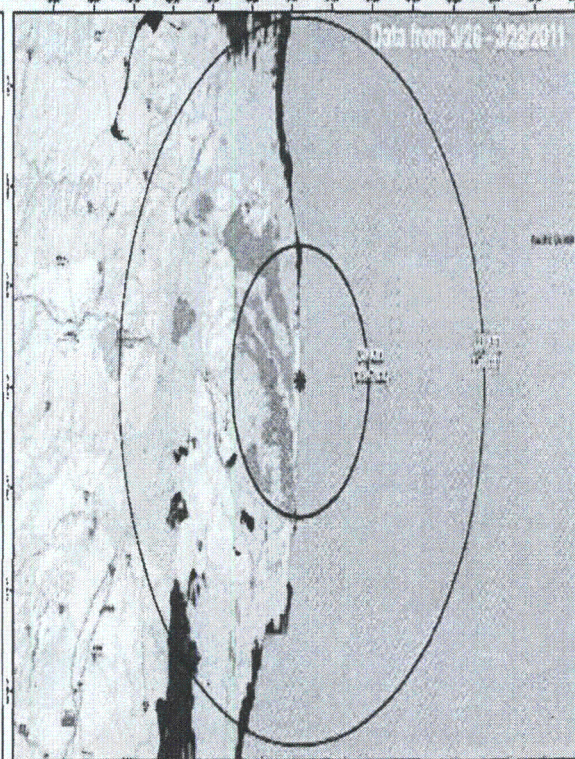
UNCLASSIFIED

Aerial Data (3/17 - 4/17/2011)

Exposure Rate at 1 Meter



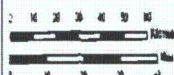
This map was produced by the Geographic Information Systems department of NNSA's Nevada Sampling Laboratory (NSL) at Nellis AFB, Las Vegas, Nevada. EBRU World Street Map and CBRT databases were used for map generation.



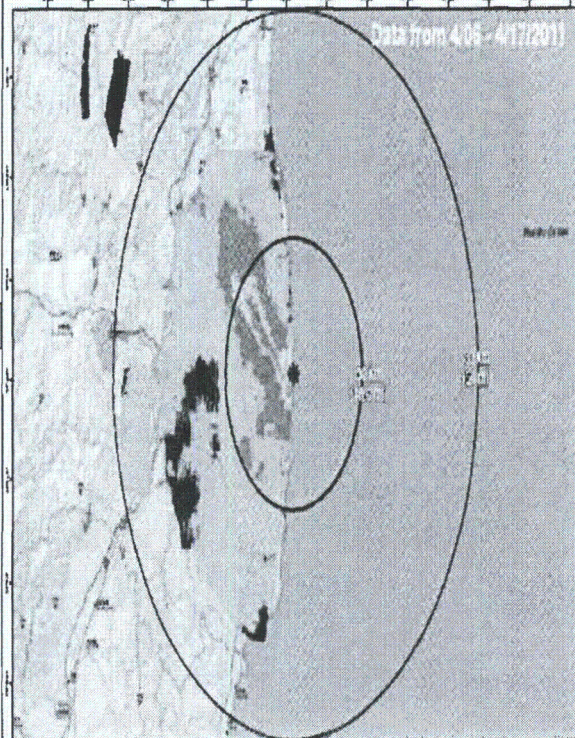
~~Not For Public  
Distribution~~

Nuclear Incident Team DOE NIT

Contact (b)(6)



NSL Environmental Health & Safety  
NSL Emergency Response Unit, 2000 Nevada Avenue, Las Vegas, NV 89101-1001



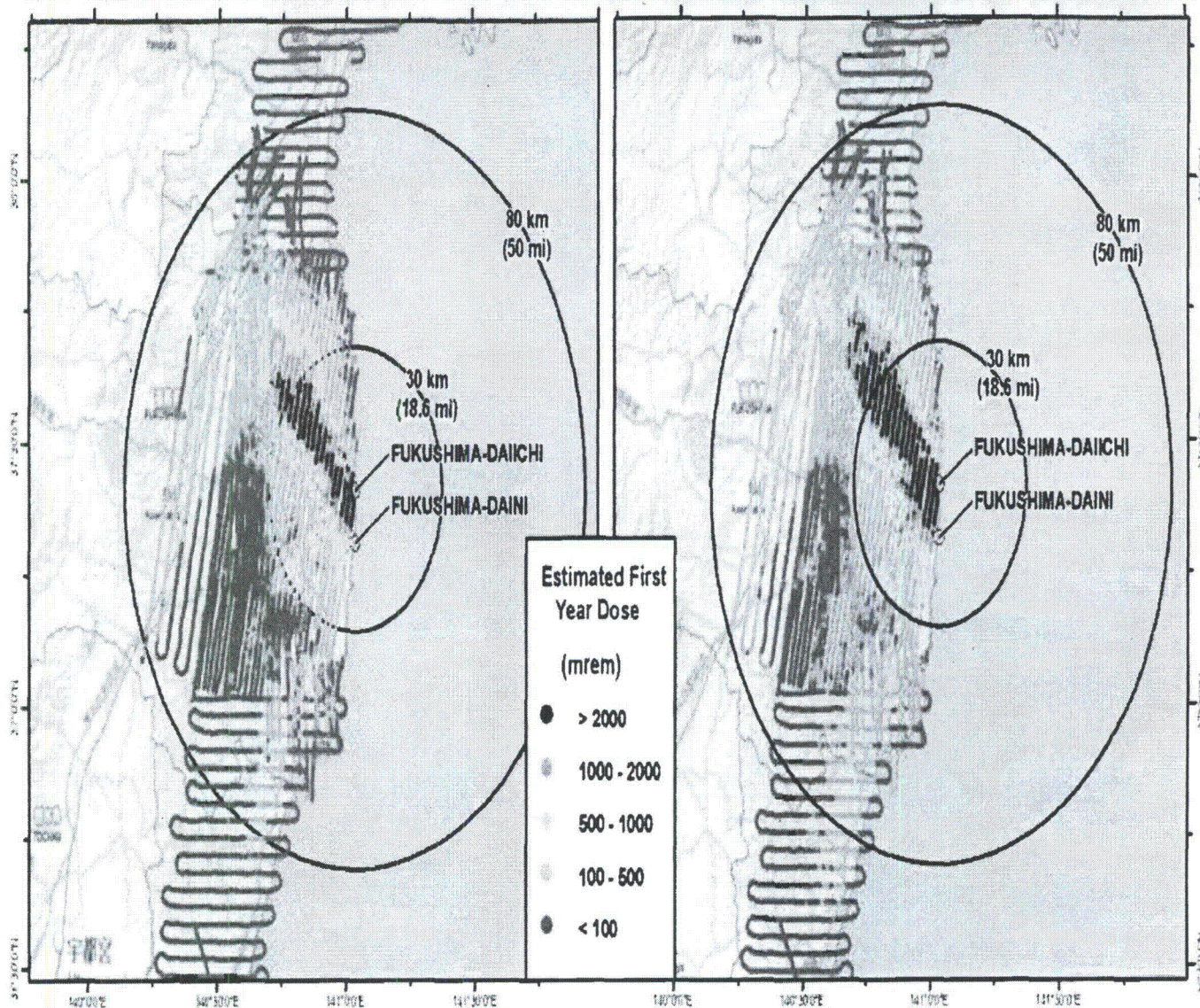




# Sheltering Effects Comparison

Dose Commencing March 16, 2011 for 365 Days

FUKUSHIMA DAIICHI  
JAPAN



## Sheltering Assumptions

- 40% dose reduction factor for spending 16 hours a day inside a wooden house and 8 hours outside
- takes into account radioactive decay of the source material
- includes the effects of external radiation due to material deposited on the ground and inhalation of resuspended radioactive particles

## No Sheltering Assumptions

- no dose reduction factor for time spent indoors
- takes into account radioactive decay of the source material
- includes the effects of external radiation due to material deposited on the ground and inhalation of resuspended radioactive particles



Map created on 04182011 1822 JST

Name: CMHT ShelteringEffectsComparison 18Apr2011

UNCLASSIFIED

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(b)(6)

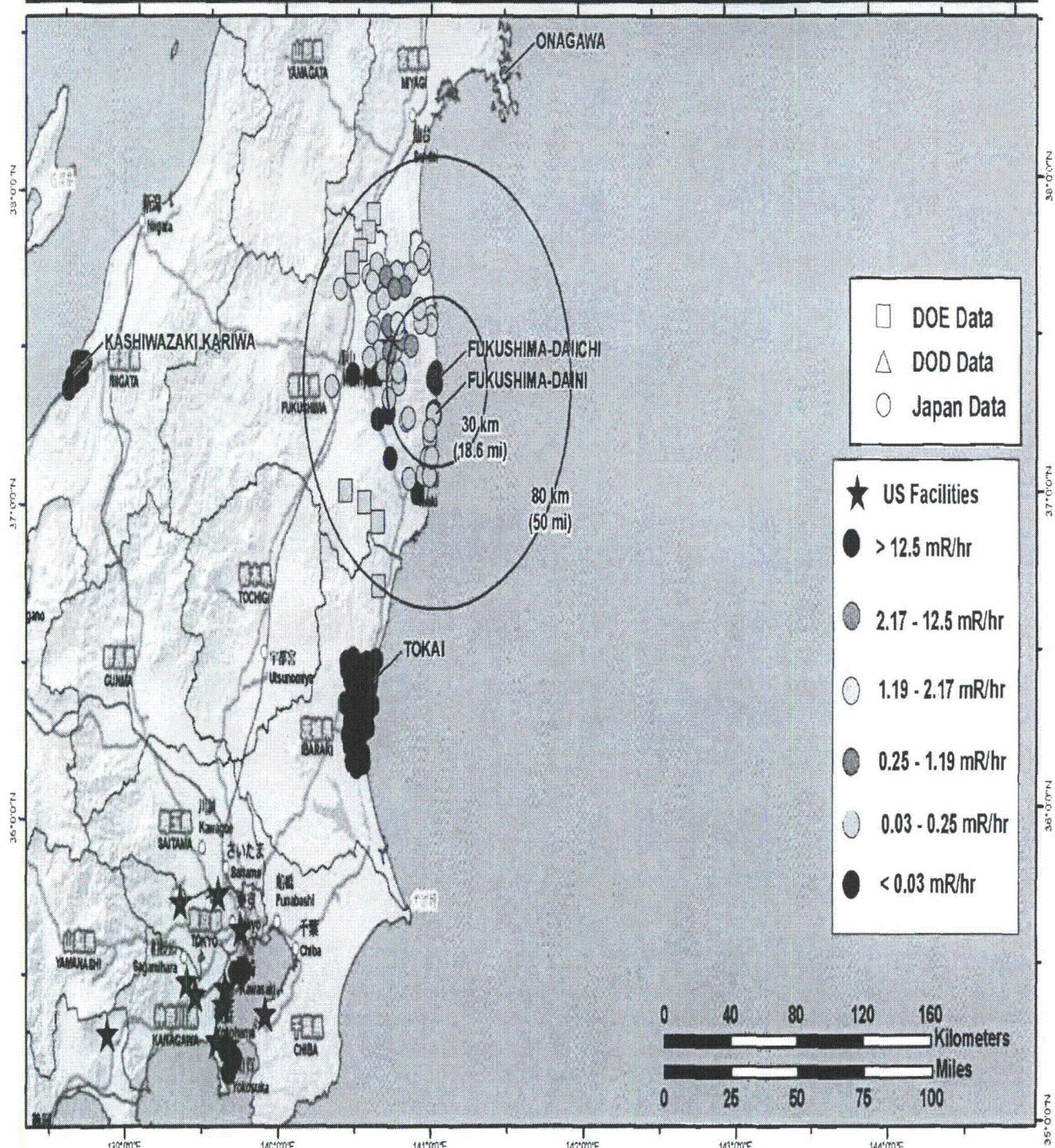




# Field Monitoring Results

April 23 00:00 to 24:00 JST

FUKUSHIMA DAIICHI  
JAPAN

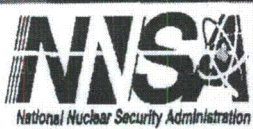


Map created on 04242011 1400 JST  
Name: NIT 24hrsMonitoringResults23Apr2011 1600JST

UNCLASSIFIED

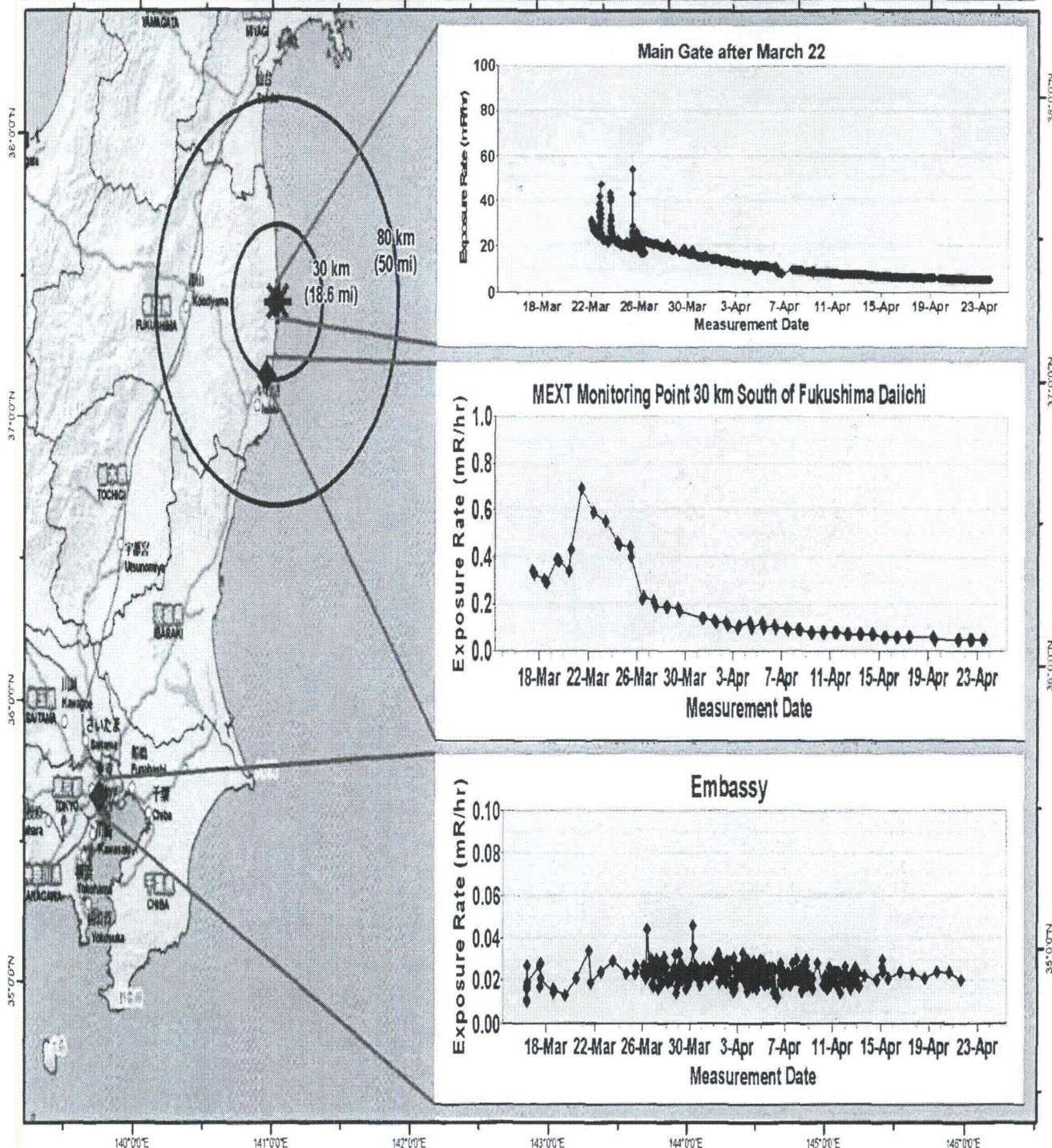
Nuclear Incident Team DOE NIT  
Contact (b)(6)





# Exposure Rate Trends From Fukushima South to the U.S. Embassy

FUKUSHIMA DAIICHI  
JAPAN



Map created on 04242011 1400 JST

Name: CMHT MonTrend 23Apr2011 Simplified

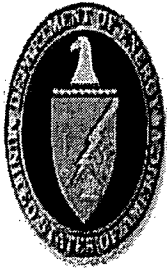
UNCLASSIFIED

Nuclear Incident Team DOE NIT

Contact

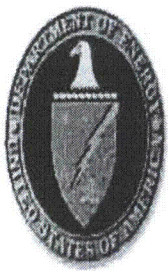
(b)(6)





# **Aerial and Ground Monitoring Data Assessment**

- **An assessment of measurements gathered through 20 April continues to show:**
  - Radiation levels consistently below actionable levels for evacuation or relocation outside of 25 miles
  - Radiological material has not deposited in significant quantities since 20 March
- **An assessment of measurements gathered at US military installations in the Tokyo area through 20 April shows:**
  - Radiation levels far below actionable levels for evacuation or relocation
  - All aerial measurements at US facilities were less than 32  $\mu\text{R/hr}$  - a level that poses no known health risk
  - Monitoring of these locations will continue although no increases in deposited radiation are anticipated



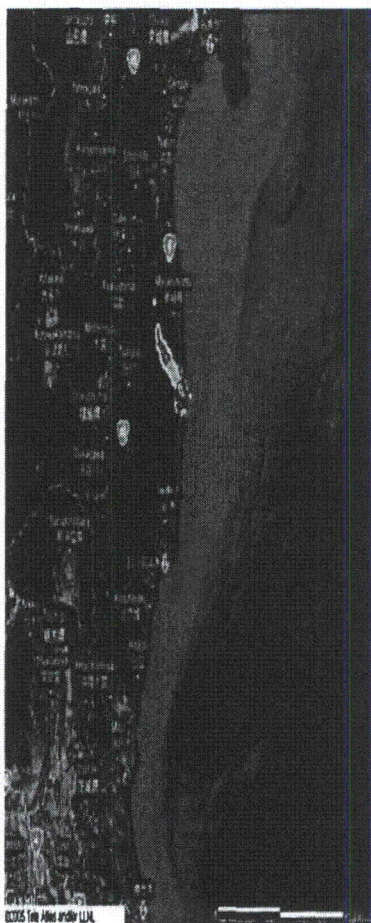
# Forecast Weather

## April 25, 2011 (JST)

04/25/11 04:00 JST



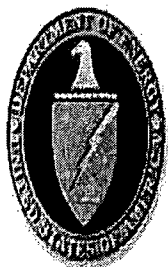
04/25/11 12:00 JST



04/25/11 20:00 JST



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## Planned Operations: Next 24 Hrs

- **Field Monitoring (Aerial)**




- Operational priority: Re-fly areas of highest deposition to confirm no new releases and monitor decay
  - AMS C-12: No flight due to other operations.
  - AMS UH-1: Weather and winds permitting, complete the UH-1 Flight 3 box west of Koriyama at 1000ft AGL and 2000 foot line spacing.

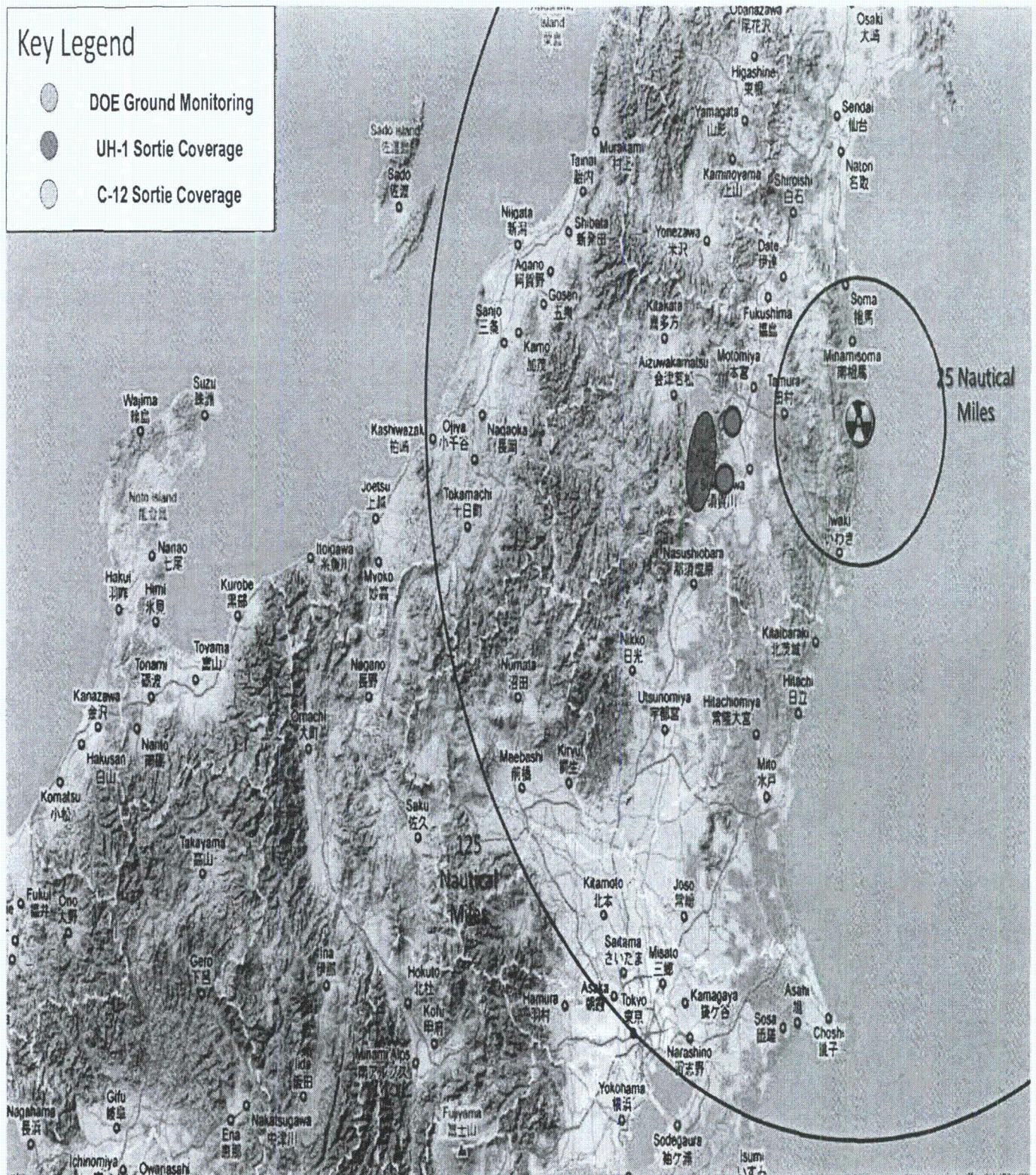
- **Field Monitoring (Ground)**

- Conduct beta/gamma surveys, RSI survey, in-situ measurements, and collect soil samples in the southern test box inside the Joint U.S. and Japan Flight Area.
- Conduct beta/gamma surveys, RSI survey, in-situ measurements, and collect soil samples in the southern test box west of Koriyama.
- Shutdown and collect the air sampler at Harris Towers, change out air sample at Embassy, and train DOE personnel assigned to the Embassy to change out air samples.



## Key Legend

-  DOE Ground Monitoring
-  UH-1 Sortie Coverage
-  C-12 Sortie Coverage



## Planned Aerial/Field Monitoring Operations

April 25, 2011 Operational Period





DOE will produce only one SITREP per day which will be transmitted at 0600.

**DEPARTMENT OF ENERGY SITUATION REPORT**

**Earthquake & Tsunami in Japan**

25 April 2011

0600 (EDT) UPDATE

Yellow highlighted text indicates updates to this version. Older items will be deleted as necessary to minimize the size of this report and facilitate quick reading. Each entry is labeled with the source or the time and date of the latest SITREP that updated the information. Less frequent information updates are available from Japanese agencies.

(NOTE: JST = EDT + 13 hours; EDT = GMT/UTC - 4 hours).

**POWER PLANT UPDATE AND OTHER NUCLEAR ISSUES**

**TEPCO raises weight limit for Unit 4 spent fuel pool.** TEPCO The operator of the troubled Fukushima Daiichi nuclear power plant is carefully monitoring Unit 4 spent fuel pool, where water temperature is rising despite increased injections of cooling water. TEPCO says it will inject 210 tons of water into the pool on Monday, after finding on Sunday evening that temperature in the pool had risen to 81 °C. TEPCO had earlier limited water being injected into the pool to 70 tons a day, saying the weight of the water could weaken the reactor building, already damaged in last month's hydrogen explosion. More in Media Reports (0600 4/25 SITREP)

**Heat exchanger for Unit 1 reactor considered.** TEPCO is thinking about setting up a heat exchanger to hasten the full-scale recovery of the cooling system at the Unit 1 reactor of the Fukushima Daiichi nuclear power plant. TEPCO says 70 percent of the fuel is apparently damaged and 6 tons of water per hour is being injected into the reactor. To cool it under more stable conditions, TEPCO wants the water level in the containment vessel to reach the height of the fuel rods. At present, the water level is estimated to be about 6 meters from the bottom of the containment vessel. More in Media Reports. See also Updates by Reactor Unit for specific plant parameters. (0600 4/25 SITREP)

**Rewiring starts at Fukushima Daiichi.** TEPCO is rewiring the power grid at its Fukushima Daiichi nuclear plant to secure the electricity supply in case of another strong quake. The plant's 6 reactors are now connected in pairs to external power sources. TEPCO began connecting the cables for the No. 1 and No. 2 reactors with the grid for the No. 5 and No. 6 reactors on Monday. This is to ensure that if any one of the 3 outside sources is cut off, the others can be used to cool the reactors. More in Media Reports (0600 4/25 SITREP)

**TEPCO discloses map of radiation levels at the damaged Fukushima Daiichi nuclear plant.** Radiation levels around Unit 3 reactor building, damaged by a hydrogen explosion, are higher than other locations; 300 mSv/hr was detected in debris on a nearby mountainside. More in Media Reports. High level maps at <http://www.nisa.meti.go.jp/english/files/en20110423-6.html> (NHK and Kyodo). (0600 4/25 SITREP)

**April 25 JST NHK Fukushima restricts park use.** Fukushima Prefecture is restricting the use of 5 of its public parks due to high levels of radiation, causing concerns among nearby residents and park visitors. The prefecture announced on Monday that it would limit the use of the parks to one hour a day, as radiation readings at the 5 facilities were at or above the 3.8  $\mu$ Sv/hr safety limit set for outdoor activities in schools. More in Media Reports (0600 4/25 SITREP)

**Kyodo Tokyo-Sendai bullet train service resumes** Bullet train services on the Tohoku Shinkansen Line resumed between Tokyo and Sendai on Monday for the first time since the Miyagi Prefecture capital was severely hit by the March 11 massive earthquake and tsunami. More in Media Reports (0600 4/25 SITREP)

**(Official Use Only) Field Measurements Update:**

**Aerial and Ground Monitoring Data Assessment (0600 4/25 SITREP)**

- Assessment of measurements gathered through 20 April continues to show:
  - Radiation levels consistently below actionable levels for evacuation or relocation outside of 25 miles.
  - Radiological material has not deposited in significant quantities since 20 March
- An assessment of measurements gathered at US military installations in the Tokyo area through 20 April shows:
  - Radiation levels far below actionable levels for evacuation or relocation
  - All aerial measurements at US facilities were less than 32  $\mu$ R/hr - a level that poses no known health risk
  - Monitoring of these locations will continue although no increases in deposited radiation are anticipated

**Recent events of past 24 hours:**

**Bilateral Coordination**

- AMS scientist working at MEXT to produce joint products

**Aerial Monitoring Operations:**

- AMS C-12: No flight due to other operations
- AMS UH-1: Started but did not complete the UH-1 Flight 3 box west of Koriyama at 1000ft AGL and 2000 foot line spacing due to the weather

**Field Monitoring Operations:**

- Conducted beta/gamma surveys, mobile survey, in-situ measurements, and soil samples in the southern test box inside the Joint U.S. and Japan Flight Area
- Conducted beta/gamma surveys, mobile survey, in-situ measurements, and soil samples in the southern test box west of Koriyama
- Shutdown and collect the air sampler at Harris Towers, change out air sample at Embassy, and train DOE personnel assigned to the Embassy to change out air samples

**Planned operations over the next 24 hours:**

**Field Monitoring (Aerial)**

- Operational priority: Re-fly areas of highest deposition to confirm no new releases and monitor decay
  - AMS C-12: Weather and winds permitting, will complete the C-12 Flight 1 and 2 boxes in the 60 km to 80 km arc south west of the Fukushima-Daiichi plant at 2000ft AGL and 1 mile line spacing
  - AMS UH-1: Weather and winds permitting, will complete the UH-1 Flight box in the 60 km to 80 km arc south of Natori at 1000ft AGL and 2000 foot line spacing

**Field Monitoring (Ground)**

- Conduct beta/gamma surveys, mobile survey, in-situ measurements, and soil samples in the sector 1 box inside the 30 – 60 km ring
- Conduct beta/gamma surveys, mobile survey, in-situ measurements, and soil samples in the sector 1 box inside the 60 – 80 km ring

**Updates by Reactor Unit (updated each SITREP)**

- **Fukushima Daiichi Unit 1 reactor**
  - Per JAIF at 0000 JST 4/25, reactor parameters are: RPV Temp 137.7 C at feedwater nozzle, RPV pressure (A) 0.440 MPaG, (B) 1.160 MPaG; water level (A) -1.70 (B) -1.70 meters below the top of the fuel rods. Containment vessel pressure 0.155 MPa abs. SFP temperature is 14°C.
  - Per IAEA at 0300 UTC 24 April fresh water is being continuously injected into the reactor pressure vessel through the feedwater line at an indicated flow rate of 6 m<sup>3</sup>/h.
  - Per IAEA at 1625 UTC 21 April, Nitrogen gas continues to be injected into the Unit 1 Containment Vessel.
  - Unit #1 contains 292 assemblies in the spent fuel storage pool.



- **Fukushima Daiichi Unit 2 reactor**
  - Per JAIF at 0000 JST 4/25, reactor parameters are: RPV temperature 122.9 °C and the feed water nozzle, RPV pressure (A) 0.020 MPaG, (B) 0.027 MPaG; water level (A) -1.50 (B) -2.10 meters below the top of the fuel rods. Containment vessel pressure 0.080 MPa abs. SFP temperature is 47.0 °C.
  - Per IAEA at 0300 UTC 24 April, fresh water injection into the RPV is ongoing at 7.0 m<sup>3</sup>/h.
  - Per IAEA at 1800 UTC 24 April, 97 tons of fresh water was injected to the SFP via SFP cooling line from 19-22 April.
  - Unit #2 SFP contains 587 assemblies in the spent fuel storage pool.
- **Fukushima Daiichi Unit 3 reactor**
  - Per JAIF at 0000 JST 25 April, reactor parameters are: RPV temperature 74.6 °C at the feedwater nozzle, RPV pressure (A) 0.055 MPaG, (B) 0.089 MPaG. water level (A) -1.85 (B) -2.25 meters below the top of the fuel rods; containment vessel pressure 0.1038 MPa abs;
  - Per IAEA at 0300 UTC 24 April, fresh water injection ongoing at 6.8 m<sup>3</sup>/h.
  - Per IAEA at 1800 UTC 24 April, 50 tons of water was sprayed into the SFP on 22 April.
  - Unit #3 SFP contains 514 assemblies in the spent fuel storage pool.
- **Fukushima Daiichi Unit 4 reactor**
  - Per JAIF, as of 0730, JST 20 April, thermography of the SFP indicated the water temp was 29°C.
  - Per IAEA at 1800 UTC 24 April, 140 tons of fresh water was sprayed over the SFP using the concrete pumping vehicle from 04:30 to 08:44 UTC 23 April. Further spraying began at 04:25 UTC 24 April.
  - Unit 4 is shutdown with the core removed to the spent fuel pool in December for maintenance on the reactor.
  - Unit #4 SFP contains 1331 irradiated fuel assemblies, plus 204 fresh fuel assemblies in the spent fuel storage pool.
- **Fukushima Daiichi Unit 5 reactor**
  - Unit 5 was in a refueling outage at the time of the earthquake.
  - Per JAIF, as of 0200 JST 25 April, the SFP water temp was 35.1°C.
  - Unit #5 SFP contains 946 assemblies in the spent fuel storage pool.
- **Fukushima Daiichi Unit 6 reactor**
  - Unit 6 was in a refueling outage at the time of the earthquake.
  - Per JAIF of 0200 JST 25 April, SFP water temp was 30.0°C.
  - Unit #6 SFP contains 876 assemblies in the spent fuel storage pool.
- **Fukushima Daiichi Common Spent Fuel Pool**
  - No change in condition/status several days.
  - Temperature was about 24°C as of 22:40 UTC on 24 April.

- **Fukushima Daiichi Dry Cask Storage Building**
  - No change in condition/status several days.

Sources include:

Federation of Electric Power Companies of Japan  
Nuclear Industrial Safety Agency

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Links:

<http://www.jaif.or.jp/english/>  
<http://www.tepco.co.jp/en/index-e.html>  
<http://www.iaea.org/>  
<http://www.mext.go.jp/english/>  
<https://portalwc.doe.gov/>  
<http://www.nisa.meti.go.jp/english/>  
<http://www.fepc.or.jp/english/>  
<http://english.kyodonews.jp/>  
<http://www3.nhk.or.jp/nhkworld/>

### **Other Information**

## **UPDATE ON USG COORDINATION**

### **Bilateral Coordination**

No significant updates.

### **Media Reports**

April 25 JST, NHK, **TEPCO monitoring rising temperatures.** The operator of the troubled Fukushima Daiichi nuclear power plant is carefully monitoring Unit 4 spent fuel pool, where water temperature is rising despite increased injections of cooling water. TEPCO says it will inject 210 tons of water into the pool on Monday, after finding on Sunday evening that the temperature in the pool had risen to 81 °C. The utility firm had earlier limited the amount of water being injected into the pool to 70 tons a day, saying the weight of the water could weaken the reactor building, which was already damaged in last month's hydrogen explosion.

On Friday, TEPCO found that the pool's temperature had reached 91 degrees, so it began injecting 2 to 3 times the amount of water. TEPCO says the pool's water temperature dropped to 66 degrees on Saturday after water was injected, but started to rise again, to 81 degrees. The operator says the water level in the pool was 2.5 meters lower than normal after 165 tons of water were injected on Sunday. It is carefully monitoring the water level and temperature to avoid further troubles. The Number 4 spent fuel pool stores 1,535 fuel rods, the most at the nuclear complex. (0600 4/25 SITREP)

April 25 JST NHK, **Heat exchanger for Unit 1 reactor considered.** TEPCO is thinking about setting up a heat exchanger to hasten the full-scale recovery of the cooling system



at the Number 1 reactor of the Fukushima Daiichi nuclear power plant. TEPCO says 70 percent of the fuel is apparently damaged and 6 tons of water per hour is being injected into the reactor. In order to cool it under more stable conditions, TEPCO wants the water level in the containment vessel to reach the height of the fuel rods. At present, the water level is estimated to be about 6 meters from the bottom of the containment vessel.

Two plans have been considered to cool the vessel, one uses sea water, the other air. To avoid the risk of further damage from possible aftershocks TEPCO is favoring the water system. It says the pipes which connect the containment vessel and the heat exchanger must be quake protected. In addition, radioactive substances must be removed before pouring contaminated water into the heat exchanger.

These tasks should be done inside the nuclear reactor building but as the level of radioactivity is too high for human entry, many problems remain before the heat exchanger can be set up. (0600 4/25 SITREP)

**April 25 JST NHK, Rewiring starts at Fukushima Daiichi.** TEPCO is rewiring the power grid at its Fukushima Daiichi nuclear plant to secure the electricity supply in case of another strong quake. The plant's 6 reactors are now connected in pairs to external power sources. TEPCO began connecting the cables for the No. 1 and No. 2 reactors with the grid for the No. 5 and No. 6 reactors on Monday. This is to ensure that if any one of the 3 outside sources is cut off, the others can be used to cool the reactors.

During the work, external power to the No. 1 and No. 2 reactors will be suspended for about 4 hours. Instead, diesel generators will power the injection of water to cool the reactors. The plant operator says external power to the No. 5 reactor will also halt for about 2 hours, but that there will be no problem. Operation at the reactor has been safely stopped.

Injection of nitrogen into the container of the No. 1 reactor to prevent another hydrogen explosion has also been halted. But TEPCO says this will not pose any issues.

TEPCO decided to rewire the power grids after all 13 of the emergency generators were disabled when a tsunami hit the plant on March 11th. The blackout has led to 4 of the 6 reactors overheating. A major aftershock on April 11th temporarily cut off the external power supply, forcing pumping of water into the 4 reactors to stop for about 50 minutes. (0600 4/25 SITREP)

**April 25 JST NHK, TEPCO discloses radiation map** Tokyo Electric Power Company has disclosed a map of radiation levels at the damaged Fukushima Daiichi nuclear plant.

The utility plans to urgently remove radioactive rubble, and the map will help to protect workers from unnecessary exposure to radiation. TEPCO began making the map in late March, and has posted copies in the plant's buildings.

The map shows radiation levels that controllers measured around the first 4 reactors before the start of the working day. Radiation levels around the Number 3 reactor building, which was damaged by a powerful hydrogen explosion, are higher than in other locations, and 300 millisieverts per hour of radiation was detected in debris on a nearby mountainside.

Work started on April 6th to remove contaminated rubble, which had been obstructing the restoration process. TEPCO says much of the debris around the former office building has been removed, and it has started clearing the rubble around the Number 3 and Number 4 reactors. Enough debris has been removed to fill 50 containers, and it is being kept in a field on the mountainside. The radiation levels one meter away are 1 to 2 millisieverts per hour. (0600 4/25 SITREP)

Tokyo, April 25 JST Kyodo. **TEPCO's contamination map shows radiation levels at 150 plant areas.** A contamination survey map drawn up by Tokyo Electric Power Co. shows the radiation levels at about 150 locations inside the utility's damaged Fukushima Daiichi nuclear power plant, according to information obtained Saturday by Kyodo News. TEPCO updates the data periodically to help guide workers trying to contain the nuclear crisis at the plant in Fukushima Prefecture, which was crippled after the March 11 earthquake and tsunami, avoid highly radioactive areas. It also submits the updated maps of data near the Nos. 1 to 4 reactors to the Economy, Trade and Industry Ministry and the government's Nuclear and Industrial Safety Agency and posts them at the base for dealing with the crisis in Fukushima Prefecture.

In the first revelation of detailed radiation levels inside the plant, the map containing data up to Wednesday night shows that a piece of debris near the No. 3 reactor recorded a high radiation emission of 900 millisieverts per hour. Many of the locations, including a pipe through which highly radioactive water is being transferred and rubble that remains on the premises, indicated radiation measurements of about 100 millisieverts, the data show. Another piece of debris found beside the No. 3 reactor measured 300 millisieverts, and the surface of a pipe that sends water containing high levels of radiation to a nuclear waste disposal facility recorded 75 to 86 millisieverts. A pipe near the facility contained radiation as high as 160 millisieverts.

The government has raised the legal limit on the amount of radiation to which each worker can be exposed in an emergency situation to 250 millisieverts. It takes less than 17 minutes to reach the limit when a worker is exposed to 900 millisieverts per hour. Amid concerns about the impact of radiation leaks on the environment and on workers, TEPCO has been using remotely controlled equipment to remove debris from hydrogen explosions at some of the reactors following the earthquake and tsunami disaster. It is expected to take around six months to complete the task. (0600 4/25 SITREP)

Tokyo, April 25 JST Kyodo. **Government endorses TEPCO's estimates on radioactive leak into sea.** The government's nuclear safety agency on Monday endorsed a report by Tokyo Electric Power Co. estimating radioactive substances 20,000 times the



allowable annual limit were carried into the Pacific Ocean by contaminated water leaking from the crisis-hit Fukushima Daiichi nuclear plant in early April.

The Nuclear and Industrial Safety Agency approved the report submitted by the plant operator last Thursday and said the leak would not cause immediate health hazards because radioactive materials would be diluted in seawater, while fishing had been banned in areas close to the atomic power station.

Hidehiko Nishiyama, a spokesman for the nuclear agency, said the concentration of radioactive substances believed to have leaked into the sea from a cracked pit between April 1 and 6 was about 30,000 times higher than the level seen in low-level radioactive water TEPCO deliberately dumped into the sea between April 4 and 10. (0600 4/25 SITREP)

**Tokyo, April 25 JST Kyodo Government decides specifics of nuke crisis evacuees' brief hometown visits** The government has decided on the specifics of brief visits by evacuees to their homes within a 20-kilometer radius of the crippled Fukushima Daiichi nuclear power plant, including allowing them to stay within the zone for up to five hours, officials said Monday.

Prime Minister Naoto Kan told a parliamentary session that he expects the hometown visits by evacuees to begin after the upcoming Golden Week holidays through early May and wrap up after some time given that more than 26,000 households will be involved.

The government has explained the details to municipalities located within the 20-km area, which was designated last week as a legally binding no-entry zone. (0600 4/25 SITREP)

**Sendai, April 25 JST Kyodo Tokyo-Sendai bullet train service resumes** Bullet train services on the Tohoku Shinkansen Line resumed between Tokyo and Sendai on Monday for the first time since the Miyagi Prefecture capital was severely hit by the March 11 massive earthquake and tsunami.

The resumption will likely stimulate reconstruction activities in the disaster-ravaged northeastern region of Tohoku as it will allow local government officials quick access to the Tokyo metropolitan area and help boost tourism to the region as well.

The shinkansen service between Tokyo and Sendai was restored after operations resumed between Sendai and Fukushima stations Monday. East Japan Railway Co. plans to resume shinkansen runs on the entire Tohoku line between Tokyo and Shin-Aomori on Friday. (0600 4/25 SITREP)

**April 25 JST NHK Fukushima restricts park use.** Fukushima Prefecture is restricting the use of 5 of its public parks due to high levels of radiation, causing concerns among nearby residents and park visitors. The prefecture announced on Monday that it would limit the use of the parks to one hour a day, as radiation readings at the 5 facilities were at or above the safety limit set for outdoor activities in schools. The safety limit set by the central government last week is 3.8 microsieverts per hour.

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In Fukushima city, officials put up notices warning park users about the one-hour restriction at parks subject to the measure. They also covered children's sandboxes with plastic sheeting to prevent the spread of dust. The prefectural government is urging visitors to prevent their children from putting sand or dirt in their mouths and to wash their hands and gargle after visiting the parks. A mother of a 4-year-old said that since small children love to play outdoors, she's worried about the effects of radiation on her daughter. (0600 4/25 SITREP)

**CONTACT INFORMATION:**

**Nuclear Incident Team in the Emergency Operations Center**

(b)(6)

**Office of the Deputy Secretary 202-586-5500**

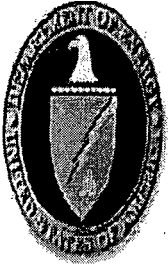
**Watch Schedule**

**April 25** 0400-0800  
Jeff Underwood  
Michael Worley

**April 26** 0400-0800  
Regina Carter  
Bob Boudreau

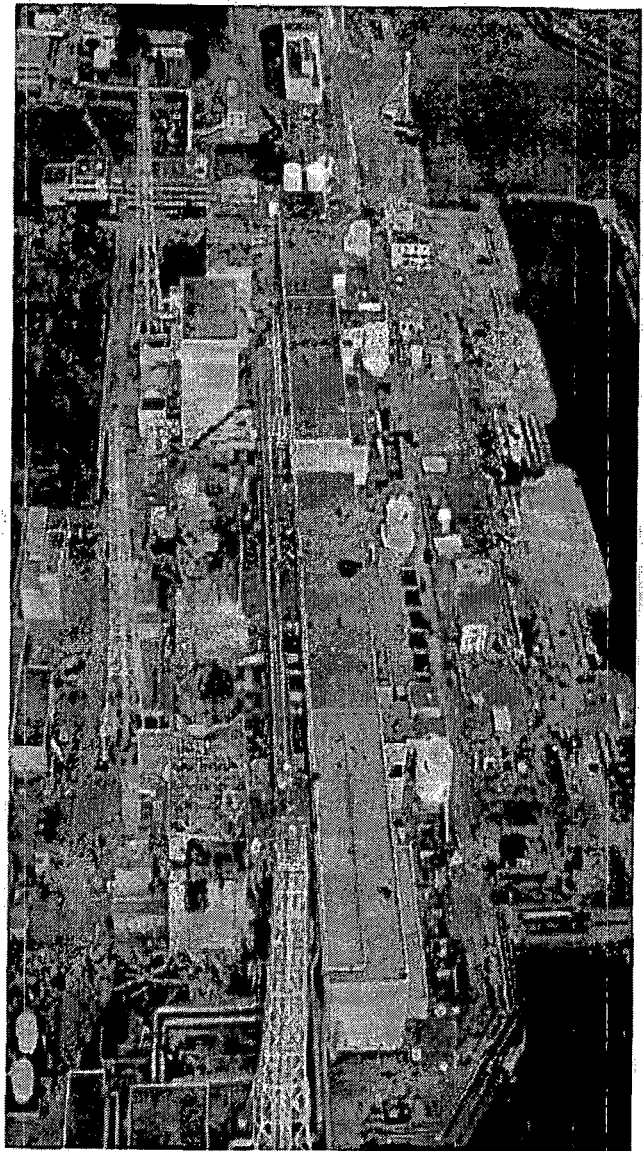
~~—OFFICIAL USE ONLY—~~



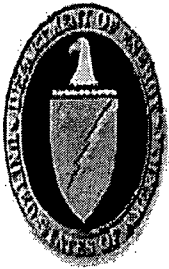


# Japan Earthquake Response

April 25, 2011 // 0600 EDT



— OFFICIAL USE ONLY —

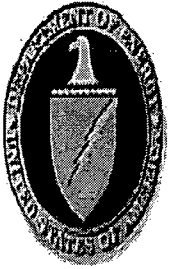


**This information is for limited distribution to  
those with a  
NEED TO KNOW  
and should not be forwarded outside your  
agency or organization without prior  
clearance from U.S. DOE**

**Contact: DOE/NNSA Nuclear Incident Team**

(b)(6)

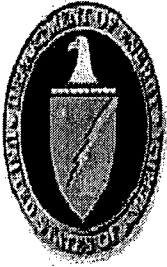




## DOE/NNSA Objective

- **Objective: Collect data and provide measurement results and technical advice on radioactive contamination and radiation exposure:**
  - In support of the State Department in advising American citizens on protective action and evacuation guidelines
  - In support of DoD in its efforts to safely conduct humanitarian assistance/disaster relief operations and advice on departure/return of military dependents
  - In support of the Government of Japan (GOJ) in producing guidelines on relocation and use of agricultural lands

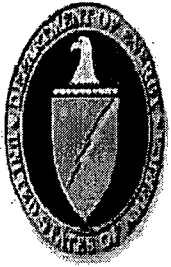
***Desired End-state:*** Successful transfer of supplementary equipment and expertise to GOJ to facilitate large-scale, long-term monitoring and sampling efforts; DOE/NNSA provides intermediate assistance in the form of reachback and laboratory analysis support to GOJ and DoD



## Current Status

- TEPCO plans to begin spraying a chemical hardening agent on top of debris near the reactor buildings on April 26
- Units 1, 2, 3 and 4 reactor buildings and spent fuel pools generally stable and continue to receive fresh water injections
- TEPCO says it will inject 210 tons of water into the pool on Monday, after finding on Sunday evening that the temperature in the pool had risen to 81 °C. TEPCO had earlier limited the amount of water injected into the pool to 70 tons a day, saying the weight of the water could weaken the reactor building, already damaged in last month's hydrogen explosion.
- TEPCO is thinking about setting up a heat exchanger to hasten the full-scale recovery of the cooling system at the Unit 1 reactor. TEPCO wants the water level in the containment vessel to reach the height of the fuel rods - water level is estimated to be about 6 meters from the bottom of the containment vessel.
- TEPCO is rewiring the power grid at its Fukushima Daiichi nuclear plant to secure the electricity supply in case of another strong quake
- Radiation levels around Unit 3 reactor building, damaged by hydrogen explosion, are higher than in other locations; 300 mSv/hr was detected in debris on a nearby mountainside





# DOE/NNSA Emergency Response

- **Command, Control, Coordination:**
  - **Nuclear Incident Team (NIT):** Coordinating overall response
  - **Policy Working Group (PWG):** Coordinating overall policy
  - **Senior Energy Official:** Primary Manager of deployed field teams
  - **Liaisons:** DART
- **Modeling and Assessment**
  - **National Atmospheric Release Advisory Center (NARAC):** Conducting predictive radioactive atmospheric dispersion modeling
  - **Consequence Management Home Team (CMHT)\*\*:** Providing scientific assessment of ground measurements and AMS flights
- **Field Monitoring**
  - **Consequence Management Response Team (CMRT)\*\*:** Conducting ground monitoring, air sampling and initial results analysis
  - **Aerial Measuring System (AMS):** Conducting aerial detection for mapping radiological ground material deposits. Currently 2 platforms: 1 Fixed, 1 Rotary
- **Sampling and Lab Analysis**
  - **Lawrence Livermore and Los Alamos National Labs (LLNL & LANL):** Conducting airborne contamination monitor filter analysis
  - **Savannah River Site (SRS)\*\*:** Conducting radionuclide analysis of soil samples
- **Medical Consultation**
  - **Radiation Emergency Assistance Center/Training Site (REAC/TS):** Providing medical advice about radiological exposure

## Deployed\* (35)

### Yokota AB

- (1) SEO
- (1) SEO Staff
- (31) Field Monitoring

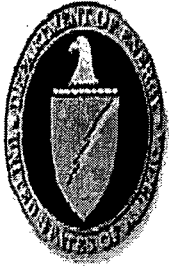
### US Embassy Tokyo

- (2) DART LNO

*\*The number deployed does not currently reflect DOE/NNSA personnel assisting in nuclear energy (NE) aspects of the response.*

**\*\*Augmented by personnel from the DOE/NNSA Radiological Assistance Program (RAP)**

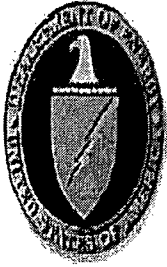
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## Significant Events: Past 24 Hrs

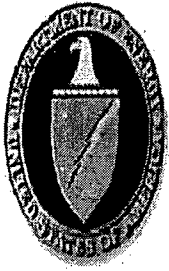
- **Bilateral Coordination**
  - DOE Field Operations assigned scientific and data support to collaborate directly with GOJ/MEXT for the production of joint data products resulting from monitoring operations





## Significant Events: Past 24 Hrs

- **Aerial Monitoring Operations**
  - AMS C-12: No flight due to other operations
  - AMS UH-1: Started but did not complete the UH-1 Flight 3 box west of Koriyama at 1000ft AGL and 2000 foot line spacing due to the weather
- **Field Monitoring Operations**
  - Conducted beta/gamma surveys, mobile survey, *in situ* measurements, and soil samples in the southern test box inside the Joint U.S. and Japan Flight Area
  - Conducted beta/gamma surveys, mobile survey, *in situ* measurements, and soil samples in the southern test box west of Koriyama
  - Shutdown and collected the air sampler at Harris Towers, changed out the air sampler at Embassy, and trained DOE personnel assigned to the Embassy to change out air samples



## Significant Events: Past 24 Hrs

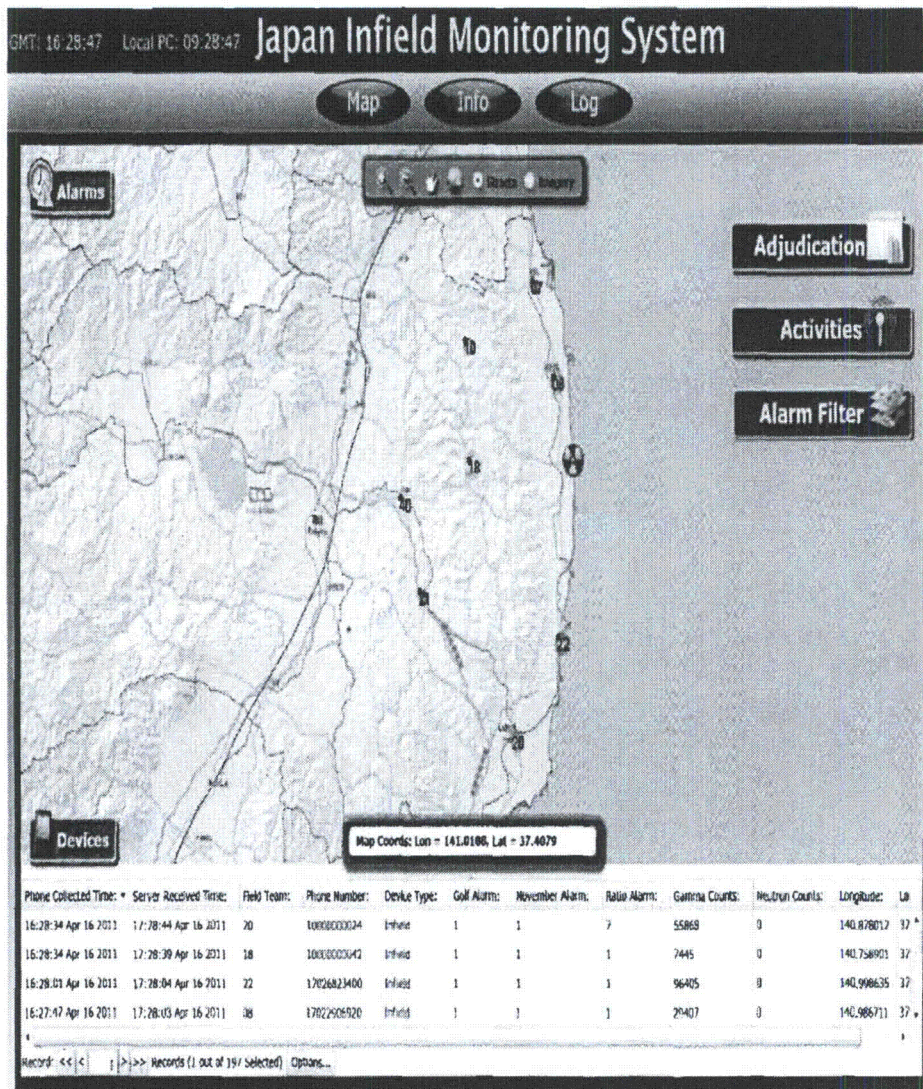
- **Modeling and Assessment**
  - NARAC continued to normalize models to field measurements, assess time correlated deposition, conduct trend analysis, and correlate dose rate measurements with actual weather patterns
- **Sampling and Analysis**
  - Continued CMHT analysis of air samples processed at GEL Laboratory
  - Prioritized soil samples for analysis at Savannah River Site
- **Medical Consult**
  - Nothing substantive to report
- **Nuclear Incident Team**
  - Provided ground monitoring and aerial measuring data spreadsheets to CDC, FDA, HHS, USDA, EPA, NRC, DHS, NR, DIA, NCMI, and WH





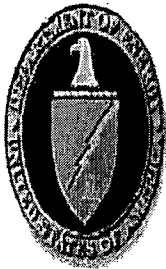
# Infield Monitoring System

## Live Status Board



### Infield Monitoring System

- ♦ An array of sodium iodide radiation detectors placed at key locations, as identified by the green dots, around Fukushima Daiichi
- ♦ The Infield Monitoring System detects changes in radiation levels
- ♦ IMS is continuously monitored in real time



# Data Inputs

- **Monitoring**

- 418 hours total flying time for Aerial Measuring System (AMS) fixed and rotary-wing
- 201,148 total field measurements taken by DOE, DoD, and GOJ fixed stations and deployed teams

- **Sampling**

- 590 total air samples taken at US facilities throughout Japan for lab analysis in US
- 93 total *in situ* ground spectra taken throughout Japan for lab analysis in US
- 96 Japan soil samples received, inprocessed, and being prepared by SRS Environmental Lab for analysis
  - Four soil samples are expected to get shipped out on Monday

## Organizations Providing Data

- **Consequence Management Response Team**

- CMRT
- AMS
- AFRAT (departing Japan mid-May)

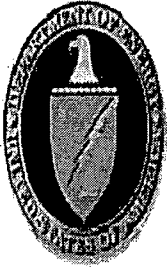
- **External US**

- Japan Emergency Command Center, US Embassy, Tokyo
- USAF, BSC Commander
- USAF, WC-135 Constant Phoenix
- Futenma Marine Corps Air Station
- Nuclear Regulatory Commission
- Naval Reactors

- **Japan**

- Ministry of Foreign Affairs (MOFA)
- Nuclear Safety Technology Center (NUSTEC)
- Tokyo Electric Power Company (TEPCO)
- Ministry of Agriculture, Forestry and Fisheries (MAFF)
- Ministry of Education, Culture, Sports, Science, and Technology (MEXT)
- Ministry of Health, Welfare and Labor
- Nuclear and Industrial Safety Agency (NISA)
- Nuclear Safety Commission





# Guide to Interpretation

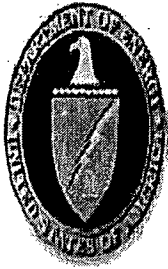
## Areas at Risk for Agricultural Contamination

- Aerial measurements can indicate areas where agricultural monitoring and sampling should occur, although they cannot directly determine the amount of contamination of agricultural products grown in these areas
- AMS monitoring results in areas beyond 25 miles from the Fukushima Daiichi reactors show areas where dose rates are many times higher than historical background
- The measured external dose rates in these areas are not high enough to warrant evacuation or relocation of the population, however, lower levels of radioactive contamination in agricultural products provide more of a risk because the radioactive material can be ingested into the body. Agricultural monitoring in these areas may be warranted.

◆ Areas 10 to 100 times historical background are indicated by green.

◆ Areas 2 to 10 times historical background are indicated by light blue.

◆ Areas at or near historical background are indicated by dark blue.



# Guide to Interpretation

## US EPA Derived Response Levels (DRLs) for Evacuation and Relocation

### ■ Early Phase DRL

If a person is in danger of receiving an external radiation dose of 1 Rem over 4 days, the EPA recommends evacuation until radiation levels decrease. This area is indicated by red.

### ■ First Year DRL

If a person is in danger of receiving an external radiation dose greater than 2 Rem during the first year, the EPA recommends relocation until radiation levels decrease. This is not an urgent action because the dose is received over a full year. This area is indicated by orange.

### ■ Fifty Year DRL

If a person is in danger of receiving an external radiation dose greater than 5 Rem over 50 years, the EPA recommends relocation until radiation levels decrease. This is not an urgent action because the dose is received over fifty years. This area falls within the second year DRL.

### ■ Second Year DRL

If a person is in danger of receiving an external radiation dose of greater than 0.5 Rem in the second year (or any subsequent year), the EPA recommends relocation until radiation levels decrease. This area is indicated by yellow.

*These calculations account for multiple variables. For instance, radiation is most intense in the first days following its release therefore dose reduction may be met by evacuating early in the response.*

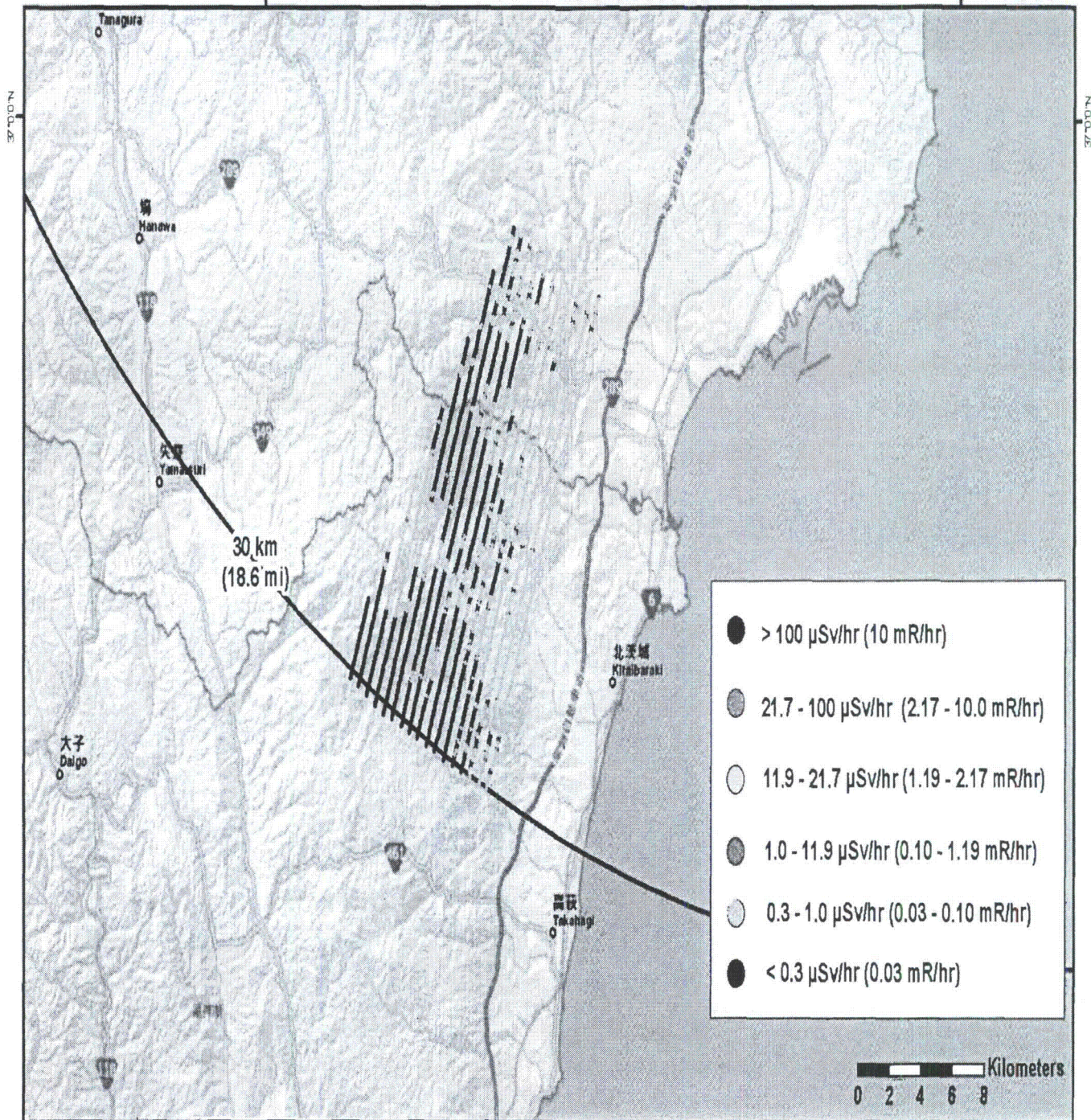
*Protective actions are frequently expressed in dose rates. The dose rate is an indicator that residents would accumulate the threshold dose if they stayed in the area the entire time expressed (e.g. 1 year, 2 years, 50 years).*





# Aerial Monitoring Results UH-1 Flight (April 24, 2011)

FUKUSHIMA DAIICHI  
JAPAN



Map created on 04252011 1300 JST

Name: CMOC UH-1 Results 04252011

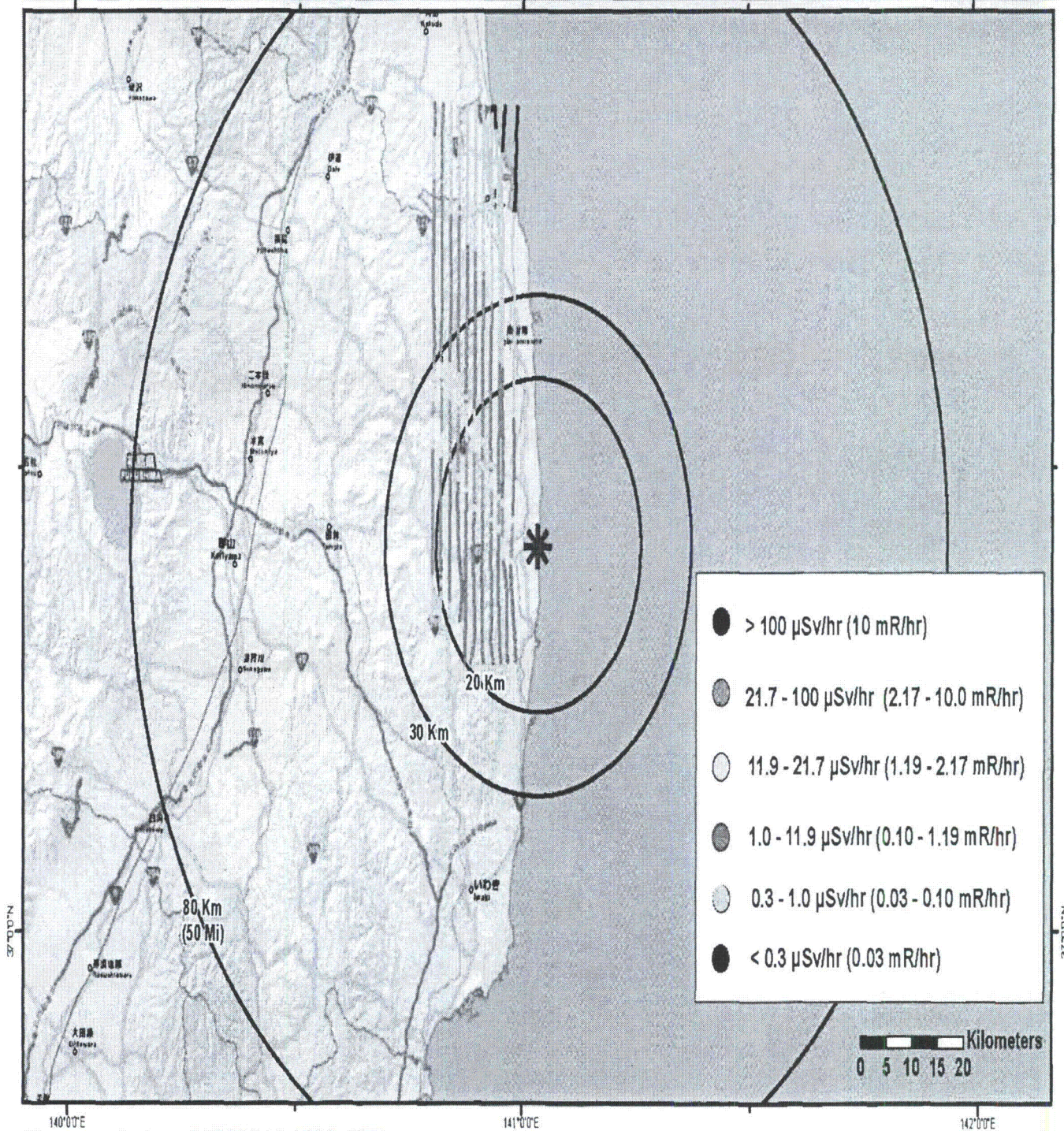
Official Use Only





# Aerial Monitoring Results C-12 Flight (April 24, 2011)

FUKUSHIMA DAIICHI  
JAPAN



Map created on 04252011 1330 JST  
Name: CMOC C-12 Results 04252011

— Official Use Only —



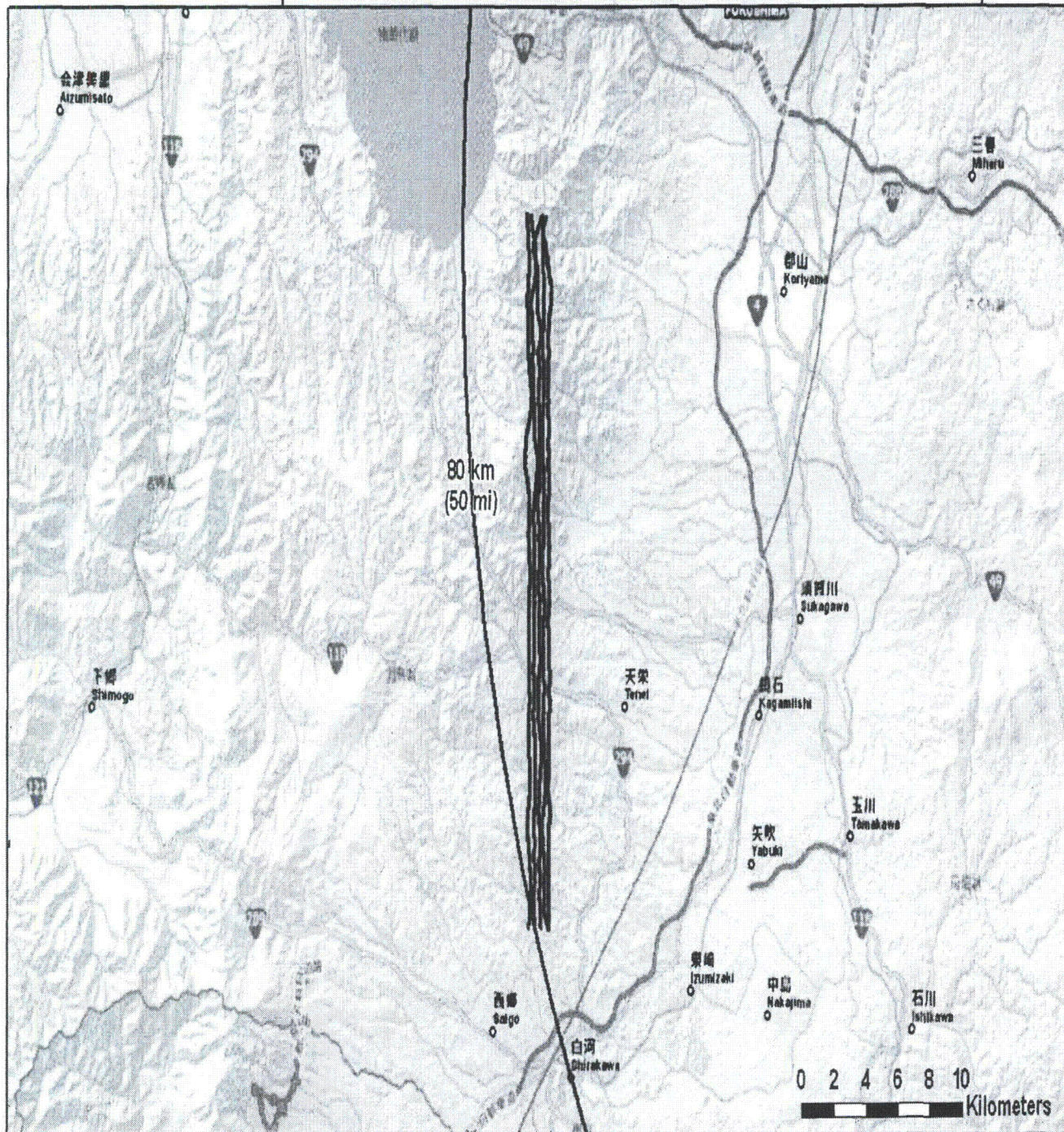


# Aerial Monitoring Path UH-1

April 25, 2011

FUKUSHIMA DAIICHI

JAPAN



Map created on 04252011 1640 JST

Name: NIT UH-1 Path 04252011\_2

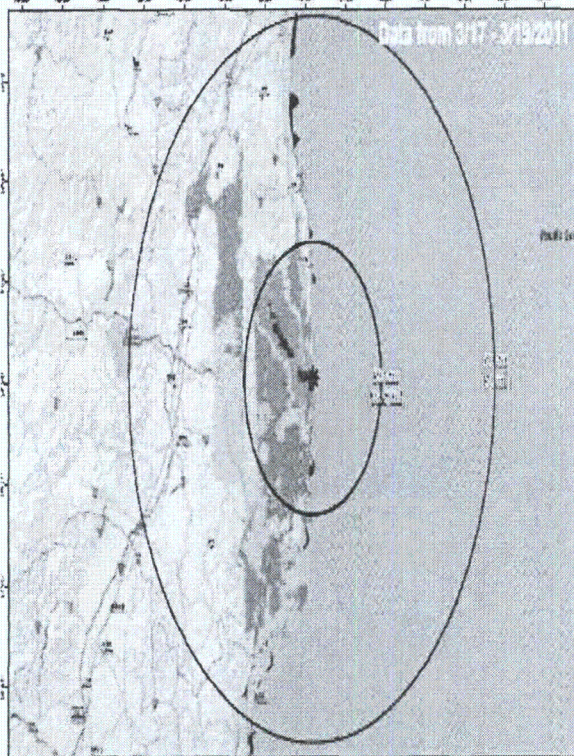
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# Aerial Monitoring Survey Areas

## Overview Aerial Monitoring Contoured Results (3/17 - 04/17/2011)

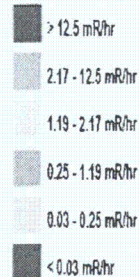
FUKUSHIMA DAIICHI  
JAPAN



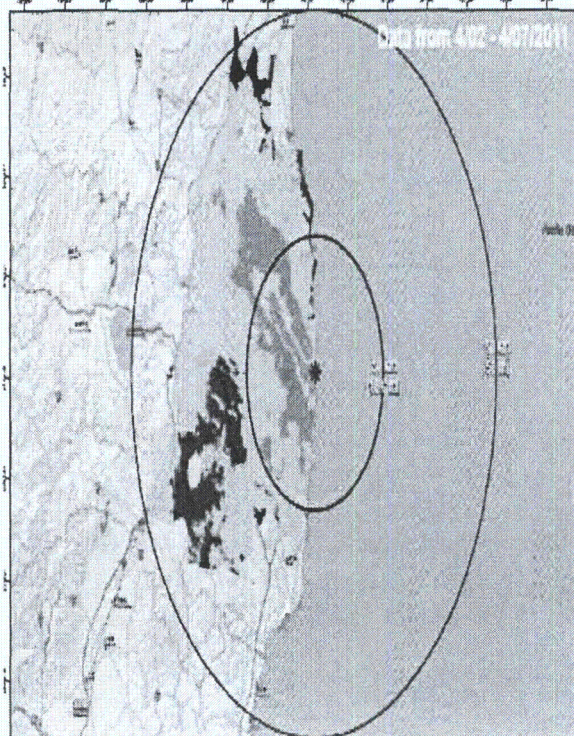
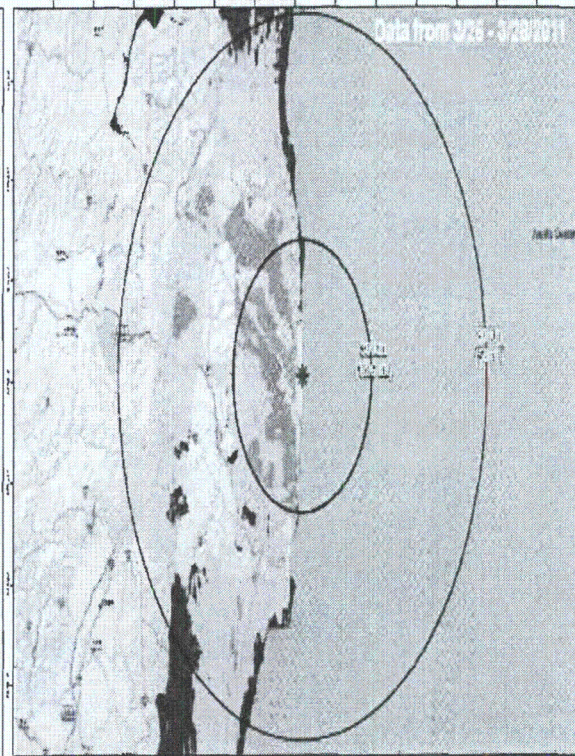
UNCLASSIFIED

Aerial Data (3/17 - 4/17/2011)

Exposure Rate at 1 Meter

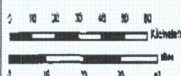


This map was produced by the Geographic Information Systems department of NSA's Remote Sensing Laboratory (RSL) at Hurler AFB, Las Vegas, Nevada. ESRI World Street Map and COMINT databases were used for map generation.

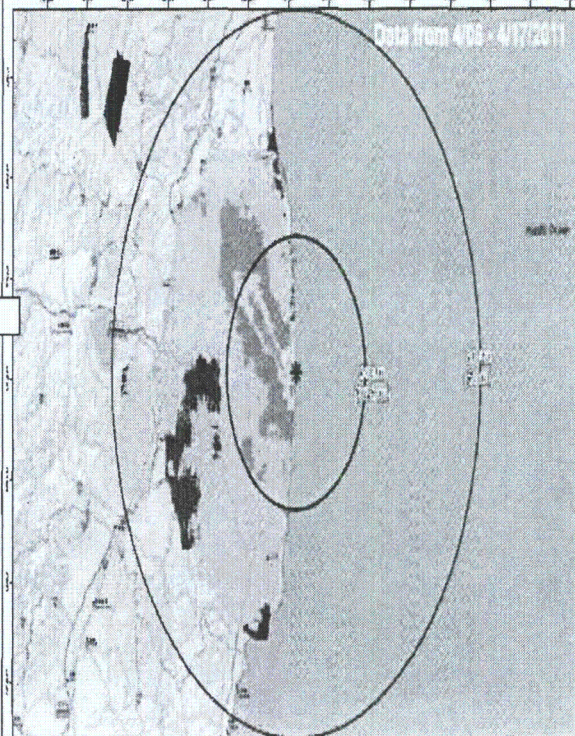


Not For Public  
Distribution

Nuclear Incident Team DOE NIT  
Contact (b)(6)



NSA and NSA/CSS/ISS are not responsible for the use of this information by any other agency.

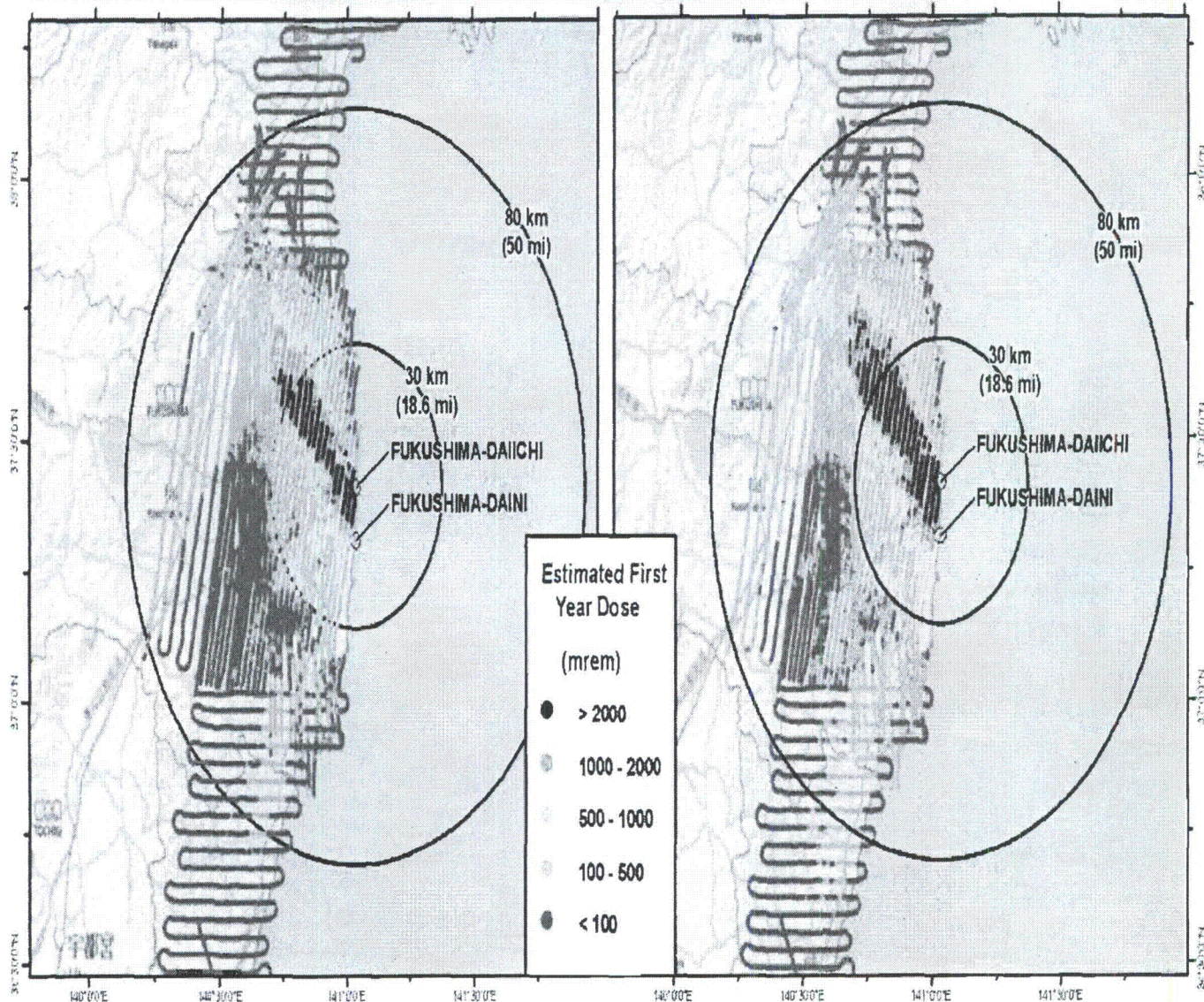






# Sheltering Effects Comparison Dose Commencing March 16, 2011 for 365 Days

FUKUSHIMA DAIICHI  
JAPAN

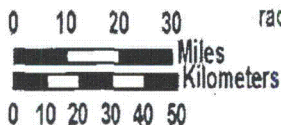


## Sheltering Assumptions

- 40% dose reduction factor for spending 16 hours a day inside a wooden house and 8 hours outside
- takes into account radioactive decay of the source material
- includes the effects of external radiation due to material deposited on the ground and inhalation of resuspended radioactive particles

## No Sheltering Assumptions

- no dose reduction factor for time spent indoors
- takes into account radioactive decay of the source material
- includes the effects of external radiation due to material deposited on the ground and inhalation of resuspended radioactive particles



Map created on 04182011 1822 JST

Name: CMHT ShelteringEffectsComparison 18Apr2011

UNCLASSIFIED

Nuclear Incident Team DOE NIT

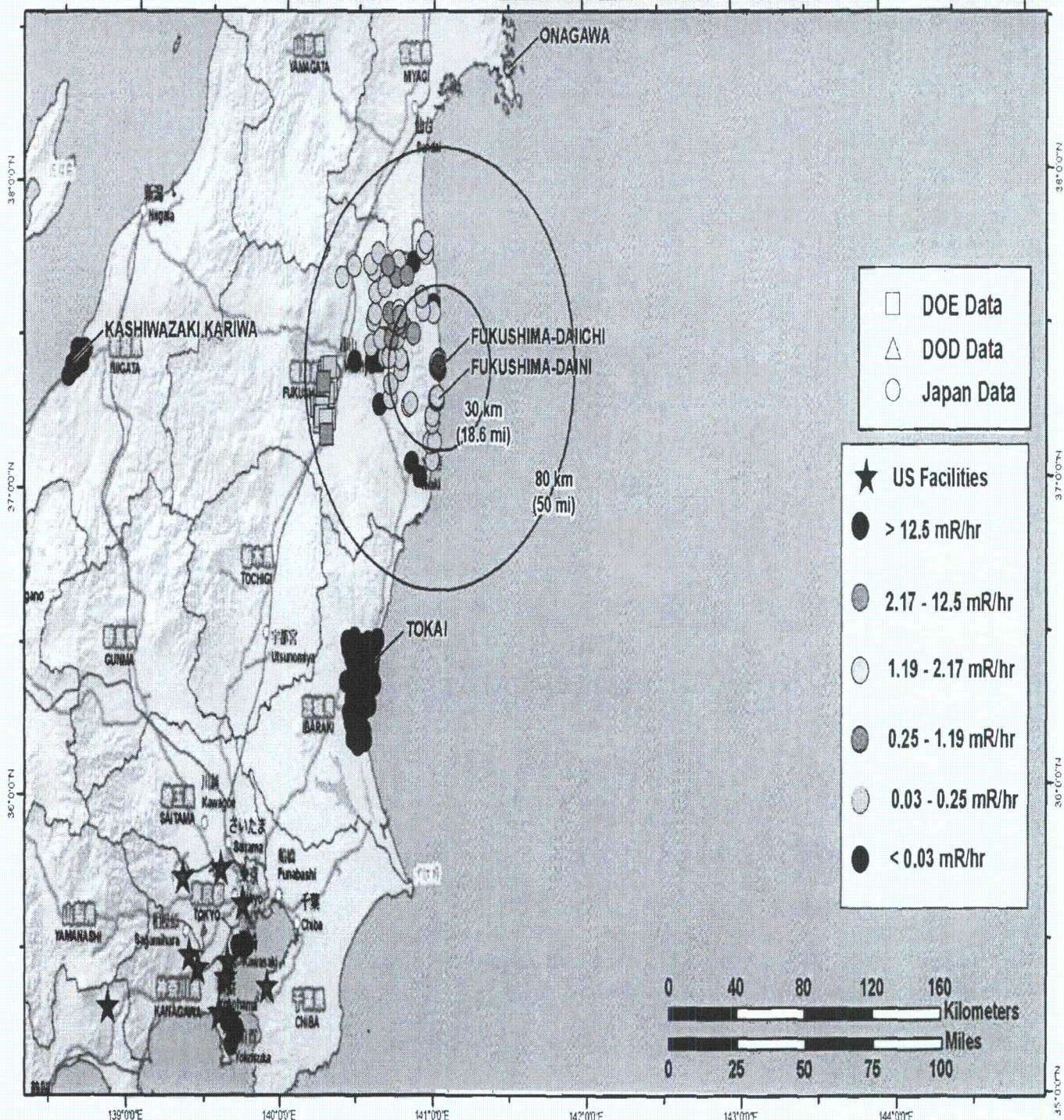
Contact (b)(6)





# Field Monitoring Results April 24 00:00 to 24:00 JST

FUKUSHIMA DAIICHI  
JAPAN



Map created on 04252011 1400 JST  
Name: NIT 24hrsMonitoringResults24Apr2011 1600JST

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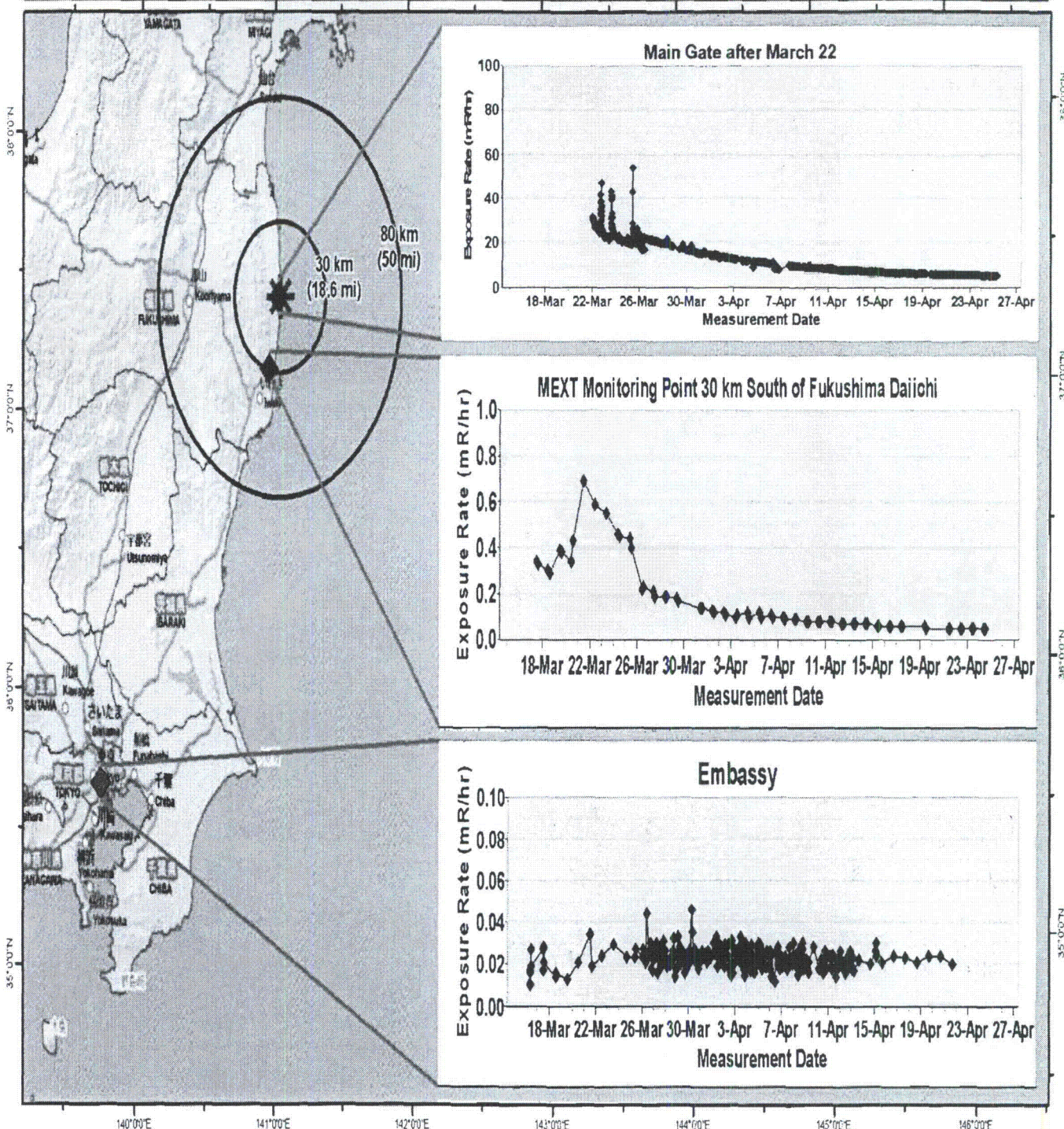
Nuclear Incident Team DOE NIT  
Contact (b)(6)





# Exposure Rate Trends From Fukushima South to the U.S. Embassy

FUKUSHIMA DAIICHI  
JAPAN



Map created on 04252011 1400 JST  
Name: CMHT MonTrend 24Apr2011 Simplified

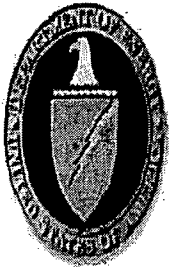
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Nuclear Incident Team DOE NIT

Contact

(b)(6)

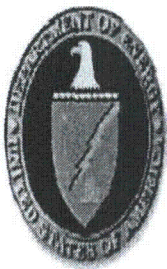




# Aerial and Ground Monitoring Data Assessment

- **An assessment of measurements gathered through 20 April continues to show:**
  - Radiation levels consistently below actionable levels for evacuation or relocation outside of 25 miles
  - Radiological material has not deposited in significant quantities since 20 March
- **An assessment of measurements gathered at US military installations in the Tokyo area through 20 April shows:**
  - Radiation levels far below actionable levels for evacuation or relocation
  - All aerial measurements at US facilities were less than 32  $\mu\text{R/hr}$  - a level that poses no known health risk
  - Monitoring of these locations will continue although no increases in deposited radiation are anticipated





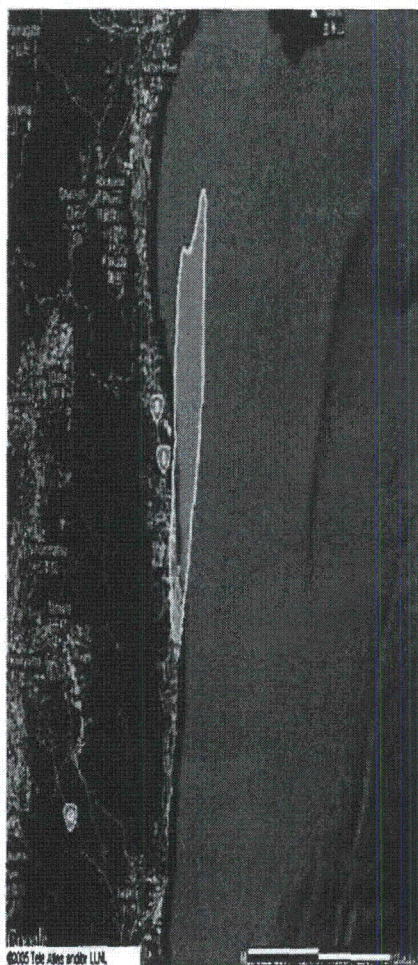
# Forecast Weather

## April 26, 2011 (JST)

04/26/11 04:00 JST



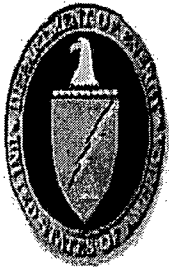
04/26/11 12:00 JST



04/26/11 20:00 JST



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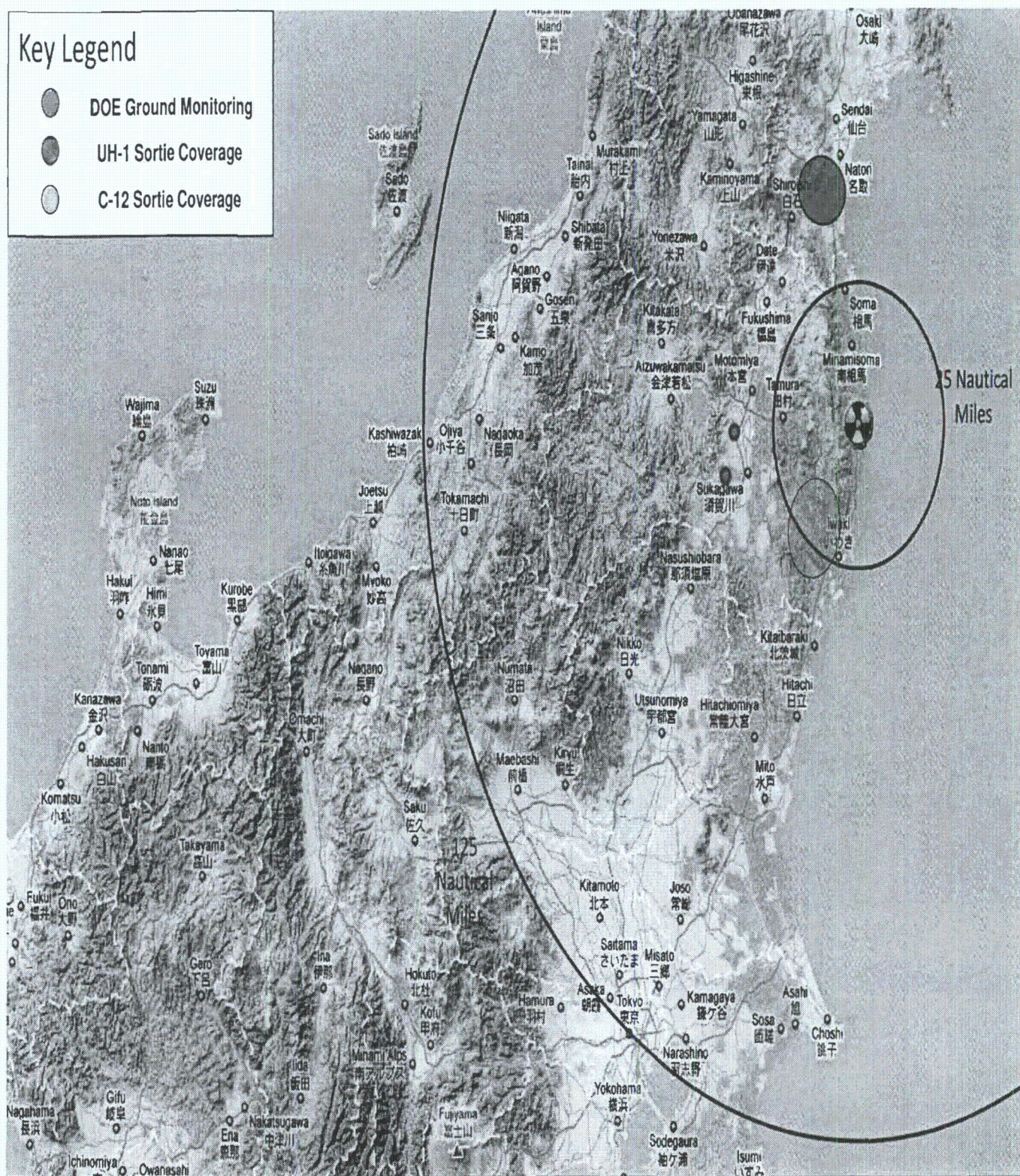
## Planned Operations: Next 24 Hrs

- **Field Monitoring (Aerial)**
  - Operational priority: Re-fly areas of highest deposition to confirm no new releases and monitor decay
    - AMS C-12: Weather and winds permitting, will complete the C-12 Flight 1 and 2 boxes in the 60 km to 80 km arc south west of the Fukushima-Daiichi plant at 2000ft AGL and 1 mile line spacing
    - AMS UH-1: Weather and winds permitting, will complete the UH-1 Flight box in the 60 km to 80 km arc south of Natori at 1000ft AGL and 2000 foot line spacing
- **Field Monitoring (Ground)**
  - Conduct beta/gamma surveys, mobile surveys, *in situ* measurements, and collect soil samples in the sector 1 box inside the 30 – 60 km ring
  - Conduct beta/gamma surveys, mobile surveys, *in situ* measurements, and collect soil samples in the sector 1 box inside the 60 – 80 km ring



## Key Legend

- DOE Ground Monitoring
- UH-1 Sortie Coverage
- C-12 Sortie Coverage



## Planned Aerial/Field Monitoring Operations

April 26, 2011 Operational Period



**NNSA**  
National Nuclear Security Administration



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DOE will produce only one SITREP per day which will be transmitted at 0600.

## **DEPARTMENT OF ENERGY SITUATION REPORT**

### **Earthquake & Tsunami in Japan**

26 April 2011

0600 (EDT) UPDATE

Yellow highlighted text indicates updates to this version. Older items will be deleted as necessary to minimize the size of this report and facilitate quick reading. Each entry is labeled with the source or the time and date of the latest SITREP that updated the information. Less frequent information updates are available from Japanese agencies.

(NOTE: JST = EDT + 13 hours; EDT = GMT/UTC - 4 hours).

### **POWER PLANT UPDATE AND OTHER NUCLEAR ISSUES**

Per NHK, Radioactive water rises in No.3 and 4 reactors. Per TEPCO, the water level in the tunnel of the No. 3 reactor rose to 99 centimeters below the surface as of 1800 on April 25. That passes the level at which TEPCO plans to remove the water, but it has yet to secure storage space. The water level in the basement of the No.3 reactor's turbine building also rose by 10 centimeters over 3 days. A survey on April 21 found an increase in the density of radioactive substances in the water in the basement of the No. 4 reactor's turbine building. Per TEPCO, the levels of cesium-134 and 137 increased about 250-fold and iodine-131 increased about 12 times compared with one month ago. The water level in the No. 4 reactor's turbine building rose by 20 centimeters in 10 days. TEPCO says water used to cool the No. 3 reactor could be leaking into No. 4 as their turbine buildings are connected. More details in Media Reports. (0600 4/26 SITREP)

Per NHK, TEPCO has prioritized the operation to transport water from No 2 reactor. The level of water has not changed but the level of radiation there is especially high and the contaminated water is hampering other work. The water level at Unit #2 is reported as 89 cm below the top of the tunnel. TEPCO has set the standard of one meter below the top of the tunnel as the point at which it should begin to remove contaminated water. More details in Media Reports. (0600 4/26 SITREP)

Per NHK, TEPCO is preparing to fill the No. 1 reactor with water. TEPCO is sending robots inside the reactor building to check for leakage and other damage in preparation for increasing the current water feed of 6 tons per hour to a maximum of 14 tons. TEPCO's plan is to fill the No. 1 reactor and its container with water by mid-July. The increased flow, if no issues are encountered, should begin April 27. Unfortunately, NISA (per Kyodo) has announced that they expect the robots to find water leakage, likely affecting the plans to flood the reactor. More details in Media Reports. (0600 4/26 SITREP)

NISA Update (the 113th Release, As of 11:30 April 25th, 2011)  
Fukushima Daiichi Nuclear Power Station (NPS)

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- Fresh water injection (Around 38t) to the Spent Fuel Pool of Unit 2 via the Spent Fuel Pool Cooling Line was carried out. (From 10:12 till 11:18 April 25th).
- The power supplies to the motor-driven pumps injecting fresh water to the Reactor Pressure Vessel was switched from external power supplies to temporary diesel generators for enhancement works of the external power supplies of Units 1 to 3. (10:57 April 25th)

**Directives Regarding Foods and Drinks**

- Addition of item for suspension of shipment: Shiitake grown on raw lumber in an open field of Fukushima Prefecture. (0600 4/26 SITREP)

**TEPCO raises weight limit for Unit 4 spent fuel pool.** TEPCO The operator of the troubled Fukushima Daiichi nuclear power plant is carefully monitoring Unit 4 spent fuel pool, where water temperature is rising despite increased injections of cooling water. TEPCO says it will inject 210 tons of water into the pool on Monday, after finding on Sunday evening that temperature in the pool had risen to 81 °C. TEPCO had earlier limited water being injected into the pool to 70 tons a day, saying the weight of the water could weaken the reactor building, already damaged in last month's hydrogen explosion. (0600 4/25 SITREP)

**Rewiring starts at Fukushima Daiichi.** TEPCO is rewiring the power grid at its Fukushima Daiichi nuclear plant to secure the electricity supply in case of another strong quake. The plant's 6 reactors are now connected in pairs to external power sources. TEPCO began connecting the cables for the No.1 and No.2 reactors with the grid for the No.5 and No.6 reactors on Monday. This is to ensure that if any one of the 3 outside sources is cut off, the others can be used to cool the reactors. (0600 4/25 SITREP)

**TEPCO discloses map of radiation levels at the damaged Fukushima Daiichi nuclear plant.** Radiation levels around Unit 3 reactor building, damaged by a hydrogen explosion, are higher than other locations; 300 mSv/hr was detected in debris on a nearby mountainside. <http://www.nisa.meti.go.jp/english/files/en20110423-6.html> (NHK and Kyodo). (0600 4/25 SITREP)

Radiation level: 450μSv/h at the south side of the office building, 53μSv/h at the Main gate, 21μSv/h at the West gate, reported by JAIF as of 09:00, Apr. 25 (0600/4/26 SITREP)

**(Official Use Only) Field Measurements Update:**

**Aerial and Ground Monitoring Data Assessment**

- Assessment of measurements gathered through 20 April continues to show:
  - Radiation levels consistently below actionable levels for evacuation or relocation outside of 25 miles.
  - Radiological material has not deposited in significant quantities since 20 March

- An assessment of measurements gathered at US military installations in the Tokyo area through 20 April shows:
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  - All aerial measurements at US facilities were less than 32  $\mu\text{R/hr}$  - a level that poses no known health risk
  - Monitoring of these locations will continue although no increases in deposited radiation are anticipated

**Recent events of past 24 hours: (0600 4/26 SITREP)**

**Bilateral Coordination:**

- Coordinated GOJ-USG meeting to discuss transition of AMS
  - GOJ attendees: MEXT and MOD
- DOE Field Operations assigned scientific and data support to collaborate directly with GOJ/MEXT for the production of joint data products resulting from monitoring operations. (0600 4/26 SITREP)

**Aerial Monitoring Operations:**

- AMS C-12: Started the C-12 Flight 1 and 2 boxes in the 60 km to 80 km arc south west of the Fukushima-Daiichi plant at 2000ft AGL and 1 mile line spacing. (weather delayed today's flights - still out on mission @ time of SITREP)
- AMS UH-1: Started the UH-1 Flight box in the 60 km to 80 km arc south of Natori at 1000ft AGL and 2000 foot line spacing

**Field Monitoring Operations:**

- Conducted beta/gamma surveys, RSI survey, in sector one 60-80 km ring
- Replaced one unit in the EWA system at Uchigo
- Continue monitoring activities at the CMOC TOC at Yokota AB

**Planned operations over the next 24 hours: (0600 4/26 SITREP)**

**Field Monitoring (Aerial)**

- Operational priority: Re-fly areas of highest deposition to confirm no new releases and monitor decay
  - AMS C-12: Weather and winds permitting, will complete the C-12 Flight 1 and 2 boxes in the 60 km to 80 km arc south west of the Fukushima-Daiichi plant at 2000ft AGL and 1 mile line spacing
  - AMS UH-1: Weather and winds permitting, will complete the UH-1 Flight box in the 60 km to 80 km arc south of Natori at 1000ft AGL and 2000 foot line spacing

**Field Monitoring (Ground)**



- Conduct beta/gamma surveys, mobile survey, *in-situ* measurements, and soil samples inside the 30 – 60 km are south of Natori. This will require an overnight stay to provide required survey time.
- Shutdown and collect the air sampler at the Yokosuka Naval Base

**Updates by Reactor Unit (updated each SITREP)**

- **Fukushima Daiichi Unit 1 reactor**
  - Per JAIF at 0800 JST 4/25, reactor parameters are: RPV Temp 137.7 C at feedwater nozzle, RPV pressure (A) 0.551 MPaG, (B) 1.274 MPaG; water level (A) -1.70 (B) -1.65 meters below the top of the fuel rods. Containment vessel pressure 0.155 MPa abs. SFP temperature unknown, indicator failure.
  - Per IAEA at 0300 UTC 24 April fresh water is being continuously injected into the reactor pressure vessel through the feedwater line at an indicated flow rate of 6 m<sup>3</sup>/h.
  - Per IAEA at 1625 UTC 21 April, Nitrogen gas continues to be injected into the Unit 1 Containment Vessel.
  - Unit #1 contains 292 assemblies in the spent fuel storage pool.
- **Fukushima Daiichi Unit 2 reactor**
  - Per NISA at 0800 JST 4/25, reactor parameters are: RPV temperature 122.5°C and the feed water nozzle, RPV pressure (A) 0.081 MPaG, (B) .074 MPaG; water level (A) -1.45 (B) -2.10 meters below the top of the fuel rods. Containment vessel pressure 0.080 MPa abs. SFP temperature is 46.0°C.
  - Per IAEA at 0300 UTC 24 April, fresh water injection into the RPV is ongoing at 7.0 m<sup>3</sup>/h.
  - Per IAEA at 1800 UTC 24 April, 97 tons of fresh water was injected to the SFP via SFP cooling line from 19-22 April.
  - Unit#2 SFP contains 587 assemblies in the spent fuel storage pool.
- **Fukushima Daiichi Unit 3 reactor**
  - Per JAIF at 0800 JST 25 April, reactor parameters are: RPV temperature 72.5°C at the feedwater nozzle, RPV pressure (A) 0.048 MPaG, (C) 0.012 MPaG. water level (A) -1.85 (B) -2.25 meters below the top of the fuel rods; containment vessel pressure 0.1038 MPa abs;
  - Per IAEA at 0300 UTC 24 April, fresh water injection ongoing at 6.8 m<sup>3</sup>/h.
  - Per IAEA at 1800 UTC 24 April, 50 tons of water was sprayed into the SFP on 22 April.
  - SFP Temp unknown, indicator failure
  - Unit #3 SFP contains 514 assemblies in the spent fuel storage pool.
- **Fukushima Daiichi Unit 4 reactor**
  - Per TEPCO, as of 1810, JST 25 April, SFP water temp was 83°C prior to spray beginning. Water spray began at 1810.
  - Per IAEA at 1800 UTC 24 April, 140 tons of fresh water was sprayed over the SFP using the concrete pumping vehicle from 04:30 to 08:44 UTC 23 April. Further spraying began at 04:25 UTC 24 April.

- Unit 4 is shutdown with the core removed to the spent fuel pool in December for maintenance on the reactor.
- Unit #4 SFP contains 1331 irradiated fuel assemblies, plus 204 fresh fuel assemblies in the spent fuel storage pool.
- **Fukushima Daiichi Unit 5 reactor**
  - Unit 5 was in a refueling outage at the time of the earthquake.
  - Per JAIF, as of 0800 JST 25 April, the SFP water temp was 37.3°C.
  - Unit #5 SFP contains 946 assemblies in the spent fuel storage pool.
- **Fukushima Daiichi Unit 6 reactor**
  - Unit 6 was in a refueling outage at the time of the earthquake.
  - Per JAIF of 0200 JST 25 April, SFP water temp was 30.0°C.
  - Unit #6 SFP contains 876 assemblies in the spent fuel storage pool.
- **Fukushima Daiichi Common Spent Fuel Pool**
  - No change in condition/status several days.
  - Temperature was about 27.5 °C as of 0800 JST on 25 April.
- **Fukushima Daiichi Dry Cask Storage Building**
  - No change in condition/status several days.

Sources include:

Federation of Electric Power Companies of Japan

Nuclear Industrial Safety Agency

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Links:

<http://www.jaif.or.jp/english/>

<http://www.tepco.co.jp/en/index-e.html>

<http://www.iaea.org/>

<http://www.mext.go.jp/english/>

<https://portalwc.doe.gov/>

<http://www.nisa.meti.go.jp/english/>

<http://www.fepc.or.jp/english/>

<http://english.kyodonews.jp/>

<http://www3.nhk.or.jp/nhkworld/>

### Other Information

## UPDATE ON USG COORDINATION

### Bilateral Coordination

No significant updates.

### Media Reports



**April 26, NHK, Radioactive water in No.3 and 4 reactors rises:** The operator of the disaster-hit Fukushima Daiichi nuclear power plant says the level of radioactive water has risen in the Number 3 and Number 4 reactors. The levels of radioactive water in the power plant are hampering efforts to restore its functions. TEPCO is moving highly radioactive water from the tunnel of the No. 2 reactor to a temporary storage facility. The utility company says the water level in the tunnel of the No. 3 reactor rose to 99 centimeters below the surface as of 6 PM on Monday. That passes the level at which TEPCO plans to remove the water, but it has yet to secure storage space. The water level in the basement of the No.3 reactor's turbine building also rose by 10 centimeters over 3 days. TEPCO says a survey last Thursday found an increase in the density of radioactive substances in the water in the basement of the No. 4 reactor's turbine building. The company says the levels of cesium-134 and 137 increased about 250-fold and iodine-131 increased about 12 times compared with one month ago. TEPCO says contamination of this level requires them to prioritize the transfer or disposal of the water. The water level in the No. 4 reactor's turbine building rose by 20 centimeters in 10 days. TEPCO says water used to cool the No. 3 reactor could be leaking into No. 4 as their turbine buildings are connected. [http://www3.nhk.or.jp/daily/english/26\\_03.html](http://www3.nhk.or.jp/daily/english/26_03.html) (0600 4/26 SITREP)

**April 26, NHK, Radioactive water level remains unchanged at the No. 2 reactor:** The operator of the troubled Fukushima Daiichi nuclear power plant says the level of radioactive water in a tunnel at the No.2 reactor is unchanged. TEPCO has prioritized the operation to transport water from the No.2 reactor. The level of radiation there is especially high and the contaminated water is hampering other work to bring the crisis under control. TEPCO says the water was 89 centimeters below the top of the tunnel at 7 AM on Tuesday. The level has been about the same for the past few days. TEPCO also says the contaminated water levels are rising in the tunnels at the No.3 and No.4 reactors. It says water was 98 centimeters below the top of the tunnel at the No.3 reactor, a rise of 3 centimeters in 24 hours. TEPCO has set one meter as the standard level at which it should begin removing the contaminated water. At reactor No.4, the water was 115 centimeters from the top of the tunnel, a rise of 5 centimeters in 24 hours. But TEPCO has not found a location to store contaminated water from these 2 reactors. It will continue to carefully monitor the situation. [http://www3.nhk.or.jp/daily/english/26\\_18.html](http://www3.nhk.or.jp/daily/english/26_18.html) (0600 4/26 SITREP)

**April 26, Kyodo, Nuke Agency Says Water May Be Leaking From No. 1 Reactor Container:** The government's nuclear agency said Tuesday that water may be leaking from the No. 1 reactor container of the crisis-hit Fukushima Daiichi nuclear power plant, and that remote-controlled robots are expected to check the situation inside the reactor building. The possible water leakage is likely to affect work to flood the reactor's primary container with water as part of efforts to stably cool the nuclear fuel placed inside the pressure vessel. "We are currently examining data, but we think that there is water leakage to some extent," Hidehiko Nishiyama, NISA spokesman, told a press conference in the morning. He said that data suggesting the possibility showed up through work to inject nitrogen into the container, which is aimed at reducing the risks of hydrogen explosions. The robots, which went inside the No. 1 reactor building on April 17 to check the radiation level there, are expected to enter the building again later

Tuesday to observe the primary container, Nishiyama said. TEPCO officials said they did not notice whether there was water leakage in the data taken by the robots earlier. The nuclear regulatory body said, meanwhile, that industry minister Banri Kaieda ordered Tokyo Electric on Monday to swiftly collect and report data on the plant's reactors, such as on the pressure and temperature, taken during the immediate aftermath of the March 11 massive quake. "There was about an hour until a tsunami hit the plant after the quake. So we believe that some of the data remain at the site," Nishiyama said. So far, postquake data released by the utility known as TEPCO starts at 7:30 p.m. of March 11, about five hours after the 2:46 p.m. quake. The record of the data is believed to be left inside the central control rooms where radiation levels are still relatively high. Even though over six weeks have passed since the quake and tsunami, the reactors and spent fuel pools at the Nos. 1 to 4 units have not seen their cooling functions restored and need to have water periodically injected or poured from outside to prevent the fuel from overheating. But the emergency measure has created vast pools of radiation contaminated water at the premises of the crippled six-reactor complex, located on the Pacific coast of Fukushima Prefecture some 220 kilometers northeast of Tokyo. <http://english.kyodonews.jp/news/2011/04/87776.html> (0600 4/46 SITREP)

April 26, NHK, **TEPCO is preparing to fill the No. 1 reactor with water.** Remote-controlled robots are being used to look inside one of the disabled reactor buildings at the Fukushima Daiichi nuclear plant, before workers begin pumping more water into the reactor. Tokyo Electric Power Company is planning to fill the No. 1 reactor and then its container with water by mid July, to submerge the fuel rods and cool them down stably. To prepare for the operation, TEPCO sent robots inside the reactor building on Tuesday morning to check for leakage and other damage. If no problems are found, the utility plans to increase the amount of water being fed into the reactor on Wednesday, on an experimental basis. The water feed is due to be increased from the current 6 tons per hour to a maximum of 14 tons. Workers will monitor changes in temperature and pressure, to see whether the reactor container can safely hold the water. Robots will then enter the building again, to check for signs of seepage. The government's nuclear safety agency says TEPCO also needs to determine whether a water-filled reactor container can withstand strong aftershocks. TEPCO hopes to fill up the No. 1 and No. 3 reactor containers by mid-July, as part of its recently announced schedule for containing the nuclear accident. [http://www3.nhk.or.jp/daily/english/26\\_17.html](http://www3.nhk.or.jp/daily/english/26_17.html) (0600 4/26 SITREP)

April 26, NHK, **Official: Fukushima radiation release falling.** Japan's Nuclear Safety Commission estimates the amount of radioactive release from the Fukushima Daiichi power plant at around 1 terabecquerels per hour as of Sunday. A government advisor says he thinks the amount is gradually falling. The commission announced its latest estimate on Monday, and compared the level to the 154 terabecquerels per day on April 5th. Kenkichi Hirose, a Cabinet Office advisor in charge of the Nuclear Safety Commission, told reporters that he believes the amount of radioactive release has been declining judging from the current conditions of the plant. Radioactivity is measured in becquerels, and a trillion becquerels is a terabecquerel. A huge amount of becquerels does not automatically translate into a similar level of sieverts, which is a unit for measuring the likely medical impact of the radiation on an individual. When Japan raised the severity



rating of the Fukushima nuclear disaster on April 12th, the commission announced its estimate that 630,000 terabecquerels of radiation had been released into the atmosphere from March 11th till April 5th. At that time, the Japanese Nuclear and Industrial Safety Agency offered its own calculation of 370,000 terabecquerels. The agency said its estimate is about one-tenth of what was released in the 10 days following the Chernobyl accident on April 26th, 1986, and the Nuclear Safety Commission's estimate is even higher. The figures for Fukushima involve radioactive iodine 131 and cesium 137. [http://www3.nhk.or.jp/daily/english/26\\_11.html](http://www3.nhk.or.jp/daily/english/26_11.html) (0600 4/26 SITREP)

**April 26, NHK, Government was unaware of hydrogen explosion risk.** An advisor to Prime Minister Naoto Kan says no one in the government knew of the risk of a hydrogen explosion in the initial stages of the emergency at the Fukushima Daiichi nuclear plant. The disclosure was made on Monday by Goshi Hosono, who is a governing party lawmaker and senior member of the government's nuclear taskforce. Hosono referred to a hydrogen blast that shattered the No.1 reactor building one day after the March 11th earthquake and tsunami. The blast occurred after workers began venting air from the reactor containment vessel to reduce pressure inside. Hosono said he was not aware of a single nuclear expert who warned of the risk of a hydrogen blast following the venting operation. He said nitrogen inside the reactor container was supposed to prevent such explosions. Plant operator Tokyo Electric Power Company also told reporters that hydrogen is supposed to be processed within the containment vessel, and that such an explosion is not assumed in a reactor building. Large amounts of radioactive substances were released into the environment as a result of the hydrogen blast. [http://www3.nhk.or.jp/daily/english/26\\_10.html](http://www3.nhk.or.jp/daily/english/26_10.html) (0600 4/26 SITREP)

**April 25 JST, NHK, First all out search near Fukushima Plant.** Police conducted their first full-scale search for victims of the March 11th disaster in Futaba Town in Fukushima Prefecture, where part of the troubled Fukushima Daiichi nuclear power plant is located. The search was of the town's Nakano District, four and a half kilometers north of the plant. On Monday morning, about 120 police officers from Fukushima and Tokyo prefectures entered the coastal areas wearing protective gear. During the search, the officers used heavy machinery to remove debris from destroyed buildings and checked the roadsides the tsunami reached. Futaba Town is entirely located within the 20-kilometer no-entry zone. Police say many missing people could still be in areas surrounding the Fukushima Daiichi plant and that they will redouble their efforts. [http://www3.nhk.or.jp/daily/english/25\\_26.html](http://www3.nhk.or.jp/daily/english/25_26.html) (0600 4/26 SITREP)

**April 25 JST, NHK, Panel to study better ways to check radiation.** A health ministry panel is studying more effective ways to measure radiation levels in tap water to ensure its safety. Radioactive iodine higher than the safety limits was found in drinking water in some parts of Tokyo and surrounding areas in late March following the accident at the Fukushima Daiichi nuclear power plant. A radiation expert told the panel that radioactive materials released from the power plant are brought to wide areas by the wind, fall onto the ground or rivers with rain and contaminate water sources. The expert said winds from the direction of the power plant and rain had been observed shortly before the radiation levels in tap water peaked. The expert said it is necessary to analyze wind

direction and rainfall more thoroughly in order to establish better ways to monitor radiation levels. [http://www3.nhk.or.jp/daily/english/25\\_23.html](http://www3.nhk.or.jp/daily/english/25_23.html) (0600 4/26 SITREP)

April 25 JST, NHK, **TEPCO to cut manager salaries to secure funds.** The operator of the Fukushima Daiichi nuclear plant will implement deep salary cuts for management to help fund its compensation payments for the nuclear accident. TEPCO said on Monday that it would halve the salaries of all its board members, including the chairman and the president, starting this month. Annual pay for other executive directors will be slashed by 40 percent. The company will cut the salaries of about 3,000 employees in managerial positions by 25 percent. TEPCO has already asked its labor union to accept a 20 percent reduction in annual pay for 32,000 rank-and-file employees. Both sides reached an agreement on Monday. The utility expects to save some 660 million dollars in salary costs. TEPCO will also give up its recruitment of about 1,100 new graduates for fiscal 2012 and sell off part of its stock holdings and real estate to raise money. The company plans to make initial payments worth more than 600 million dollars to 50,000 households that have been forced to leave their towns to avoid high radioactivity caused by the nuclear accident. But the total compensation amount is expected to balloon, as damage is spreading to the farming, fisheries and manufacturing industries. [http://www3.nhk.or.jp/daily/english/25\\_25.html](http://www3.nhk.or.jp/daily/english/25_25.html) (0600 4/26 SITREP)

**CONTACT INFORMATION:**

**Nuclear Incident Team in the Emergency Operations Center**

(b)(6)

**Office of the Deputy Secretary 202-586-5500**

**Watch Schedule**

**April 26** 0400-0800  
Regina Carter  
Bob Boudreau

**April 27** 0400-0800  
Chris Behan  
Matt Hutmaker