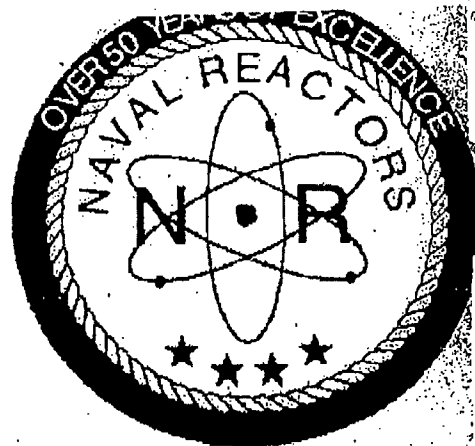


☒ UNCLASSIFIED
☐ NOFORN
☐ CONFIDENTIAL (Take to Mailroom)
☐ SECRET (Take to Mailroom)



DATE: 3/21/11 (EST)

TO:

Attn: PMT

ADDRESSEE'S NAME

NRC

ORGANIZATION/COMPANY

(301)-816-5151

FAX #

VOICE #

FROM:

George Davenport

ORIGINATOR'S NAME

(202) 781-5993

VOICE #

COMMENTS:

Latest Isotopic Data

THIS FAX CONSISTS OF 2 PAGES INCLUDING THIS SHEET**

USS GEORGE WASHINGTON
Gamma Analysis of 1m3 Portable Air Sample
Taken morning of 3/22 JST

Nuclide	Activity (pCi)	DLA (pCi)
I-131	2.67E+02	1.40E+01
I-132	1.02E+02	1.30E+01
Te-132	1.64E+02	1.20E+01
Cs-134	1.36E+02	1.40E+01
Cs-136	2.04E+01	6.10E+00
Cs-137	1.50E+02	1.30E+01

DRAFT

NERT Analysis Organization

Major Topic Areas Organized by Objective

Formal Analyses to be Delivered to Industrial Consortium

Tracking Number	Topic Area	Scope Description	Principal Investigator and Support Team	Date Assigned and Requestor	Status
					<ul style="list-style-type: none">• In Process• Initial Delivery• Reviewed• Delivered
Objective One: Getting reactors and spent fuel pools to stable condition (NRC)					
F-1-01	Analysis of Cooling Drywell Gap	<ul style="list-style-type: none">• Heat transfer analysis• Methods for filling drywell gap• Methods for penetrating drywell walls or roof (including description of high pressure water cutting tool)• Evaluation of need to move shield blocks• Heat transfer impacts if noncondensable gas bubble forms at top of drywell	Mitch Farmer, ANL Bob Youngblood, INL George Flanagan, ORNL Dana Kelly, INL	4/4 Kondo	In Process
F-1-02	Options for Establishing Long-Term Decay Heat Removal	<ul style="list-style-type: none">• When is thermal equilibrium established?• When can feed and bleed be discontinued?• Heat transfer required to cool core if it is a lumped mass	Mitch Farmer, ANL	3/28 Kelly	In Process
F-1-03	Effect of Sand on Spent Fuel Pool Cooling and Potential for Recriticality		David Poston, LANL	4/4 Consortium	In Process
F-1-04	What Caused Unit 4 Explosion?	<ul style="list-style-type: none">• Potential ignition sources	Jess Gehin, ORNL Ken Sorenson, SNL	4/3 Omoto	Delivered

DRAFT

DRAFT

Tracking Number	Topic Area	Scope Description	Principal Investigator and Support Team	Date Assigned and Requestor	Status
					<ul style="list-style-type: none"> • In Process • Initial Delivery • Reviewed • Delivered
F-1-05	Fuel Damage Best Estimate	<ul style="list-style-type: none"> • Percent fuel failure in each reactor • Potential for primary containment breach in each reactor • Probable location of damaged fuel • How quickly did zircaloy oxidize? 	Shawn Burns, SNL Larry Ott, ORNL	4/4 Kelly	In Process
F-1-06	Hydrogen and Noncondensable Gas Inventory Estimates	<ul style="list-style-type: none"> • Options for hydrogen mitigation 	Mitch Farmer, ANL Ted Ginsberg, BNL	3/28 Kelly	Delivered and Transmitted to Consortium
Objective Two: Control of radiation levels – work toward allowing worker access to TB (nearer-term) and RB and minimizing public release (DOE)					
F-2-01	Options for Treating and Recycling Reactor Coolant	<ul style="list-style-type: none"> • System configuration description 	Jim Buel, PNNL	3/28 Kelly	In Process
F-2-02	Correlation of Dose Measurements With Predictions	<ul style="list-style-type: none"> • Evaluate equipment performance in high radiation fields • Evaluate equipment shielding options 	John Wagner, ORNL Chris Grandy, ANL	3/28 Kelly	In Process
F-2-03	Options for Storage, Treatment, and Disposal of Contaminated Water		Monica Regalbuto, DOE	4/4 Kelly	In Process
F-2-04	Potential for Bioaccumulation		Jim Buel, PNNL	4/5 Kelly	In Process
Objective Three: Robotics – preparation for catastrophic event, interruption of access, collection of data (DOE)					
Objective Four: Identify diagnostics, measurements to address and maintain primary containment integrity (e.g. corrosion) (DOE)					

DRAFT

Tracking Number	Topic Area	Scope Description	Principal Investigator and Support Team	Date Assigned and Requestor	Status
					<ul style="list-style-type: none"> • In Process • Initial Delivery • Reviewed • Delivered
F-4-01	Removal of Oxygen and Other Gases		Mitch Farmer, ANL Ted Ginsberg, BNL	3/28 Kelly	Initial Delivery Complete Waiting on Review
F-4-02	Evaluation of Corrosion Potential	<ul style="list-style-type: none"> • Corrosion mitigation strategies • Is corrosion testing needed? 	Jeremy Busby, ORNL Jeff Wass, INL	3/21 Kelly	Delivered
Objective Five: Emergency planning -- plumes from major catastrophic event, evacuation management (NRC/DOE)					

DRAFT

From: Jaczko, Gregory <Gregory.Jaczko@nrc.gov>
Sent: Tuesday, March 15, 2011 2:08 AM
To: Coggins, Angela; Batkin, Joshua; Pace, Patti
Subject: FW: Updated NARAC Plots for 4 core loads
Attachments: Unit2_TotalMeltdown_ScaledByFactor4_2011Mar15.ppt

From: Poneman, Daniel[SMTP:DANIEL.PONEMAN@HQ.DOE.GOV]
Sent: Tuesday, March 15, 2011 2:06:59 AM
To: Jaczko, Gregory
Cc: DAgostino, Thomas
Subject: FW: Updated NARAC Plots for 4 core loads
Auto forwarded by a Rule

Daniel B. Poneman
Deputy Secretary
US Department of Energy
Washington, DC 20585
(202) 586-5500

From: NITOPS
Sent: Tuesday, March 15, 2011 1:43 AM
To: SCHU; (b)(6); Poneman, Daniel; Lyons, Peter; DAgostino, Thomas;
(b)(6); Hurlbut, Brandon
Cc: Aoki, Steven; Mustin, Tracy; Miller, Neile; Johnson, Shane; Connery, Joyce; Kelly, John E (NE); NITOPS; Alldridge, David; Niedzielski-Eichner, Phillip; Huizenga, David; Lyons, Peter; Golub, Sal
Subject: Updated NARAC Plots for 4 core loads

These plots reflect the discussion from the 0100EST conference call. This represents complete melt and no containment of 4 core loads (1 for unit #2 and 3 from the unit #4 pool). This does NOT reflect the effect of a fire.

-NIT Ops
202-586-8100

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Consequence Report

Meltdown Unit 2 Scaled by 4

NARAC Report - Potential Release

Issued: March 14, 2011 22:37 PT

SUMMARY:

This report describes the health effect consequences associated with a hypothetical unknown release to the atmosphere from a radiological source. This is an initial, automated NARAC product, not a final recommendation. Initial predictions are for a limited time period and areas affected may change at later times. Please consult NARAC staff (925-422-7627) for refined, quality assured predictions. Predictions should be confirmed and refined using measurements.

PRODUCTS:

Early Phase Dose (0-96 Hrs) : (Total Effective Dose Including Plume Passage)

Material: BA-140 + LA-140 + CS-137 + I-131 + I-132 + TE-132 + I-133 + I-135 + XE-131M + XE-133M + XE-133 + XE-135M + XE-135 + KR-85 + KR-85M + KR-88

This product identifies areas that could exceed doses of 5 and 1 rem over a 4-day exposure period, which begins at the start of the release. If used to project doses from a potential future release, these levels correspond to the EPA/DHS guidelines for the Early Phase based on the dose that may be avoided if shelter and evacuation guidance can be implemented prior to the beginning of the release. These Protective Action Guideline (PAG) limits are based on an assessment of the long-term risk of developing cancer in exposed individuals over their lifetime or producing genetic disorders in subsequent generations. These risks result from the projected combined dose caused by radiation from the material deposited onto the surface, radiation from the material as it is carried in the air, and radiation from the material that has been inhaled and retained by the body. Upon request, estimates of the total number of people exposed, and (after accounting for estimated deaths from acute, short-term effects) the number of expected subsequent fatal cancers and combined number of expected subsequent fatal and non-fatal cancers may be displayed. These are computer model estimates assuming unprotected exposure and no mitigating action (such as evacuation or sheltering) for the entire time period of this prediction, and therefore may be over-estimates of the actual effects.

Early Phase Evac Shelter PAGs (12-108 hrs) : (Evacuation/Sheltering based on Avoidable Total Effective Dose)

Material: BA-140 + LA-140 + CS-137 + I-131 + I-132 + TE-132 + I-133 + I-135 + XE-131M + XE-133M + XE-133 + XE-135M + XE-135 + KR-85 + KR-85M + KR-88

The following figure illustrates the model-predicted dose levels produced by the radiological release. An individual's dose is caused by exposure to the radioactive material via three pathways (groundshine, inhalation, and cloudshine). The combined dose from all exposure pathways is referred to as the Total Effective Dose (TED). The U.S. Environmental Protection Agency (EPA) and Department of Homeland Security (DHS) have proposed or accepted similar sets of Protective Action Guides (PAGs) to indicate when protective actions should be considered/implemented to protect the population. These Guides correspond to specific dose levels and are primarily based on an assessment of the risk in developing cancer over an exposed individual's lifetime. Thus the health effects produced by these doses may develop over a period of years. The PAG level for evacuation, or sheltering in some situations, ranges from 1-5 rem. Note that the PAGs were developed based on avoidable dose (i.e. the dose that will be avoided once protective actions have been implemented). These model predictions are based on the conservative assumption that individuals are unsheltered and remain in the area during the time period specified in the figure's legend. If protective actions have not been implemented by the beginning of this exposure period, avoidable dose may be less than that shown for the unsheltered population, but accumulated dose will continue to rise at an undiminished rate. Health effects could be significantly different for sheltered individuals or for those exposed in these areas for different time periods. Estimates of the number of exposed individuals expected to experience these effects may be given in the legend. The counts given for all illnesses include those leading to pre-mature death. Note that the counts and area covered by each contour are cumulative such that outer contours include the counts/areas of all inner contours.

Early Phase Guidance (Radioiodine) : (KI Administration based on Thyroid Radioiodine Dose)

Material: I-131 + I-132 + TE-132 + I-133 + I-135

The U.S. Environmental Protection Agency (EPA) and Department of Homeland Security (DHS) have proposed or accepted similar sets of Protective Action Guides (PAGs) to indicate when protective actions should be considered/implemented to protect the population. These Guides correspond to specific dose levels and are primarily based on an assessment of the risk in developing cancer over an exposed individual's lifetime. Thus the health effects produced by these doses may develop over a period of years. In the event radioiodines are released into the atmosphere, the PAG level is based on the projected dose to a child's thyroid which may be avoided by the administering of potassium iodide. Additional levels based on guidance from the U.S. Food and Drug Administration for adults may also be shown. (Note that the PAG level for potassium iodide administration to pregnant women is 5 rem to the adult thyroid.) These model predictions are based on the effects of radiation from the material inhaled and retained by the body, and use the conservative assumption that individuals are unsheltered and remain in the area during the time period specified in the figure's legend. Health effects could be significantly different for sheltered individuals or for those exposed in these areas for different time periods. Estimates of the number of exposed individuals expected to experience these effects may be given in the legend. If so, the counts given for all illnesses include those leading to pre-mature death. Note that the counts and area covered by each contour are cumulative such that outer contours include the counts and areas of all inner contours.

Worker Protection Dose Rate at 12 hrs (Near Field) : (Groundshine Dose Rate at 03/15/2011 18:00:00 JST)

Material: BA-140 + LA-140 + CS-137 + I-131 + I-132 + TE-132 + I-133 + I-135

This product identifies the location of the EPA/DHS's protective guideline threshold dose limits assuming a 1-hour stay time for unprotected workers performing various life and property protecting emergency services. These limits are based on the risk of workers developing cancer over their lifetimes, and ensure that exposures will not result in detrimental acute or early health effects. Although these doses may be expressed in terms of the EPA Response Worker Guidelines, these contours may also be used to estimate the ongoing dose received by the unsheltered general population. The dose associated with potential inhalation of resuspended material is not included in these estimates. The relative importance of any committed inhalation dose from resuspended material is dependent on a variety of factors (e.g. weather, radionuclides, etc.). Note that the population count and area covered by each contour are cumulative such that outer contours include the counts and areas of all inner contours. NOTE: This release scenario has not produced radiation doses which reach the originally requested threshold levels.

Worker Protection Dose Rate at 12 hrs (Far Field) : (Groundshine Dose Rate at 03/15/2011 18:00:00 JST)

Material: BA-140 + LA-140 + CS-137 + I-131 + I-132 + TE-132 + I-133 + I-135

This product identifies the locations where the Federal Radiation Protection Guidance occupational upper limit dose may be exceeded for various exposure periods by unprotected workers performing emergency services. These limits are based on the risk of workers developing cancer over their lifetimes, and ensure that exposures will not result in detrimental acute or early health effects. Although these doses may be expressed in terms of the EPA Response Worker Guidelines, these contours may also be used to estimate the ongoing dose received by the unsheltered general population. NCRP and NRC administrative control areas are also shown. Note: EPA and NRC guidelines are based on a total dose limit. These contoured dose rate values, if constant over the indicated exposure period, will deliver the equivalent limiting dose. For rapidly-decaying dose rates, these predictions will be conservative. The dose associated with potential inhalation of resuspended material is not included in these estimates. The relative importance of any committed inhalation dose from resuspended material is dependent on a variety of factors (e.g. weather, radionuclides, etc.). Note that the population count and area covered by each contour are cumulative such that outer contours include the counts and areas of all inner contours.

Deposition at 12 hrs : (Surface Contamination from Deposited Radionuclides)

Material: BA-140 + LA-140 + CS-137 + I-131 + I-132 + TE-132 + I-133 + I-135

This product identifies the more highly contaminated areas due to fallout and deposition of the radioactive material. This material, depending upon the type of radiation emitted, may continue to give significant doses to individuals in these areas through inhalation of resuspended radioactive material or from direct external radiation. These levels of deposited radioactivity should be confirmed by monitoring surveys.

SOURCE INFORMATION:

NARAC Contact Information email: narac@hhs.gov or phone (925) 424-6465

Release Start Time: March 14, 2011 14:00 PDT

Release Stop Time: March 19, 2011 02:00 PDT

Release Location: (37.421389, 141.0325)

Source Material and Amount:

Early Phase Dose (0-96 Hrs)

Early Phase Evac Shelter PAGs (12-108 hrs)

1.37626e+07 Ci of BA-140 (100% respirable)

5.51394e+06 Ci of CS-137 (100% respirable)

5.96786e+07 Ci of I-131 (100% respirable)

7.24168e+07 Ci of I-132 (100% respirable)

5.6098e+07 Ci of I-133 (100% respirable)

8.70671e+06 Ci of I-135 (100% respirable) over 131400 sec

2.83708e+06 Ci of KR-85 (100% respirable)

1.60132e+06 Ci of KR-85M (100% respirable)

448677 Ci of KR-88 (100% respirable)

622420 Ci of LA-140 (100% respirable)

2.32228e+07 Ci of TE-132 (100% respirable)

4.50185e+06 Ci of XE-131M (100% respirable)

6.22676e+08 Ci of XE-133 (100% respirable)

1.61433e+07 Ci of XE-133M (100% respirable)

1.42418e+08 Ci of XE-135 (100% respirable)

7.96226e+06 Ci of XE-135M (100% respirable)

Early Phase Guidance (Radioiodine)

5.96786e+07 Ci of I-131 (100% respirable)

7.24168e+07 Ci of I-132 (100% respirable)

5.6098e+07 Ci of I-133 (100% respirable)

8.70671e+06 Ci of I-135 (100% respirable) over 131400 sec

2.32228e+07 Ci of TE-132 (100% respirable)

Worker Protection Dose Rate at 12 hrs (Near Field)

Worker Protection Dose Rate at 12 hrs (Far Field)

Deposition at 12 hrs

1.37626e+07 Ci of BA-140 (100% respirable)

5.51394e+06 Ci of CS-137 (100% respirable)

5.96786e+07 Ci of I-131 (100% respirable)

7.24168e+07 Ci of I-132 (100% respirable)

5.6098e+07 Ci of I-133 (100% respirable)

8.70671e+06 Ci of I-135 (100% respirable) over 131400 sec

622420 Ci of LA-140 (100% respirable)

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2.32228e+07 Ci of TE-132 (100% respirable)

Source Geometry:

sphere with radius of 1 m released at 1 m

Particle Size Distribution:

All particulate is in the respirable range from 0.1 to 10 microns

METEOROLOGY:

ADAPT Gridded Metdata from 03/15/2011 06:00:00 JST to 03/17/2011 03:00:00 JST at 3 hr intervals were used in this calculation

Gridded Met

Source	Obs Time
ADAPT	March 14, 2011 14:00 PDT
ADAPT	March 14, 2011 17:00 PDT
ADAPT	March 14, 2011 20:00 PDT
ADAPT	March 14, 2011 23:00 PDT
ADAPT	March 15, 2011 02:00 PDT
ADAPT	March 15, 2011 05:00 PDT
ADAPT	March 15, 2011 08:00 PDT
ADAPT	March 15, 2011 11:00 PDT
ADAPT	March 15, 2011 14:00 PDT
ADAPT	March 15, 2011 17:00 PDT
ADAPT	March 15, 2011 20:00 PDT
ADAPT	March 15, 2011 23:00 PDT
ADAPT	March 16, 2011 02:00 PDT
ADAPT	March 16, 2011 05:00 PDT
ADAPT	March 16, 2011 08:00 PDT
ADAPT	March 16, 2011 11:00 PDT

No precipitation is included in this calculation

ASSUMPTIONS:

Unless otherwise stated ICRP60 series DCF's were used for dose plots.

NARAC Contact Information email: narac@hhl.gov or phone (925) 424-6463

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CONTACT INFORMATION:

Calculation requested on March 14, 2011 22:36 PDT by:

none none, DOE NIT
202-586-8100

~~This report has not been approved for distribution.~~

~~Classification: Official Use Only - Not Approved for Further Distribution~~

DISCLAIMER:

These model predictions are intended to be guidance, and are not final recommendations. The accuracy of any prediction will be limited by the accuracy of the input data, such as estimates of the amount of material that becomes airborne and the available meteorological data for the area and time of the incident. Plume predictions may be for a limited time period, and may change at later times if new input data becomes available. Predictions should be confirmed and refined using field measurements. Air and ground concentration may be higher than predicted by this plume model simulation due the limited resolution of this particular simulation. For actual incidents or exercises, consult incident command and subject matter experts from the appropriate coordinating agency before making any decisions based on this model prediction.

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This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.



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Early Phase Dose (0-96 Hrs)
(Total Effective Dose Including Plume Passage)

Meltdown Unit 2 Scaled by 4
NARAC Report - Potential Release



Map Size: 293 km by 293 km Id: ProductionT.rcE15949.rcC1

NARAC Operations: (onDuty Assessor); narac@linl.gov; 925-424-6465

Requested by: {none none; DOE NIT; 202-586-8100}

Not approved for further distribution

Actions and Long-Term Effects

Description	(rem) Extent Area	Population
Exceeds 5 rem total effective dose.	>5 66.1 km 1,466 km ²	433,000
Exceeds 1 rem total effective dose.	>1 127 km 6,583 km ²	1.22E6

Note: Areas and counts in the table are cumulative. Population Source = LandScan2005.

Effects or contamination from March 14, 2011 14:00 PDT to March 18, 2011 14:00 PDT at or near ground level.

Release Location: 37.421389 N, 141.032500 E

Material: BA-140 + LA-140 + CS-137 + I-131 + I-132 + TE-132 + I-133 + I-135 + XE-131M + XE-133M + XE-133 + XE-135M + XE-135 + KR-85 + KR-85M + KR-88

Generated On: March 14, 2011 22:35 PDT

Model: LODI

Comments:

Doses shown are total accumulated from the beginning of release.

Hypothetical release

of 1.3763e+07 Ci starting at

of 5.5139e+06 Ci starting at

of 5.9679e+07 Ci starting at

of 7.2417e+07 Ci starting at

of 5.6098e+07 Ci starting at

of 8.7067e+06 Ci starting at

of 2.8371e+06 Ci starting at

of 1.6013e+06 Ci starting at

of 4.4868e+05 Ci starting at

of 6.2242e+05 Ci starting at

of 2.3223e+07 Ci starting at

of 4.5019e+06 Ci starting at

of 6.2268e+08 Ci starting at

of 1.6143e+07 Ci starting at

of 1.4242e+08 Ci starting at

of 7.9623e+06 Ci starting at

03/15/2011 06:00:00 JST for 4 day 12 hr
gridded met



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Early Phase Evac Shelter PAGs (12-108 hrs)
(Evacuation/Sheltering based on Avoidable Total Effective Dose)

Meltdown Unit 2 Scaled by 4
NARAC Report - Potential Release



Map Size: 147 km by 147 km Id: ProductionT.rcE15949.rcC1

NARAC Operations: (onDuty Assessor); narac@llnl.gov; 925-424-6465

Requested by: {none none; DOE NIT; 202-586-8100}

Not approved for further distribution

Actions and Long-Term Effects

Description	(rem) Extent Area	Population
Exceeds upper limit early phase PAG for evacuation/sheltering.	>5 62.0 km 1,303 km ²	381,000
Exceeds lower limit early phase PAG for evacuation/sheltering	>1 125 km 6,514 km ²	1.22E6

Note: Areas and counts in the table are cumulative. Population Source = LandScan2005.

Effects or contamination from March 15, 2011 02:00 PDT to March 19, 2011 02:00 PDT at or near ground level.

Release Location: 37.421389 N, 141.032500 E

Material: BA-140 + LA-140 + CS-137 + I-131 + I-132 + TE-132 + I-133 + I-135 + XE-131M + XE-133M + XE-133 + XE-135M + XE-135 + KR-85 + KR-85M + KR-88

Generated On: March 14, 2011 22:35 PDT

Model: LODI

Comments:

Doses shown are accrued after 03/15/2011 09:00:00 UTC and can be avoided by protective actions

Hypothetical release

of 1.3763e+07 Ci starting at

of 5.5139e+06 Ci starting at

of 5.9679e+07 Ci starting at

of 7.2417e+07 Ci starting at

of 5.6098e+07 Ci starting at

of 8.7067e+06 Ci starting at

of 2.8371e+06 Ci starting at

of 1.6013e+06 Ci starting at

of 4.4868e+05 Ci starting at

of 6.2242e+05 Ci starting at

of 2.3223e+07 Ci starting at

of 4.5019e+06 Ci starting at

of 6.2268e+08 Ci starting at

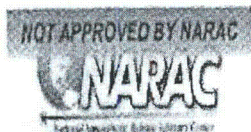
of 1.6143e+07 Ci starting at

of 1.4242e+08 Ci starting at

of 7.9623e+06 Ci starting at

03/15/2011 06:00:00 JST for 4 day 12 hr

gridded met



Early Phase Guidance (Radioiodine) (KI Administration based on Thyroid Radioiodine Dose)

Meltdown Unit 2 Scaled by 4
NARAC Report - Potential Release



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Map Size: 587 km by 587 km Id: ProductionT.rcE15949.rcC1

NARAC Operations: (onDuty Assessor); narac@llnl.gov; 925-424-6465

Requested by: {none none; DOE NIT; 202-586-8100}

Not approved for further distribution

Effects and Actions

Description	(rem) Extent Area	Population
Adult thyroid Committed Equivalent Dose - Early Phase FDA Guidance for KI administration to adults over 40.	>500 19.2 km 217 km2	42,200
Adult thyroid Committed Equivalent Dose - Early Phase FDA Guidance for KI administration to adults under 40.	>10 133 km 7,825 km2	1.50E6
Child thyroid Committed Equivalent Dose - Early Phase PAG for KI administration to children under 18.	>5 217 km 34,866 km2	1.28E7

Note: Areas and counts in the table are cumulative. Population Source = LandScan2005.

Effects or contamination from March 14, 2011 14:00 PDT to March 18, 2011 14:00 PDT at or near ground level.

Release Location: 37.421389 N, 141.032500 E

Material: I-131 + I-132 + TE-132 + I-133 + I-135

Generated On: March 14, 2011 22:35 PDT

Model: LODI

Comments:

Doses shown are total accumulated from the beginning of release.

Hypothetical release

of 5.9679e+07 Ci starting at

of 7.2417e+07 Ci starting at

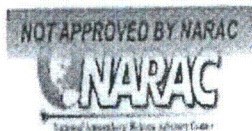
of 5.6098e+07 Ci starting at

of 8.7067e+06 Ci starting at

of 2.3223e+07 Ci starting at

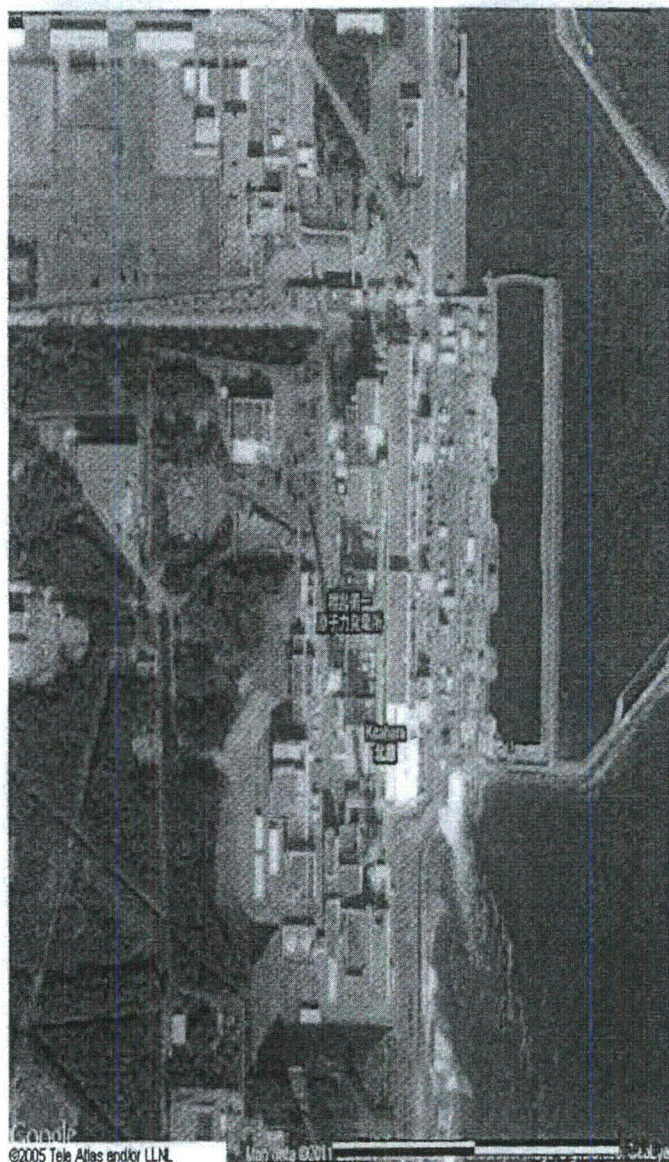
03/15/2011 06:00:00 JST for 4 day 12 hr

gridded met



Worker Protection Dose Rate at 12 hrs (Near Field)
(Groundshine Dose Rate at 03/15/2011 18:00:00 JST)

Meltdown Unit 2 Scaled by 4
NARAC Report - Potential Release



Map Size: 1.1 km by 1.1 km Id: ProductionT.rcE15949.rcC1

NARAC Operations: (onDuty Assessor); narac@llnl.gov; 925-424-6465

Requested by: {none none; DOE NIT; 202-586-8100}

Not approved for further distribution

Acute (Short-Term) Effects

Description	(rem/hr) Extent Area	Population
Note: Areas and counts in the table are cumulative. Population Source = LandScan2005.		

Effects or contamination at March 15, 2011 02:00 PDT at or near ground level

Release Location: 37.421389 N, 141.032500 E

Material: BA-140 + LA-140 + CS-137 + I-131 + I-132 + TE-132 + I-133 + I-135

Generated On: March 14, 2011 22:35 PDT

Model: LODI

Comments:

Release starting at 03/15/2011 06:00:00 JST for 4 day 12 hr

gridded met at

03/15/2011 06:00:00 JST;03/15/2011 09:00:00 JST;03/15/2011 12:00:00 JST;

03/15/2011 15:00:00 JST;03/15/2011 18:00:00 JST;03/15/2011 21:00:00 JST;

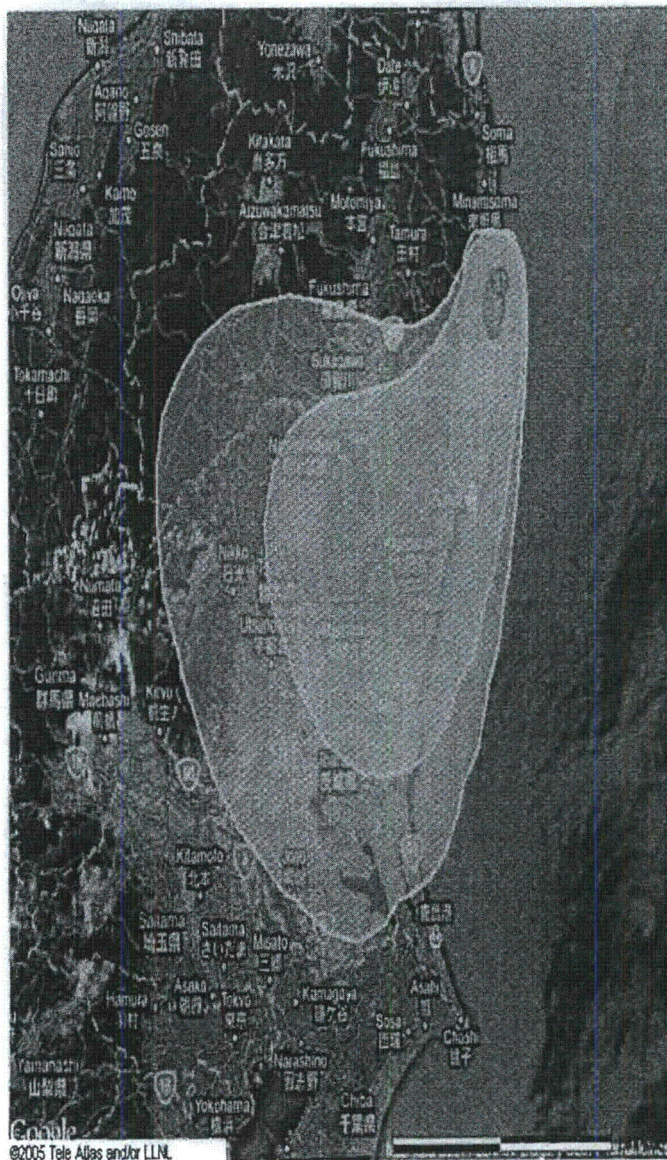
03/16/2011 00:00:00 JST;03/16/2011 03:00:00 JST;03/16/2011 06:00:00 JST;

03/16/2011 09:00:00 JST;03/16/2011 12:00:00 JST;03/16/2011 15:00:00 JST;

03/16/2011 18:00:00 JST;03/16/2011 21:00:00 JST;03/17/2011 00:00:00 JST;

03/17/2011 03:00:00 JST

Groundshine dose only. Assumes use of respiratory protection.



Map Size: 294 km by 294 km Id: ProductionT.rcE15949.rcC1

NARAC Operations: (onDuty Assessor); narac@ltnl.gov; 925-424-6465

Requested by: {none none; DOE NIT; 202-586-8100}

~~Not approved for further distribution~~

Acute (Short-Term) Effects			
	Description	(mrem/hr) Extent Area	Population
	Limit for all occupational exposures exceeded by exposure for 5 hours or less.	>1,000 14.6 km 119 km ²	31,400
	Limit for all occupational exposures exceeded by exposure for 50 hours or less.	>100 55.6 km 1,078 km ²	364,000
	NCRP radiological control boundary.	>10 141 km 8,643 km ²	1.65E6
	Limit for NRC public exclusion zone exceeded by exposure for 1 hour or less.	>2 182 km 19,868 km ²	5.08E6

Note: Areas and counts in the table are cumulative. Population Source = LandScan 2005.

Effects or contamination at March 15, 2011 02:00 PDT at or near ground level.

Release Location: 37.421389 N, 141.032500 E

Material: BA-140 + LA-140 + CS-137 + I-131 + I-132 + TE-132 + I-133 + I-135

Generated On: March 14, 2011 22:35 PDT

Model: LODI

Comments:

Release starting at 03/15/2011 06:00:00 JST for 4 day 12 hr

gridded met at

03/15/2011 06:00:00 JST:03/15/2011 09:00:00 JST:03/15/2011 12:00:00 JST:

03/15/2011 15:00:00 JST;03/15/2011 18:00:00 JST;03/15/2011 21:00:00 JST;

03/16/2011 00:00:00 JST;03/16/2011 03:00:00 JST;03/16/2011 06:00:00 JST;

03/16/2011 09:00:00 JST;03/16/2011 12:00:00 JST;03/16/2011 15:00:00 JST;

03/16/2011 18:00:00 JST:03/16/2011 21:00:00 JST:03/17/2011 00:00:00 JST:

03/17/2011 03:00:00 JST

Groundshine dose only. Assumes use of respiratory protection.

NOT APPROVED BY NARAC



Deposition at 12 hrs

(Surface Contamination from Deposited Radionuclides)

Effects and Actions

Description	(uCi/m2) Extent Area	Population
No guidelines specified. Possibly contaminated area. Use to confirm with monitoring surveys.	>100,000 18.0 km 217 km2	42,200
No guidelines specified. Possibly contaminated area. Use to confirm with monitoring surveys.	>10,000 65.6 km 1,425 km2	432,000
No guidelines specified. Possibly contaminated area. Use to confirm with monitoring surveys.	>1,000 149 km 10,856 km2	2.95E6

Note: Areas and counts in the table are cumulative. Population Source = LandScan2005.

Effects or contamination at March 15, 2011 02:00 PDT at or near ground level.

Release Location: 37.421389 N, 141.032500 E

Material: BA-140 + LA-140 + CS-137 + I-131 + I-132 + TE-132 + I-133 + I-135

Generated On: March 14, 2011 22:35 PDT

Model: LODI

Comments:

Hypothetical release

of 1.3763e+07 Ci starting at

of 5.5139e+06 Ci starting at

of 5.9679e+07 Ci starting at

of 7.2417e+07 Ci starting at

of 5.6098e+07 Ci starting at

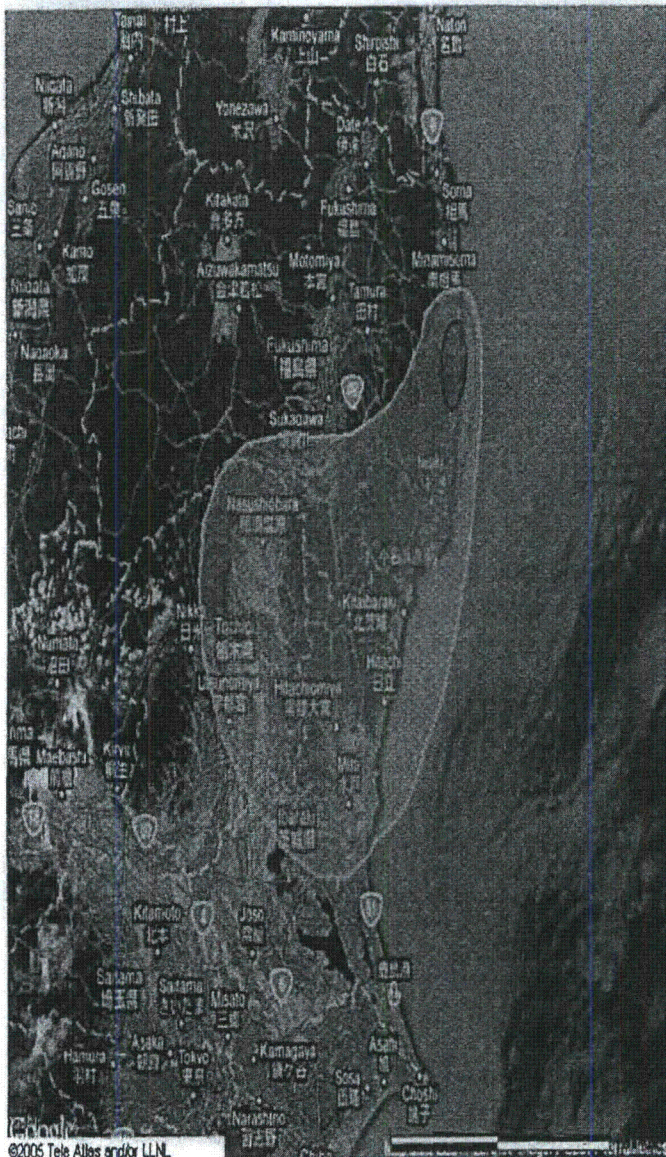
of 8.7067e+06 Ci starting at

of 6.2242e+05 Ci starting at

of 2.3223e+07 Ci starting at

03/15/2011 06:00:00 JST for 4 day 12 hr

gridded mel




Map Size: 294 km by 294 km Id: ProductionT.rcE15949.rcC1

NARAC Operations: (onDuty Assessor); narac@linl.gov; 925-424-6465

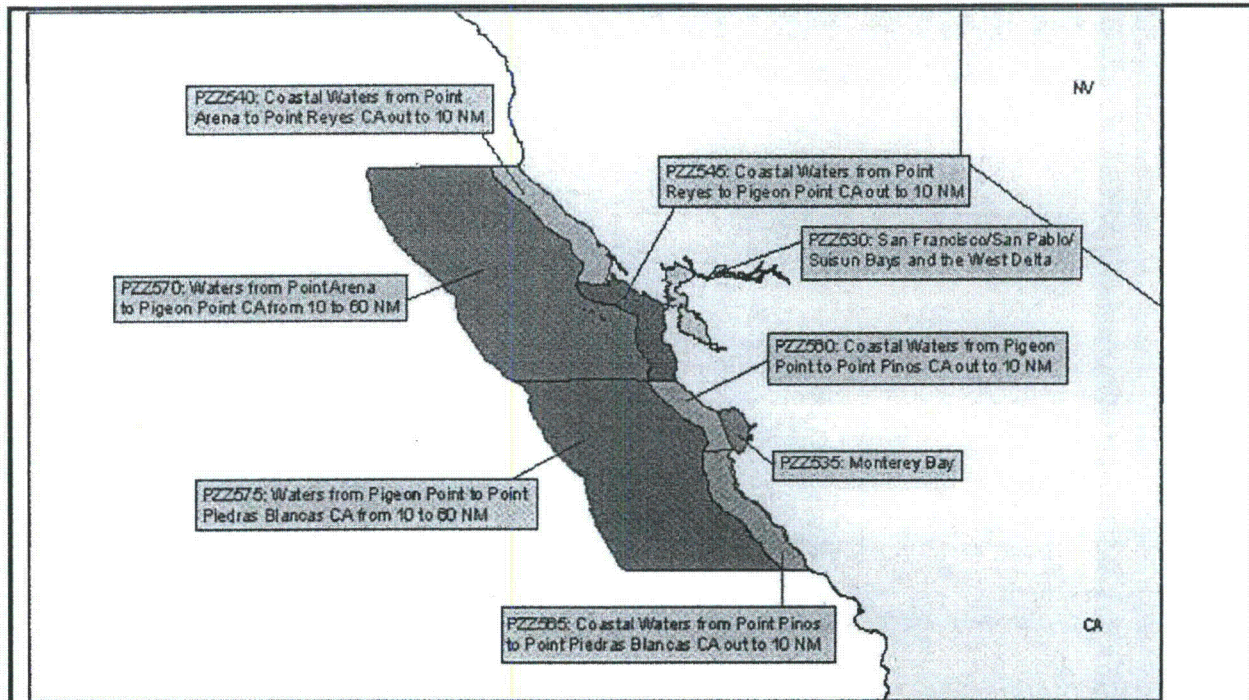
Requested by: {none none; DOE NIT; 202-586-8100}

Not approved for further distribution

Incident Status Summary ICS 209A-FEMA
(Situation Report)
FEMA RIX RRCC
1111 Broadway Oakland CA 94607
Main #
Main Fax

1. Incident Name Japan Earthquake Pacific Wide Tsunami	2. Operational Period (Date / Time) March 11, 2011 07:00-19:00 PST	3. Date Prepared: March 11, 2011	4. Report No: 002a
5. Type of Incident: Earthquake, Tsunami			
6. Location/Map of Incident:			
			

**Incident Status Summary ICS 209
(Situation Report)**



7. Declaration Information: Incident Period:

Date Issued	Declaration	Remarks

8. Current Situation:

- 10:41 PST - A Tsunami Warning continues for the: coastal areas of California and Oregon from Point Concepcion, California, to the Oregon-Washington border
- A Tsunami Advisory continues for the: coastal areas of California from the California-Mexico Border to Point Concepcion, California, and Coastal areas of Washington - British Columbia and Alaska from the Oregon-Washington Border to Attu, Alaska.
- Crescent City received an 8.1 foot swell, some boats have been destroyed in the area.
- 10:00 PST - The Tsunami Warning has been downgraded to a TSUNAMI ADVISORY for all islands in Hawaii
- 8:51 PST - State Department of Health Terry Corpus in Hawaii. He indicated that they were standing down. He did say that there was water in a hotel on the Big Island. Damage according to him was minimal
- 8:21 PST - A TSUNAMI WARNING is in effect for California Coastal areas north of Point Concepcion in Santa Barbara County to the Oregon Boarder.
 - * Residents need to move to higher ground and out of the mapped inundation zones
- A TSUNAMI ADVISORY is in effect for California Coastal areas south of Point Concepcion in Santa Barbara County.
 - * Significant, widespread inundation is not expected for areas under an advisory. Currents may be hazardous to

**Incident Status Summary ICS 209
(Situation Report)**

swimmers, boats and coastal structures and may continue for several hours after the initial wave arrival. NEXT CALL 03:30 PST

- Evacuation Summary:
San Luis Obispo County: 1,800 residents
Santa Barbara: 75-100 campers from campground
Humboldt County: 200-300 residents
Del Norte County: Mandatory; number unknown at this time
San Mateo County: Unknown at this time; five evacuation points
Santa Cruz: 6,000 residents
- Coastal Region Operational Area:
 - * Humboldt – activated EOC
 - * San Francisco – EOC partially activated, beaches are closed, no evacuations
 - * Santa Cruz – implementing non mandatory evacuation
 - * Monterey – activated level I, activated 211, sending out TENS, Monterey City EOC activated, no evacuations
 - * San Mateo – EOC activated level II, evacuations started at 0400
 - * Del Norte – EOC is activated and evacuation started at 0430
- Southern Region Operational Areas
The Southern REOC is open in support of San Luis Obispo (SLO) and Orange County Op Area EOCs
Evacuations:
 - * SLO along coastal areas, including the entire town of Avila Beach; school closures are also anticipated in that area; and campers and visitors are being asked to evacuated
- 7:52 PST - Tsunami Warning continuing. PTWC explained that these are not “new tsunami waves”, but the waves are actually wrapping around islands, trapping the energy of two waves coming from opposite directions combining into one larger wave. This is what we are experiencing now.
- Hawaii County EOC just reported a “wrap around” wave, caused waves to wash over Alii Drive in Kailua-Kona. the King Kamehameha Hotel had a foot of water in it.
- Kona Airport is open
- Maalae and North Kihei, on Maui just experienced a similar wrap around wave. Confirmed that repots of 3 inches of water travelled inland 500 feet. This represents a commercial area in Kihei, Maui.
- American Samoa 4 waves have come and gone in Pago Pago. The water will draw down in Pago pago bay 2 to 3 feet and then rise. In reference to the last AS Tsunami the water has NOT reached the road near the Satala power plant. No outages or damages know at this time. They are waiting daylight to perform a better assessment.
- Tsunami Warning for Guam has been canceled

9. Fatalities/Casualties:

9a. Fatalities:

9b. Hospitalizations:

9c. Injuries:

10. Extent of Damage:

10a. Specific Metrics (Area flooded, flood depth, total acres burned, number of aftershocks, etc):

10b. Structures Damaged:

10c. Structures Destroyed:

**Incident Status Summary ICS 209
(Situation Report)**

10d. Power Outages:
11. Evacuation Status: see 8 above – state/territory reports in Current Situation
12. Significant Impacting Weather in the past O-Period:
13. Threats to Human Life:
14. Threats to Structures:
15. Threats or Disruptions to Infrastructure, Significant:
16. Critical Resource Needs:
17a. Operations – Public Assistance (PA):
17b. Operations – Hazard Mitigation (HM):
17c. Operations – Tribal Relations:
17d. Operations - Air Operations:
18a. ESF #1- Transportation: Activated in RRCC ((b)(6)), DOT)
18b. ESF #2- Communication: <ul style="list-style-type: none"> Military Individual Mobilization Augmentees (IMAs), GSA Regional Managers, and the ESF-2 Purple Team are engaged in this event. SHARES station at Pearl City, HI, call sign WPLV359 is operational and on the air. The station is an AT&T managed industry partner. SHARES station at Guam is not operational; awaiting installation of Antenna and tower support, will send an RFI SHARES Project Office (SPO) to issues a SHARES Warning Order with Region 9&10 as the supported regions Confirmation from TSA Program Manager (PM) that the TSA HF Network has been activated at the following airports: <ol style="list-style-type: none"> Guam (GUM) Airport Lihue (LIH) Airport, HI Maui (OGG) Airport, HI TSA PM to provide a SITREP to SPO when available TSA reports no known impacts to their comm. network in country. All personnel accounted for. State Department reports that there was congestion on attempts to reach the embassy in Japan at the initial impact of the event and has improved since. No reported communication outages for State. National Weather Service initially reported that the tsunami impact on Midway Island was 50% greater than the model predicted. The NWS will be watching the wave closely as it approaches Hawaii. FCC has contacted their Public Safety Answering Points (PSAPs) in Hawaii and there are no reported issues The Federal Reserve Board contacted the Bank of Japan (BOJ); the BOJ reports no impact on its functions. <p><u>Industry</u></p> <ul style="list-style-type: none"> NCS industry partners (U.S.) have reported minimal damage to their networks within Japan. Various undersea cable systems were impacted and under investigation by their owners. There are reports of terrestrial fiber cuts within Japan affecting in-country carriers. Industry is engaged with the NCC Watch on status of events
18c. ESF #3 – Public Works/Engineering: <ul style="list-style-type: none"> ESF #3 Team Leader in route (eta 2100) Identified 2 each ESF3 Team Leader and Power, Water/Waste Water, Debris SMEs Provided GIS mapping identifying low elevation sewer pumping stations based upon 249th assessments from 2009
18d. ESF #4 – Firefighting: Nothing to report
18e. ESF #6 –Mass Care: <ul style="list-style-type: none"> Continuing to monitor the dozens of evacuation refuge areas that have been opened across Hawaii and the California Coast (no population estimates available) ARC has fully activated their National Disaster Operations Center and has deployed liaison personnel to RRCCs in Regions IX, X and State Emergency Operations Centers The Red Cross has placed national response resources on stand-by including shelter supplies, 100 Emergency Response Vehicles, Emergency Communications Response Vehicles and response leadership personnel

**Incident Status Summary ICS 209
(Situation Report)**

- No state/territorial Mass Care resource support requests received or identified

18f. Individual Assistance: 7

Listing of Facilities:

Facility	Name	County	Daily Visitor Count

Shelter Counts as of (Date):

Number	Name	County	Status	E/P Capacity	Current

SBA:

Donation Activities:

18g. ESF #7 – Resource Support:

- Received a sourcing request to transport by ground, one IMAT Team from Oakland, CA to either McClellan Business Center or Travis AFB:

Actual:

- 41 pieces
 - 11 people
 - 1,640 pounds
 - 104 cubic feet
- Coordination required between GSA, DOD and USCG. Awaiting an ARF to support this request. This will probably quickly turn into a valid tasker with FEMA Form 40-1 funding.

18h. ESF #8 – Public Health/Medical Services:

- Two Mission Assignments in progress:
 1. Initial Activation \$10K
 2. Alerting and Activation of DMAT teams and command elements - \$500K. Being processed now.
- **Activated:** Teams being traveled to Travis AFB for staging
- One Disaster Medical Assistance Team (DMAT) from Missouri - MO-1 (total 48 people)
- Command and Control: Incident Response Coordination Team (IRCT) and Logistics Support (Total 27)
- **Alerted:** Teams Alerted and Rostered
- Five Disaster Medical Assistance Teams (DMAT) including Command and Control as well as Logistics support. This includes Disaster Mortuary Operations Response Teams (DMORT) Assessment Teams.

18i. ESF #10 – Oil/Hazmat Response:

No significant reports of damage in Hawaii

18j. ESF #11 – Agriculture/Natural Resources:

- No damage to any USDA facilities have occurred in HI or CA as of this hour.

**Incident Status Summary ICS 209
(Situation Report)**

18k. ESF #12 - Energy:

- Chevron - Refinery at normal operations.
- Tesoro Hawaii - Tesoro's refinery in Kapolei did not incur any damage stemming from the tsunami. Management and operations personnel monitored the situation closely from the refinery overnight. The refinery continues to operate normally
- Due to the tsunami warning, Pacific Gas and Electric (PG&E) shut down the Humboldt Bay Generating Station as a precautionary measure. As of 11:10 am EST the generating station is being brought back on line and is expected to return to normal operations today (March 11). PG&E experienced minor rotating outages in the Humboldt Bay area as a result of reduction of power generation. The company requested that its customers in Humboldt County reduce energy usage.
- PG&E reported that their Diablo Canyon nuclear power plant did not shut down and that at 12:00 pm EST both reactors are operating normally and at full capacity. PG&E stated that operations at the plant would be affected only if wave heights reached between 11-20 feet.
- Hawaii's Chevron and Tesoro (Kapolei) refineries made preparations for the tsunami and there are no reports of damage at this time.
- The Western Electricity Coordinating Council reported at 12:00 pm EST that there were no reported impacts to electricity infrastructure in Oregon and Washington State.
- Hawaiian Electric Power Companies prepared for the tsunami by moving vulnerable generation plants offline to avoid a loss of electricity. Hawaii Electric Companies said power providers on the islands shifted power generation to other plants that are not in the inundation zone and are less vulnerable to a retreat of water.
- All ports are currently operating normally in American Samoa, Hawaii, Oregon, and California.

18l. ESF #13 - Public Safety/Security: Activated in RRCC (b)(6) ATF

18m. ESF #14 Long Term Community Recovery:

18n. ESF #15 - External Affairs:

- RA Nancy Ward interviewed by KGO CH 7 (ABC affiliate) reporter Janelle Wong (b)(6).
- Reporter asked for update and whether we expected to stand down soon. Nancy said not yet by a long shot and that we would be 24 7 until situation stabilized

Public Affairs:

Community Relations:

Congressional:

International:

**Incident Status Summary ICS 209
(Situation Report)**

19a. Finance / Administration:

Organization	Checked In	Pending	Total
FEMA			
Other Federal Agencies			
State			
Total			

Current as of:		
	Subtotals	Totals
Total Allocations		
Total Available Commitments		
Available Obligations - Grants & Temporary Housing		
Available Obligations - Mission Assignments		
Available Obligations - All Other		
Total Available Obligations		
Total Expenditures		
Total Funds Available		

20. Logistics:

- John Tarca – RRCC Logistics Chief, 510-627-7732
- Teresita Badua-Larsen -- Ordering Unit Lead, 510-627-7701
- Submitting additional Requests for funding required:

Code	Amount	
2610	10,000	Office Supplies
2615	10,000	IT Supplies/Material
2690	10,000	Materials/Supplies (building)
3140	10,000	Tools/Equipment
3160	10,000	Instrument Apparatus
2410	10,000	Printing
2580	10,000	Other Services
2587	10,000	Operations/Contract
2531	10,000	Safety and Supplies

Grand Total: \$90,000

- Randy Brawley is lead at RIX for MCU actions
- Requested initial support from ESF-01, ESF-07 and DOD
- IMAT pulling personnel and cache list together for coordination
- Need to source and stage vehicles to move cache and personnel to USCG for onward movement.
- E-tasker submitted to stage Commonly Used Shelter Items (CUSH) at Travis AFB, one kit to be sourced and staged.
- E-Tasker submitted for ISB Team to support staging area operations at Travis.
- Processed MA's for DOD Staging Area support at both Hickam (HI) and Travis (CA), sub tasked DOD to provide Staging Area Air support at both locations.
- Working with USCG to support initial movement of Regional IMAT as required.

**Incident Status Summary ICS 209
(Situation Report)**

<ul style="list-style-type: none">• Establishing the Regional Movement Coordination Unit to support coordination and flow control of resources.• Conducted the first Ops/Log coordination call at 05:00 PST.• Working with ARC to identify available resources.• Requested \$200k surge funding to support transportation.• Hawaii Catastrophic execution plan is the format being followed and executed as required.	
21. Planning:	
22. Safety:	
23. Security:	
24. Other Notes, Issues or Additional Remarks:	
25. Proposed Objectives for Next Operational Period:	
26. Prepared by: Joel Palmer – SITL RST	27. Reviewed by:

Attachment 1 – Designated Counties Table

				Current As Of:						
Declaration Date:				Incident Period:						
Number of Counties & Tribal Areas Designated										
Individual Assistance	0 Counties	Public Assistance	0 Counties	Tribal Nations	0					
Declaration Information										
Jurisdiction	Affected Not FEMA Designated	Declaration Dates								
		IA	Public Assistance							
			A	B	C	D	E	F	G	H

31. MAR. 2011 11:20

EMBASSY-CONTROL-ROOM

Fax to: 301-816-5151

ATTENTION: PMT
Dong Coe Sandra Wastler

From: TODD JACKSON
JAPAN TEAM

Subject: Info provided by
Richard Nicholas, MD
Regional Medical Officer
for East Asia
US Embassy Singapore

FA 729 of 778

***** UNCLASSIFIED// *****

Subject: CDRUSPACOM GUIDANCE ON RADIATION FORCE HEALTH PROTECTION REQUIREMENTS
FOR U.S. FORCES SUPPORTING OPERATION TOMODACHI CHANGE 2

Originator: HQ USPACOM JOC(SC)

DTG: 260048Z Mar 11

Precedence: IMMEDIATE

DAC: General

To: CJTF 519

cc: JTF 505 J6(SC), COMPACFLT PEARL HARBOR HI, PACAF COMMAND CENTER DIRECTOR(SC),
PACAF A3(SC), COMUSKOREA CP SEOUL KOR, COMMARFORPAC G3(SC), ALCOM J3(SC), USARPAC
COMMAND CENTER(SC), COMSOPAC SOJ3(SC), COMSOPAC SOJ5(SC), JOINT STAFF
WASHINGTON DC, NMCC WASHINGTON DC, DIRECT USNORTHCOM, CDR USJFCOM NORFOLK VA(MC),
HQ USPACOM EA BOOTH(SC), 13AF CC(SC), CG III MEF(SC), I CORPS (FWD) AND USARJ
COMMAND CENTER(MC), COMSEVENTHFLT, HQ USPACOM J1(SC), HQ USPACOM J2(SC), HQ
USPACOM J3(SC), HQ USPACOM J4(SC), HQ USPACOM J5(SC), HQ USPACOM J6(SC), HQ
USPACOM J7(SC), HQ USPACOM J8(SC)

UNCLASSIFIED//

UNCLASSIFIED//

FM HQ USPACOM HONOLULU HI//

TO CJTF 519//J3//

JTF 505//

COMPACFLT PEARL HARBOR HI//N3/N40/N5//

HQ PACAF JOINT BASE PH-HICKAM HI//A00/A3// COMUSKOREA CC SEOUL KOR//J3//

COMMARFORPAC//G3// ALCOM ELMENDORF AFB AK//J3// CDRUSARPAC FT SHAFTER HI//G3/

APDP/DCSOPS/CAT// COMSOPAC HONOLULU HI//SOJ3/SOJ5// INFO JOINT STAFF WASHINGTON

DC//J3// JCS NMCC WASHINGTON DC CDRUSNORTHCOM PETERSON AFB CO//J3// CDRUSJFCOM

NORFOLK VA//J3// COE DMHA HQ USPACOM SJFHQ//

13 AF//

CG III MEF//

CDR USARJ//

COMSEVENTHFLT//

(b)(5)

GENTEXT/RMKS/

(b)(5)

KI WILL BE DISTRIBUTED TO ALL GROUND, AVIATION AND MARITIME PERSONNEL WORKING WITHIN 100 NAUTICAL MILES OF FUKUSHIMA, DAI-SHI POWER PLANTS. THE DECISION TO INGEST KI WILL BE BASED ON A RISK DETERMINATION USING FUKUSHIMA REACTOR PLANT STATUS AND ASSOCIATED RADIATION VALUES. IF RADIATION VALUES REACH OR ARE ANTICIPATED TO REACH 1 REM TOTAL BODY EXPOSURE, KI IS TO BE ADMINISTERED.

(b)(5)

GENTEXT/EXECUTION/

3. OPERATIONS WITHIN USFJ DECLARED WARM ZONES.

3.A. CONTAMINATION AND RADIATION EXPOSURE LEVELS TO U.S. FORCES ARE EXPECTED TO BE MEDICALLY INSIGNIFICANT.

3.B. HOWEVER, GIVEN THE UNCERTAINTY OF THE OPERATING ENVIRONMENT, ALL U.S. FORCES SUPPORTING OPERATION TOMODACHI WITHIN USFJ DECLARED WARM ZONES WILL BE MONITORED AND TRACKED AT THE UNIT LEVEL IAW SERVICE PROCEDURES.

3.C. A CONTROL LEVEL OF 300 MREM FOR THE DURATION OF THE OPERATION IS ESTABLISHED.

3.D. INCREASED CONTROL LEVELS, UP TO 1000 MREM CAN BE IMPLEMENTED AT THE DISCRETION OF THE UNIT COMMANDER FOR THE MISSION DURATION. UNITS MUST DOCUMENT EXPOSURE MITIGATION MEASURES (MANPOWER USAGE, MAXIMIZING DISTANCE FROM SOURCE, MINIMIZING EXPOSURE TIME, AND SHIELDING). THE BEST PROTECTION IS DISTANCE AND SHELTER.

3.E. U.S. FORCES THAT ARE EXPECTED TO RECEIVE 300MREM, OR COME INTO CONTACT WITH LOOSE SURFACE CONTAMINATION DURING THE HUMANITARIAN RELIEF EFFORTS, SHOULD BE MONITORED AND HAVE EXPOSURES DOCUMENTED.

3.F. RADIATION MEDICAL EXAMINATIONS MAY BE REQUIRED PER SERVICE SPECIFIC GUIDANCE.

3.G. KI WILL BE DISTRIBUTED TO ALL GROUND, AVIATION AND MARITIME PERSONNEL WORKING WITHIN 100 NAUTICAL MILES OF FUKUSHIMA DAI-SHI POWER PLANTS. THE DECISION TO INGEST KI WILL BE BASED ON A RISK DETERMINATION USING FUKUSHIMA REACTOR PLANT STATUS AND ASSOCIATED RADIATION VALUES. IF RADIATION VALUES REACH OR ARE ANTICIPATED TO REACH 1 REM TOTAL BODY EXPOSURE, KI IS TO BE ADMINISTERED.

3.H. REGARDLESS OF OPERATIONAL LOCATION OR DISTANCE FROM THE POWER PLANTS, POTASSIUM IODINE SHOULD BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL IF THERE IS A REASONABLE PROBABILITY OF INHALATION OF RADIOIODINE.

3.I. POTASSIUM IODIDE SHOULD NOT BE ADMINISTERED TO PERSONS WITH ALLERGY TO IODINE.

GENTEX/ADMIN and LOG/

4. OPERATIONS WITHIN USFJ DECLARED HOT ZONES.

4.A. CDRUSPACOM RETAINS AUTHORITY TO PERMIT U.S. FORCES TO ENTER USFJ HOT ZONES, FOR IN-EXTREMIS CIRCUMSTANCES, PROVIDED THE U.S. FORCES HAVE PERSONAL PROTECTIVE EQUIPMENT, INDIVIDUAL RADIOLOGICAL MONITORING EQUIPMENT, HAVE TIMELY ACCESS TO PRECAUTIONARY MEDICATIONS TO MITIGATE POTENTIAL RADIATION EFFECTS, AND HAVE ACCESS TO DECONTAMINATION SITES.

4.B. UNIT COMMANDER WILL ENSURE ALL U.S. FORCES PERMITTED INTO USFJ DECLARED HOT ZONES ARE MONITORED AND EACH CASE IS DOCUMENTED WITH A MEDICAL FOLLOW-UP.

4.C. US FORCES EXPECTING EXPOSURES GREATER THAN 1000 MREM MUST GAIN CDRUSPACOM AUTHORIZATION TO CONTINUE OPERATIONS, AND SHOULD NOT EXCEED THE U.S. FEDERAL LIMIT OF 3 REM/QTR OR 5 REM/YR.

4.D. US FORCES WILL NOT EXCEED 10 REM EXCEPT FOR LIFE-SAVING OPERATIONS.

POINT OF CONTACT:

5. FOR ADDITIONAL CLARIFICATION ON THE ABOVE GUIDANCE PLEASE CONTACT (b)(6) AND DSN 315-477-7226.// GENTEX/AUTHENTICATION/J. P. NAMAN, CAPT, USN, USPACOM J331/ DSN: 477-7292//

BT

CLASSIFICATION: UNCLASSIFIED

From: LIA08 Hoc
Sent: Tuesday, March 22, 2011 10:24 AM
To: LIA01 Hoc
Cc: LIA06 Hoc
Subject: FW: Radiation scanning capability with Yamaha RMAX
Attachments: Microsoft PowerPoint - Rad_overview_3.pdf

Ted,

Last I heard (late Saturday) GoJ was no longer looking for robotics of the fly-by nature, but in the event the request comes up again, Virginia Tech is offering up what appears to be a surveillance drone that collects radiological data.
Rani

From: LIA07 Hoc
Sent: Tuesday, March 22, 2011 9:58 AM
To: Hoc, PMT12; LIA08 Hoc
Subject: FW: Radiation scanning capability with Yamaha RMAX

FYI

From: Kevin Kochersberger [mailto:kbk@vt.edu]
Sent: Tuesday, March 22, 2011 9:51 AM
To: LIA07 Hoc
Subject: Radiation scanning capability with Yamaha RMAX

Kevin Kochersberger, Research Assoc. Professor
VT - Mechanical Engineering Unmanned Systems Laboratory
www.me.vt.edu/unmanned
540-231-5589 Office

(b)(6) Cell

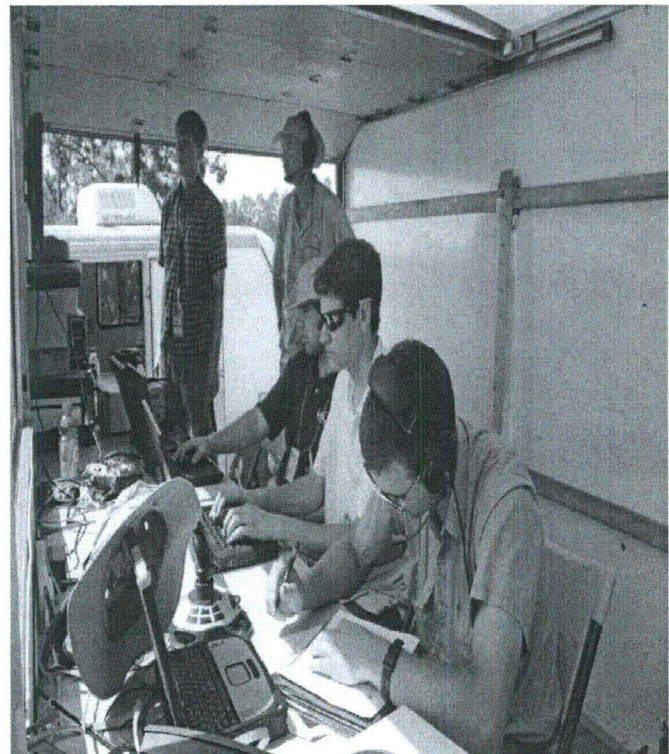
Aerial radiation mapping for nuclear reactor incident management



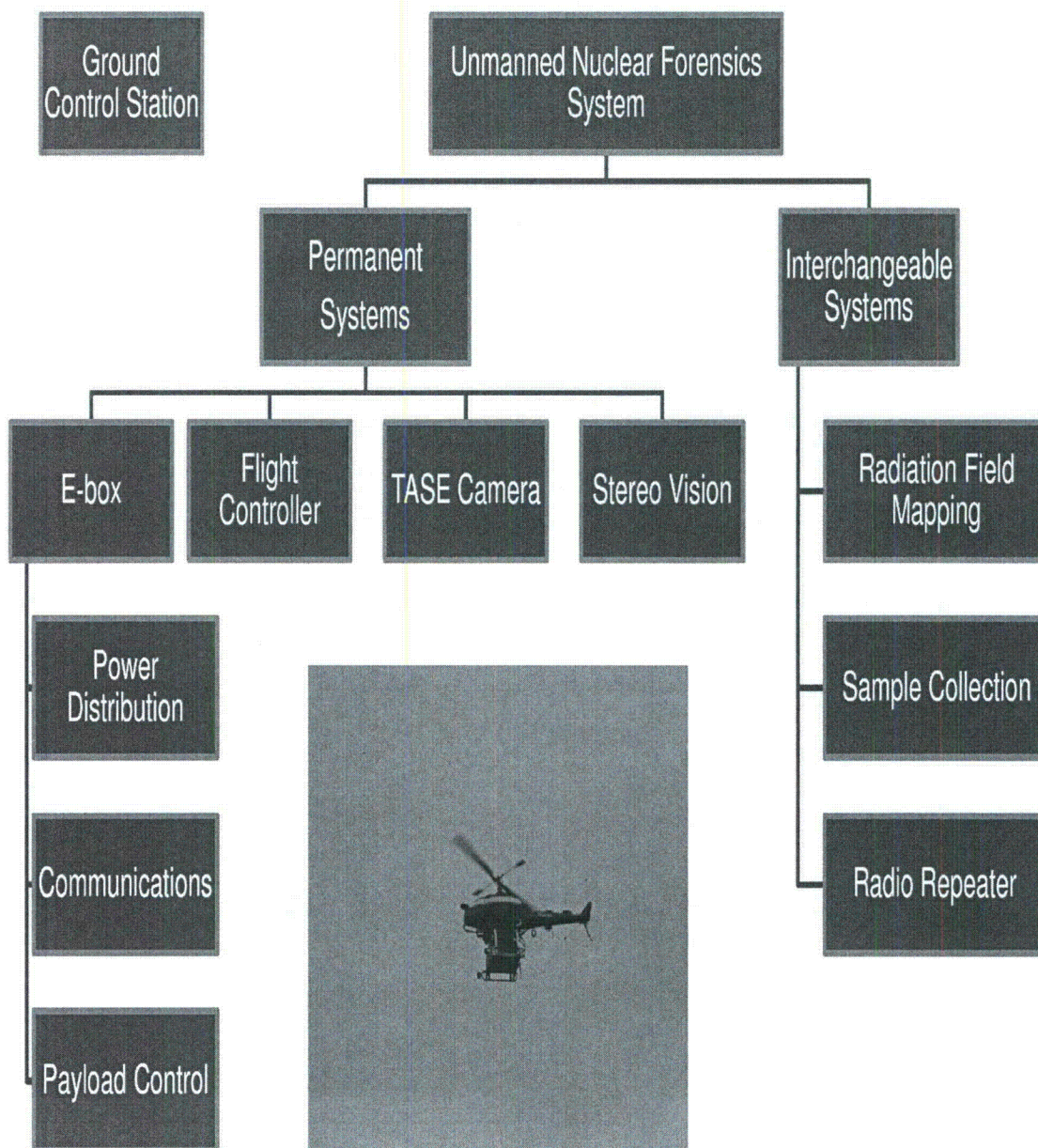
Sandia
National
Laboratories

Kevin Kochersberger, Associate Professor
Virginia Tech, Blacksburg, VA

kbk@vt.edu
540-231-5589




~~Classification: OOU~~



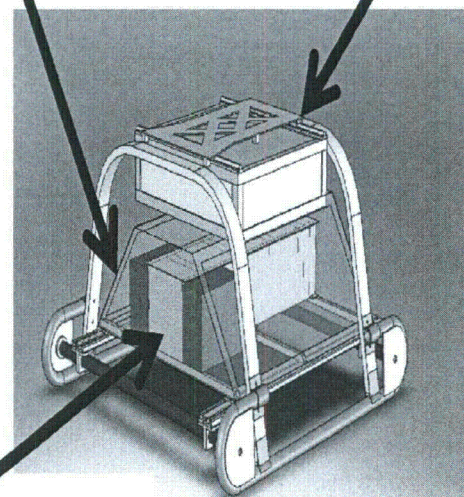
Classification: OOU

RMAX Specifications

Specification	Item	Value
	Performance	Max payload
		28 kg
		Gross weight
		94 kg
		Flight duration
		60 minutes
		Recommended max manual flight speed
		5.6 m/s (13 MPH)
		Absolute max speed, limited payload capacity
		27 m/s (61 MPH)
		Max cruise speed (wePilot autopilot)
		10 m/s (22 MPH)
		Range
		7 km
Dimensions		Main rotor diameter
		3.1 m
		Tail rotor diameter
		0.55 m
		Overall length
		3.6 m (including rotors)
		Overall height
		1.1 m
Engine		Water cooled, 2 stroke horizontally opposed 2 cylinder
		Displacement
		246 cc
		Power
		21 HP
		Fuel
		Gasoline / oil mixed 50:1

Classification: OUO

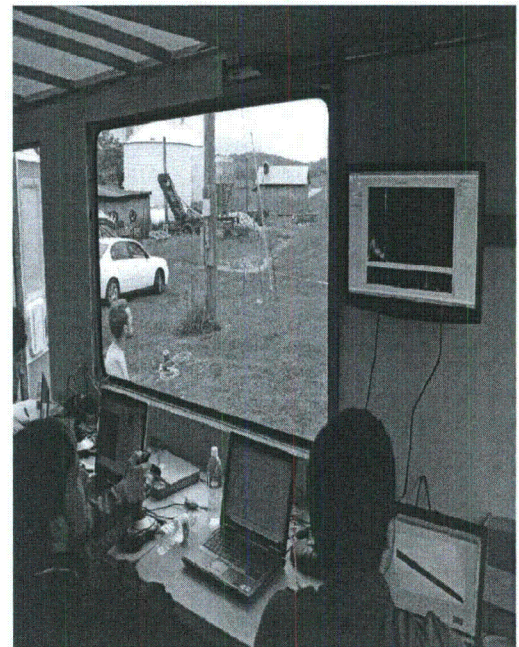
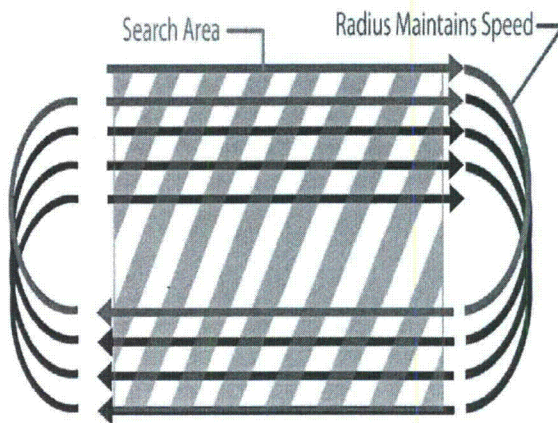
- Pod concept used for quick install, quick removal of payloads
 - Radiation sensor
 - Ground sampling robot
- Ebox (permanent) provides power and comms distribution to pods
- Gimbaled video camera used for persistent surveillance
- Stereovision system used to map 3-D terrain for blast assessment and ground robot operation



Detector in housing

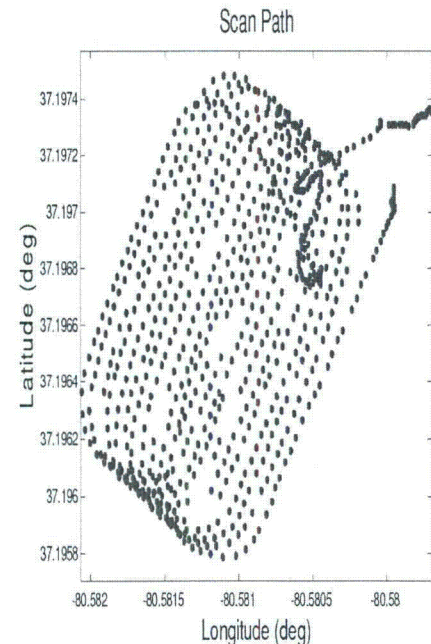
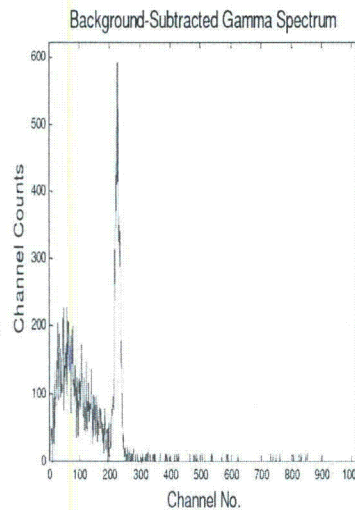
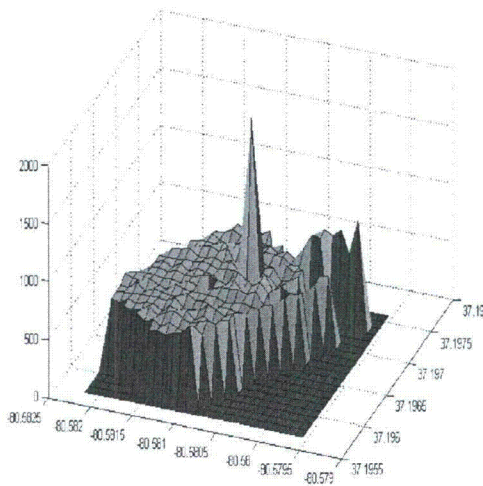
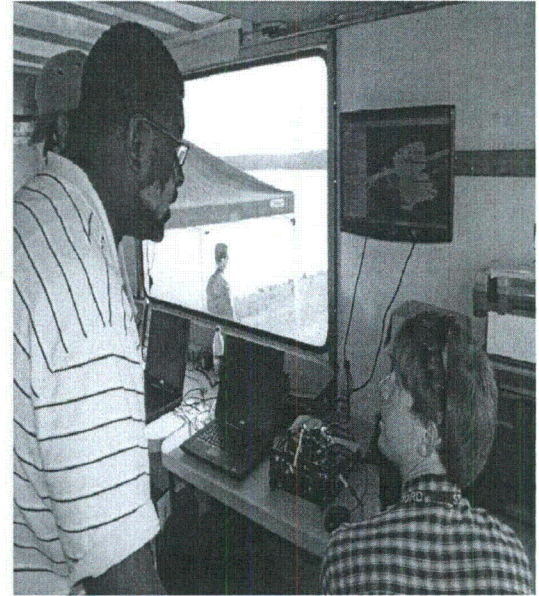
~~Classification: OUO~~

- Rad pod contains a 9" x 3" NaI scintillation detector built by Sandia National Labs – 8.6 kg
- Rad mission designed to scan area in most efficient manner based on helicopter aerodynamics
 - Scan pattern is a shifting oval path (Zamboni pattern)



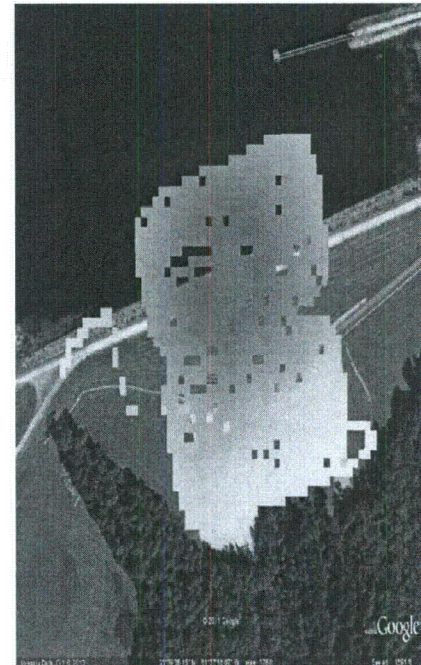
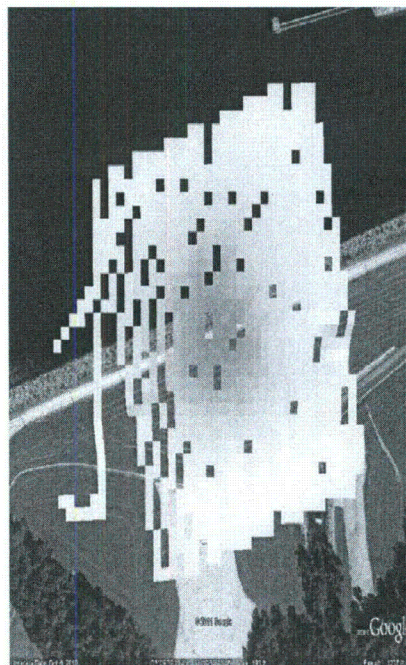
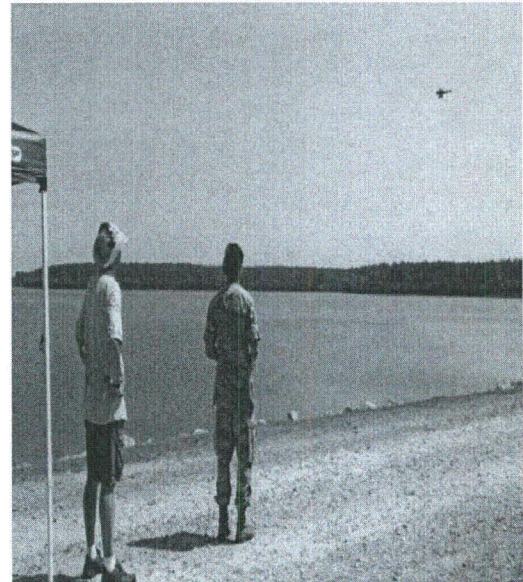
Classification: OOU

- Oct, 2009 test at Kentland Farms demonstrated detector function with a single, collimated source
 - GPS coordinates, rad counts and spectral data transmitted **real-time** to the ground control station



Classification: OOU

- June, 2010 test: Successfully mapped single and multiple omni-sources at Savannah River National Labs at 40 m and 60 m AGL
- *The RMAX flew 6 hours in three days of mapping in 98° F heat – only a single software update had to be made during the radiation mapping missions which resulted in a 20 minute delay*



Single and dual radiation source maps (Sandia NL)


Classification: OOU

-
- The Unmanned Systems Lab has a proven aerial radiation mapping system adaptable to *any* Yamaha RMAX helicopter
 - All VT hardware (electrical and mechanical) can be rapidly installed on a stock RMAX (of which there are many in Japan)
 - Operations include:
 - Radiation scans (mapping) of areas up to 1 km x 1 km
 - Radiation localization around structures
 - Plume detection, downrange radiation measurements
 - Gimbaled camera sends images back for situational awareness
 - Limitations:
 - Distance from ground ops to area of interest: See next slide
 - Flight endurance: 50 min with 10 min reserve
 - Deployment:
 - Within 2 days of notice

Classification: OUO

-
- Stereo vision imaging: system can acquire high resolution stereo images on demand
 - Flight range
 - VT uses Cobham Duo IP radios (2.2 GHz) that are capable of 900 kbps video at 20 mile line-of-sight range.
 - These are COFDM radios – will work very well non line-of-sight
 - These radios can be used for flight control, data and video
 - Past tests at VT show that these radios to be very reliable
 - Real time radiation data can be transmitted with these radios
 - ***Still must consider a 1 hour total endurance limitation on the helicopter for any mission – this realistically limits flight range to 7 km***

Classification: OUO

CBRNE HAZARDS	
HHS PSC FOHS	
jhughart@ofda.gov	
Date:	2011
ID No. or Hazard	UN 2810 HD Mustard (blister chemical warfare agent)
(b)(5)	
Acid or base hazard?	Causes chemical burns and blisters skin
Smoke of fire hazard?	Combustible
Toxic or infectious?	Causes chemical burns and blisters skin
Explosive?	(b)(5)
Radioactive?	No
Amounts:	23 metric tons present as of 2010
Sources:	Chemical warfare production plants at sites described above.
Signs:	Aerial bomb burst, spray
Exposure paths:	Air, soil, water
Sensitive populations:	People with pre-existing lung diseases
Syndromes:	Blistering of skin, eyes, & respiratory system; delayed 12 to 36 hours after exposure.
Morbidity/mortality:	Frequently injures, but rarely kills (2% mortality rate)
Equipment available:	OFDA NBC PPE Kit (50 ea), OFDA CBRNE Escape Kits (50)
Needs:	CBRNE Escape PPE, air monitoring
Training level:	Blister agents are covered in OFDA's 8-hr CBRNE Awareness Course
Acute care:	Don PPE, stop bleeding, move victim to safe area, sort victims, supply oxygen (use a CPR barrier), remove & bag contaminated clothing, flush skin & eyes with clean water 20 min, wash with soap & water, stabilize injuries, treat shock (keep victim warm), ship out Immediates first.
Sequellae:	Increased risk of lung cancer, blister infection
Supplies:	OFDA has NBC Escape hoods, Tychem coveralls, nitrile gloves, Proshield boot covers
Information:	Emergency Response Guide 153
Safety:	Fire: isolate and evacuate 1/2 mile all directions. Toxic inhalation hazard:
Training assistance:	OFDA: offer CBRNE Awareness
(b)(5)	

References:	FAS
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2011

UN 2810 GA, GB,GD (nerve chemical warfare agents)

(b)(5)

No

No

Extremely toxic

(b)(5)

No

100 metric tons as of 2010

Chemical warfare production plants at sites described above.

Aerial bomb burst, spray

Air, soil, water

Children, elderly

Acetyl cholinesterase inhibition

Highly lethal in small doses

OFDA NBC PPE Kit (50 ea), OFDA CBRNE Escape Kits (50)

CBRNE Escape PPE, air monitoring

Nerve agents are covered in OFDA's 8-hr CBRNE Awareness Course

Don PPE, stop bleeding, administer nerve agent antidote kits, move victim to safe area, sort victims, supply oxygen (use a CPR barrier), remove & bag contaminated clothing, flush skin & eyes with clean water 20 min, wash with soap & water, stabilize injuries, treat shock (keep victim warm), ship out Immediates first.

Blast trauma damage (e.g., kidney damage) if ordnance used to disperse agent

OFDA has NBC Escape hoods, Tychem coveralls, nitrile gloves, Proshield boot covers

Emergency Response Guide 153

Fire: isolate and evacuate 1/2 mile all directions. Toxic inhalation hazard:

OFDA: offer CBRNE Awareness

(b)(5)

FAS



2011

UN 2362 1,1-dichloroethane (nerve agent precursor chemical)

(b)(5)

No

Highly flammable

Toxic via ingestion

May form explosive vapors in air

No

1300 metric tons

Imported from German chemical manufacturers

UN 2362 and flammable liquid labels and placards on drums and tanks

Air, fire, smoke

People with pre-existing lung diseases, children, elderly

Burns, smoke inhalation

Low unless people caught in fire or toxic smoke

OFDA NBC PPE Kit (50 ea), OFDA CBRNE Escape Kits (50)

CBRNE Escape PPE, air monitoring

Flammable liquids are covered in OFDA's 8-hr CBRNE Awareness Course

Don PPE, stop bleeding, move victim to safe area, sort victims, supply oxygen (use a CPR barrier), remove & bag contaminated clothing, flush skin & eyes with clean water 20 min, wash with soap & water, stabilize injuries, treat shock (keep victim warm), ship out Immediates first.

Burn infections

OFDA has NBC Escape hoods, Tychem coveralls, nitrile gloves, Proshield boot covers

Emergency Response Guide 130

Fire: isolate and evacuate 1/2 mile all directions.

OFDA CBRNE Awareness, Management & Operations classes

(b)(5)

FAS



2007; 2011?
UN 2918 Radioactive material, fissile, n.o.s.: uranium yellow cake
(b)(5)
No
No
Metal toxic to kidneys, brain, liver and heart
Alpha and weak gamma emitter
1000 tons as of 2007
Libyan uranium enrichment plant
Yellow powder; often stored in barrels or drums
Air, soil
Children, fetus 8-15 wks gestation
Kidney, brain, liver to heart damage; lung cancer
Low mortality
OFDA: CBRNE Escape PPE, ADM-300 radiation detection meter, dosimeters
radiation monitoring when in vicinity of Sebha
OFDA: radioactive materials covered in 8-hr CBRNE Awareness course
First Aid section of ERG Guide 165 Don PPE, stop bleeding, move victim to safe area, sort victims, supply oxygen (CPR barrier), remove & bag contaminated clothing (but do not remove clothing adhered to skin), flush skin & eyes with clean water 20 min, wash with soap & water, stabilize injuries, treat shock (keep victim warm), ship out Immediates first.
Increased cancer risk; monitor personal doses in hazardous locations, maintain records
Pack additional Tychem QC or Tyvek white coveralls, gloves and boot covers (components for 1000 sets; or 4 triwalls with 250 ea)
ERG Guides 165, 166
Monitor ionizing radiation in hazardous areas (gamma, beta, neutron)
OFDA: offer CBRNE Awareness
Beta, gamma radiation (ADM 300 meter); pen dosimeters
Food, water, shelter for IDPs
(b)(5)



2004
UN 2978 Uranium hexafluoride
(b)(5)
Corrosive hazard to eyes, skin and respiratory system
May react violently with fuels; containers may rupture in fire
Metal toxic to kidneys, brain, liver and heart
May react violently with fuels
Alpha and weak gamma emitter
Unknown
Libyan gaseous diffusion plant
Long, gray cylinders, 1 ton, UN 2978, radiation trefoil
None unless cylinders damaged
Children, fetus 8-15 wks gestation
Chemical burns if cylinder breached; damage to kidneys, brain, liver or heart
Potentially lethal if cylinders breached
OFDA: CBRNE Escape PPE, ADM-300 radiation detection meter, dosimeters
HF and radiation monitoring when in vicinity of Sebha
OFDA: radioactive materials covered in 8-hr CBRNE Awareness course
First Aid section of ERG Guide 166 Don PPE, stop bleeding, move victim to safe area, sort victims, supply oxygen (CPR barrier), remove & bag contaminated clothing (but do not remove clothing adhered to skin), flush skin & eyes with clean water 20 min, wash with soap & water, stabilize injuries, treat shock (keep victim warm), ship out Immediates first.
Increased cancer risk; monitor personal doses in hazardous locations, maintain records
Pack additional Tychem QC or Tyvek white coveralls, gloves and boot covers (components for 1000 sets; or 4 triwalls with 250 ea)
ERG Guides 165, 166
Monitor ionizing radiation in hazardous areas (gamma, beta, neutron)
OFDA: offer CBRNE Awareness
Beta, gamma radiation (ADM 300 meter); pen dosimeters
Food, water, shelter for IDPs
(b)(5)



2011
UN 1267 Petroleum crude oil
(b)(5)
No
Highly flammable
Benzene and other volatiles are toxic via inhalation
Vapors may form explosive mixtures with air
No
3.3 MBPD
(b)(5)
Oil derricks, pipelines
Air, fire
People with pre-existing lung diseases
Burns, smoke inhalation, eye & respiratory irritation
Low unless smoke plume engulfs populated areas
OFDA: smoke escape hoods, flame-resistant base layers, Nomex coveralls, burn gel dressings
Wear FR base layers, carry smoke escape hood & burn gel dressing; wear Nomex coveralls in vicinity of bulk oil facilities
OFDA: flammable liquids covered in 8-hour CBRNE Awareness course
Don PPE, stop bleeding, move victim to safe area, sort victims, supply oxygen (CPR barrier), remove & bag contaminated clothing, flush skin & eyes with clean water 20 min, wash with soap & water, stabilize injuries, treat shock (keep victim warm), ship out Immedates first.
Pulmonary edema risk; rest 72 hrs post exposure; increased cancer risk
Extra FR base layer clothing available in OFDA CBRNE cache
ERG Guide 128
Large spill: evacuate 1000 ft downwind. Fire (truck, tank, rail car): evacuate 1/2 all directions.
OFDA: offer CBRNE Awareness
CO, H2S, LEL, total petroleum hydrocarbons
Food, water, shelter for IDPs
(b)(5)

<http://en.noclibya.com.ly/>



2011

UN 1270 Petroleum oil

(b)(5)

No

Highly flammable

Benzene and other volatiles are toxic via inhalation

Vapors may form explosive mixtures with air

No

(b)(5)

(b)(5)

Oil storage tanks (flat top), pipelines; combustible liquid labels and placards

Air, fire

People with pre-existing lung diseases

Burns, smoke inhalation, eye & respiratory irritation

Low unless smoke plume engulfs populated areas

OFDA: smoke escape hoods, flame-resistant base layers, Nomex coveralls, burn gel dressings

Wear FR base layers, carry smoke escape hood & burn gel dressing; wear Nomex coveralls in vicinity of bulk oil facilities

OFDA: flammable liquids & PPE covered in 8-hr CBRNE Awareness course

Don PPE, stop bleeding, move victim to safe area, sort victims, supply oxygen (CPR barrier), remove & bag contaminated clothing, flush skin & eyes with clean water 20 min, wash with soap & water, stabilize injuries, treat shock (keep victim warm), ship out Immediates first.

Pulmonary edema risk; rest 72 hrs post exposure; increased cancer risk

Extra FR base layer clothing available in OFDA CBRNE cache

ERG Guide 128

Large spill: evacuate 1000 ft downwind. Fire (truck, tank, rail car): evacuate 1/2 all directions.

OFDA: offer CBRNE Awareness

CO, H₂S, LEL, total petroleum hydrocarbons

Food, water, shelter for IDPs

(b)(5)

<http://en.noclibya.com.ly/>



2011
UN 1972 Natural gas, refrigerated liquid
(b)(5)
No
Extremely flammable
May cause dizziness or asphyxiation without warning
Forms explosive mixtures in air
No
Unknown
(b)(5)
Spherical or cylindrical gas tanks; UN flammable gas "2" labels & placards
Air
People with pre-existing lung diseases
Burns, smoke inhalation
Low unless explosion & plume engulfs populated areas
OFDA: smoke escape hoods, flame-resistant base layers, Nomex coveralls, burn gel dressings
Wear FR base layers, carry smoke escape hood & burn gel dressing; wear Nomex coveralls in vicinity of bulk gas facilities
OFDA: flammable liquids & PPE covered in 8-hr CBRNE Awareness course
Don PPE, stop bleeding, move victim to safe area, sort victims, supply oxygen (CPR barrier), thaw clothing frozen to skin with warm water, remove & bag contaminated clothing (but do not remove clothing adhered to skin), thaw frostbitten skin with warm water, flush skin & eyes with clean water 20 min, wash with soap & water, stabilize injuries, treat shock (keep victim warm), ship out Immedates first.
Pulmonary edema risk; rest 72 hrs post exposure, monitor for dyspnea & rales
Extra FR base layer clothing available in OFDA CBRNE cache
ERG Guide 115
Large spill: evacuate 1/2 mile downwind. Fire (truck, tank, rail car): evacuate 1 mile all directions.
OFDA: offer CBRNE Awareness
CO, H ₂ S, LEL, total petroleum hydrocarbons
Food, water, shelter for IDPs
(b)(5)

CRS <http://www.fas.org/sgp/crs/mideast/RL33142.pdf>



2011

UN Class 1 Division 1.1 Explosives (Mass explosion hazards): Milan anti-tank missiles, Dassault Rafale multi-role fighter aircraft; Scud-B & Scud-C missiles

Nationwide

No

Ordnance detonations create fires

Ordnance detonations create toxic smoke (carbon monoxide, hydrogen sulfide, etc.)

Ordnance presents mass explosion hazards

(b)(5)

Unknown

Libyan state armed forces

Ordnance

Blast, fragmentation, thermal

Residents; urban combat areas

Blast pressure damage to gas-filled organs, penetrating trauma, burns

Trauma supplies in Field Health and Safety kits (33 ea)

Biohazard PPE for medical care providers

Blast trauma refresher, tourniquets, blood rake, chest seals, recovery position

First Aid section, ERG Guide 112 Don PPE, stop bleeding, move victim to safe area, sort victims, supply oxygen (CPR barrier), remove & bag contaminated clothing (but do not remove clothing adhered to skin), flush skin & eyes with clean water 20 min, wash with soap & water, stabilize injuries, treat shock (keep victim warm), ship out Immediates first.

Kidney damage, infections

Trauma supplies: Combat Gauze™, Bloodstopper™ bandages, triangular bandages, alcohol pads

ERG Guide 112

HA site surveys for ordnance and civil unrest

OFDA offer blast trauma refresher, tourniquets, blood rake, chest seals, recovery position

Binocular surveys of HA sites, civil unrest areas

Trauma supplies for host nation victims

(b)(5)

CRS <http://www.fas.org/sgp/crs/mideast/RL33142.pdf>



2011
UN 2814, Infectious substances, affecting humans: anthrax & botulinum toxin (residual)
Unknown; possibly residual
No
No
Infectious, dangerous to humans
Potential for biohazard dispersal device of combined with bio agent matls
No
(b)(5)
Flu-like symptoms
Air
Anyone in contact is at risk
Anthrax Pulmonary Syndrome
High; case definition at http://emergency.cdc.gov/agent/anthrax/anthrax-hcp-factsheet.asp
NBC PPE Kits (50), CBRNE Escape Kits (33)
OFDA: additional 8 hrs CBRNE training for DART
OFDA: 8-hr CBRNE Awareness; Libya: minimal
http://emergency.cdc.gov/agent/anthrax/index.asp
http://emergency.cdc.gov/agent/anthrax/index.asp
CBRNE Escape Hoods, NBC PPE Kits
ERG Guide 158
Monitor team for signs & symptoms
Offer CDC assistance thru TAG if needed
BioPCR
Antibiotics for anthrax
(b)(5)

FAS



2011

UN 1230 Methanol

(b)(5)

No

Highly flammable

Highly toxic via inhalation and skin absorption

May form explosive vapor mixtures in air

No

2000 metric tons per day

(b)(5)

Fires, smoke; dyspnea, blurred vision, cramps, agitated behavior

Air (smoke), ingestion (accidental)

Children, elderly, lung dx patients; people who accidentally ingest methanol instead of ethanol

Neurologic damage w/in 24 hrs of exposure

Highly toxic via ingestion

Industrial chemical PPE kits (full face piece and half mask respirators with canisters) (50 ea)

Monitor air for methanol if working in vicinity of complex and fires occur

OFDA: 8-hr CBRNE Awareness; Libya: minimal

<http://www.nlm.nih.gov/medlineplus/ency/article/002680.htm>

Permanent neurologic damage (e.g., blindness)

Extra Tychem or Tyvek coveralls, gloves, boot covers, respirator cartridges

ERG Guide 131

Monitor air for methanol if working in vicinity of complex, and fires occur; evacuate and isolate 1/2 mile all directions if major fire occurs

Health education: Methanol health effects,
<http://www.nlm.nih.gov/medlineplus/ency/article/002680.htm>

Methanol detector tubes

Food, water and shelter for IDPs evacuated from vicinity of complex

(b)(5)

<http://www.ice.gov.it/paesi/africa/libia/upload/106/Industria%20della%20plastica.pdf>



2011

UN 1005 Ammonia, anhydrous

(b)(5)

Can cause chemical burns to skin, eyes & respiratory system

Containers may explode if heated

Toxic via inhalation, ingestion & skin contact

Containers may explode if heated

No

2200 metric tons per day

(b)(5)

Distinct ammonia odor

Air

Children, elderly, people with lung diseases

Eye & respiratory system irritation

Highly toxic & potentially lethal

Industrial chemical PPE kits (full face piece and half mask respirators with canisters) (50 ea)

Monitor air for ammonia if working in vicinity of complex and fires occur

OFDA: 8-hr CBRNE Awareness; Libya: minimal

First Aid section, ERG Guide 125 Don PPE, stop bleeding, move victim to safe area, sort victims, supply oxygen (CPR barrier), thaw clothing frozen to skin with warm water, remove & bag contaminated clothing (but do not remove clothing adhered to skin), thaw frostbitten skin with warm water, flush skin & eyes with clean water 20 min, wash with soap & water, stabilize injuries, treat shock (keep victim warm), ship out Immediates first.

Pulmonary edema; rest 72 hours post exposure

Extra Tychem or Tyvek coveralls, gloves, boot covers, respirator cartridges

ERG Guide 125

Monitor air for ammonia if working in vicinity of complex, and fires occur. Toxic Inhalation Hazard; small spill: isolate 100-ft radius, then protect 0.1 mi radius (day and night). Large spill: isolate 500-ft radius, then protect 0.5 mi radius by day and 1.4 mi. radius by night

Health education: ammonia health effects,
<http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=2>

Ammonia detector tubes

Food, water and shelter for IDPs evacuated from vicinity of complex

(b)(5)

<http://www.ice.gov.it/paesi/africa/libia/upload/106/Industria%20della%20plastica.pdf>



2011

UN 3370, Urea nitrate, wetted w/ not less than 10% water

(b)(5)

No

Flammable/combustible materials

Toxic or fatal if swallowed or absorbed through skin

Dried out material may explode if exposed to heat, flame, friction or shock

No

2750 metric tons per day

(b)(5)

Corrosive, irritating smoke from fires

Air

Children, elderly, people with lung diseases

Eye & respiratory system irritation; eye & skin burns

Can cause disease or death via smoke or explosion

Industrial chemical PPE kits (full face piece and half mask respirators with canisters) (50 ea);
Draeger BG-4 rebreathers (8)

Evacuate 1/2 mile in all directions in the event of a fire

OFDA: 8-hr CBRNE Awareness; Libya: minimal

First Aid section, ERG Guide 113 Don PPE, stop bleeding, move victim to safe area, sort victims, supply oxygen (CPR barrier), flush skin & eyes with clean water 20 min, wash with soap & water, stabilize injuries, treat shock (keep victim warm), ship out Immediates first.

Pulmonary edema; rest 72 hours post exposure. Monitor burns for infections.

Extra Tychem or Tyvek coveralls, gloves, boot covers, respirator cartridges

ERG Guide 113

Evacuate 1/2 mile in all directions in the event of a large fire.

BG-4 rebreather and air-purifying respirator PPE training

Urea nitrate explosive colorimetric detection kit, Mistral Security, GSA contract GS-07F-5557P

Food, water and shelter for IDPs evacuated from vicinity of complex

(b)(5)

<http://www.ice.gov.it/paesi/africa/libia/upload/106/Industria%20della%20plastica.pdf>



2011

UN 1114, Benzene

(b)(5)

Inhalation or skin contact may cause burns

Highly flammable

Toxic via inhalation or absorption through skin

Vapors may form explosive mixtures with air

No

(b)(5)

UN 1114 and flammable liquids labels and placards on drums and tanks

Air, contact, smoke

Children, elderly

Burns, smoke inhalation, central nervous system depression

Can cause disease or death via smoke, inhalation or absorption

Industrial chemical PPE kits (full face piece and half mask respirators with canisters) (50 ea);
Dräger BG-4 rebreathers (8)

Industrial PPE kits noted above

Flammable and toxic liquids are covered in OFDA's 8-hr CBRNE Awareness Class

First Aid section of Emergency Response Guide 130 Don PPE, stop bleeding, move victim to safe area, sort victims, supply oxygen (CPR barrier), thaw clothing frozen to skin with warm water, remove & bag contaminated clothing (but do not remove clothing adhered to skin), thaw frostbitten skin with warm water, flush skin & eyes with clean water 20 min, wash with soap & water, stabilize injuries, treat shock (keep victim warm), ship out Immediates first.

Benzene is a Class A carcinogen associated with acute myelogenous leukemia

Extra organic vapor air purifying respirator cartridges and protective clothing are available in OFDA's CBRNE Cache

Emergency Response Guide 130, ATSDR Toxicological Profile

Large spill: evacuate 1000-ft radius; large fire: isolate & evacuate 1/2-mile radius

ATSDR Case Studies in Environmental Medicine - Benzene; atsdr.cdc.gov

Benzene detector tubes; range 0.5-420 ppm

Food, water and shelter for IDPs evacuated from fire or large spill

(b)(5)

<http://wjm.mbendi.com/indy/chem/genc/af/lb/p0005.htm>



2011

UN 1010 Butadienes, stabilized

(b)(5)

Inhalation or skin contact may cause burns

Extremely flammable

Toxic via inhalation

Vapors may form explosive mixtures with air

No

(b)(5)

UN 1010 and flammable gas labels and placards on drums and tanks

Air, contact, smoke

Children, elderly

Burns, smoke inhalation

Can cause disease or death via smoke, inhalation, burns or blast trauma

Industrial chemical PPE kits (full face piece and half mask respirators with canisters) (50 ea);
Dräger BG-4 rebreathers (8)

Industrial PPE kits noted above

Flammable and toxic liquids are covered in OFDA's 8-hr CBRNE Awareness Class

First Aid section, Emergency Response Guide 116 Don PPE, stop bleeding, move victim to safe area, sort victims, supply oxygen (CPR barrier), thaw clothing frozen to skin with warm water, remove & bag contaminated clothing (but do not remove clothing adhered to skin), thaw frostbitten skin with warm water, flush skin & eyes with clean water 20 min, wash with soap & water, stabilize injuries, treat shock (keep victim warm), ship out Immedates first.

Burn infections, pulmonary edema

Extra organic vapor air purifying respirator cartridges and protective clothing are available in OFDA's CBRNE Cache

Emergency Response Guide 116

Large spill: evacuate 1/2-mi radius; large fire: isolate & evacuate 1-mile radius

Emergency Response Guide 116

Butadiene (Chloroprene) detector tubes

Food, water and shelter for IDPs evacuated from fire or large spill

(b)(5)

<http://wjm.mbendi.com/indy/chem/genclaf/lb/p0005.htm>



2011

UN 1962, Ethylene, compressed

(b)(5)

No

Extremely flammable

May cause dizziness or asphyxiation

May form explosive mixtures with air

No

"UN 1962, Ethylene, compressed" and flammable gas label or placard on cylinders

Air, smoke

Children, elderly

Burns, smoke inhalation, simple asphyxiation, CNS depression

Potential for mass casualties from explosions

Industrial chemical PPE kits (full face piece and half mask respirators with canisters) (50 ea);
Dräger BG-4 rebreathers (8)

Industrial PPE kits noted above

Flammable gases are covered in OFDA's 8-hr CBRNE Awareness Class

First Aid section in Emergency Response Guide 115; Don PPE, stop bleeding, move victim to safe area, sort victims, supply oxygen (CPR barrier), thaw clothing frozen to skin with warm water, remove & bag contaminated clothing (but do not remove clothing adhered to skin), thaw frostbitten skin with warm water, flush skin & eyes with clean water 20 min, wash with soap & water, stabilize injuries, treat shock (keep victim warm), ship out Immediates first.

Burn infections, pulmonary edema

Extra organic vapor air purifying respirator cartridges and protective clothing are available in OFDA's CBRNE Cache

Emergency Response Guide 115

Large spill: evacuate 1/2-mi radius; large fire: isolate & evacuate 1-mile radius


Emergency Response Guide 115

Olefins detector tubes

Food, water and shelter for IDPs evacuated from fire or large spill

(b)(5)

<http://wjm.mbendi.com/indy/chem/genc/af/lb/p0005.htm>


2011
UN 1075, Propylene
(b)(5)
No
Extremely flammable
May cause dizziness or asphyxiation
May form explosive mixtures with air
No
"UN 1962, propylene, compressed" and flammable gas label or placard on cylinders
Air, smoke
Children, elderly
Burns, smoke inhalation, simple asphyxiation, CNS depression
Potential for mass casualties from explosions
Industrial chemical PPE kits (full face piece and half mask respirators with canisters) (50 ea); Draeger BG-4 rebreathers (8)
Industrial PPE kits noted above
Flammable gases are covered in OFDA's 8-hr CBRNE Awareness Class
First Aid section in Emergency Response Guide 115; Don PPE, stop bleeding, move victim to safe area, sort victims, supply oxygen (CPR barrier), thaw clothing frozen to skin with warm water, remove & bag contaminated clothing (but do not remove clothing adhered to skin), thaw frostbitten skin with warm water, flush skin & eyes with clean water 20 min, wash with soap & water, stabilize injuries, treat shock (keep victim warm), ship out Immediates first.
Burn infections, pulmonary edema
Extra organic vapor air purifying respirator cartridges and protective clothing are available in OFDA's CBRNE Cache
Emergency Response Guide 115
Large spill: evacuate 1/2-mi radius; large fire: isolate & evacuate 1-mile radius
Emergency Response Guide 115
Olefins detector tubes
Food, water and shelter for IDPs evacuated from fire or large spill
(b)(5)

<http://wjm.mbendi.com/indy/chem/genc/af/lb/p0005.htm>



2011
UN 1012 Butylene (a.k.a. butene)
(b)(5)
No
Extremely flammable
May cause dizziness or asphyxiation
May form explosive mixtures with air
No
"UN 1962, butylene, compressed" and flammable gas label or placard on cylinders
Air, smoke
Children, elderly
Burns, smoke inhalation, simple asphyxiation, CNS depression
Potential for mass casualties from explosions
Industrial chemical PPE kits (full face piece and half mask respirators with canisters) (50 ea); Draeger BG-4 rebreathers (8)
Industrial PPE kits noted above
Flammable gases are covered in OFDA's 8-hr CBRNE Awareness Class
First Aid section in Emergency Response Guide 115; Don PPE, stop bleeding, move victim to safe area, sort victims, supply oxygen (CPR barrier), thaw clothing frozen to skin with warm water, remove & bag contaminated clothing (but do not remove clothing adhered to skin), thaw frostbitten skin with warm water, flush skin & eyes with clean water 20 min, wash with soap & water, stabilize injuries, treat shock (keep victim warm), ship out Immediates first.
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