Installation Management Command - Pacific

Depleted Uranium Update

COL Howard Killian, Deputy Region Director

May 2008

Our Mission: ***To provide the Army with the installation capabilities and services to support expeditionary operations in a time of persistent conflict, and to provide a quality of life for Soldiers & Families commensurate with their service.***

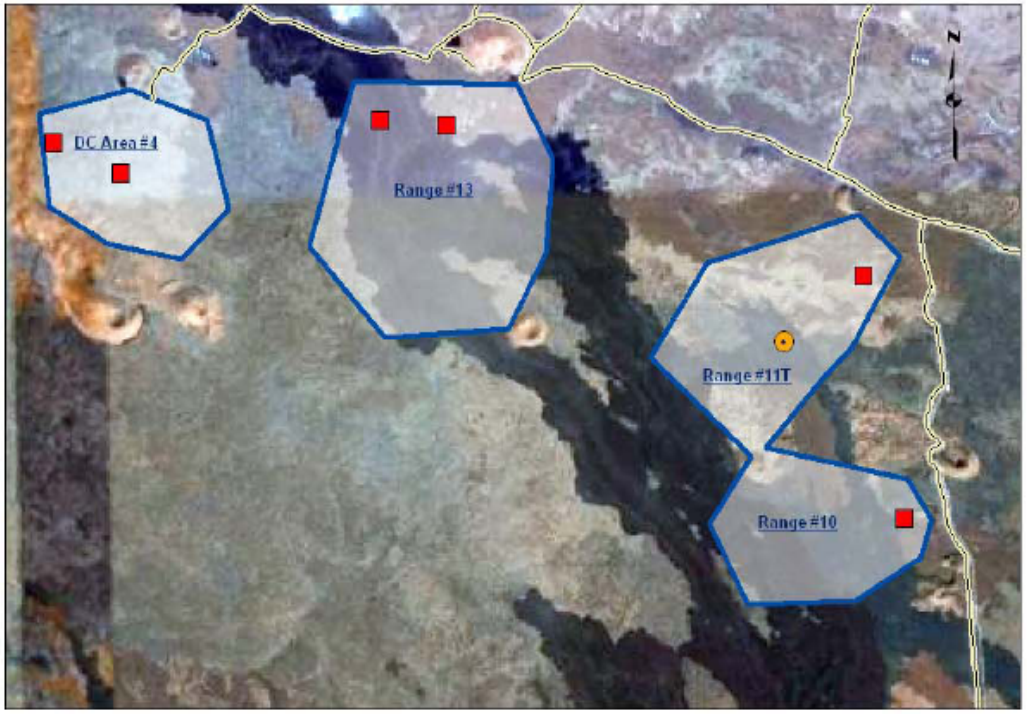
IMCOM -- The Army's Home

Project Current Status

- General
  - Deputy Assistant Secretary of Army Davis visited with key leaders 13-17 April 08 and briefed current status of various efforts
  - Comprehensive archive search report underway for Davy Crockett System
  - Air Monitoring Plan being developed
- Schofield Barracks
  - Characterization Survey: Released 22 APR 08
  - Draft Baseline Human Health Risk Assessment (BHHRA) released 22 APR 08
- Pohakuloa Training Area (PTA)
  - Characterization Survey: Fall 08
  - USM technology demonstration/validation, survey to start AUG 08
  - PTA air monitoring sample analysis:
    - Partially (half) complete 12 APR 08
    - Awaiting analytical data
  - BHHRA anticipated by the end of the calendar year
  - Developed B-2 impact assessment and temporary deconfliction measures
- Met and briefed the Saddle Road Task Force, 21 FEB 08—Task Force is conducting an independent study through a contractor, AMEC

World Class Team

HAWAII STATE DEPARTMENT OF HEALTH
HEALTHY PEOPLE • HEALTHY COMMUNITIES • HEALTHY ISLANDS



AERIAL SURVEY PHOTOS

Spotter round recovered

Spotter round recovered

Legend

- DC Spotter Round
- Piston Locations
- DC Range Area (Estimated)

CABRERA SERVICES

DC RANGE AREA (ESTIMATED)

POHAKULOA TRANNING AREA
HILO, HAWAII
ISLAND OF HAWAII

04/2008	DRAWING # Fig 4-3	Figure 4-3

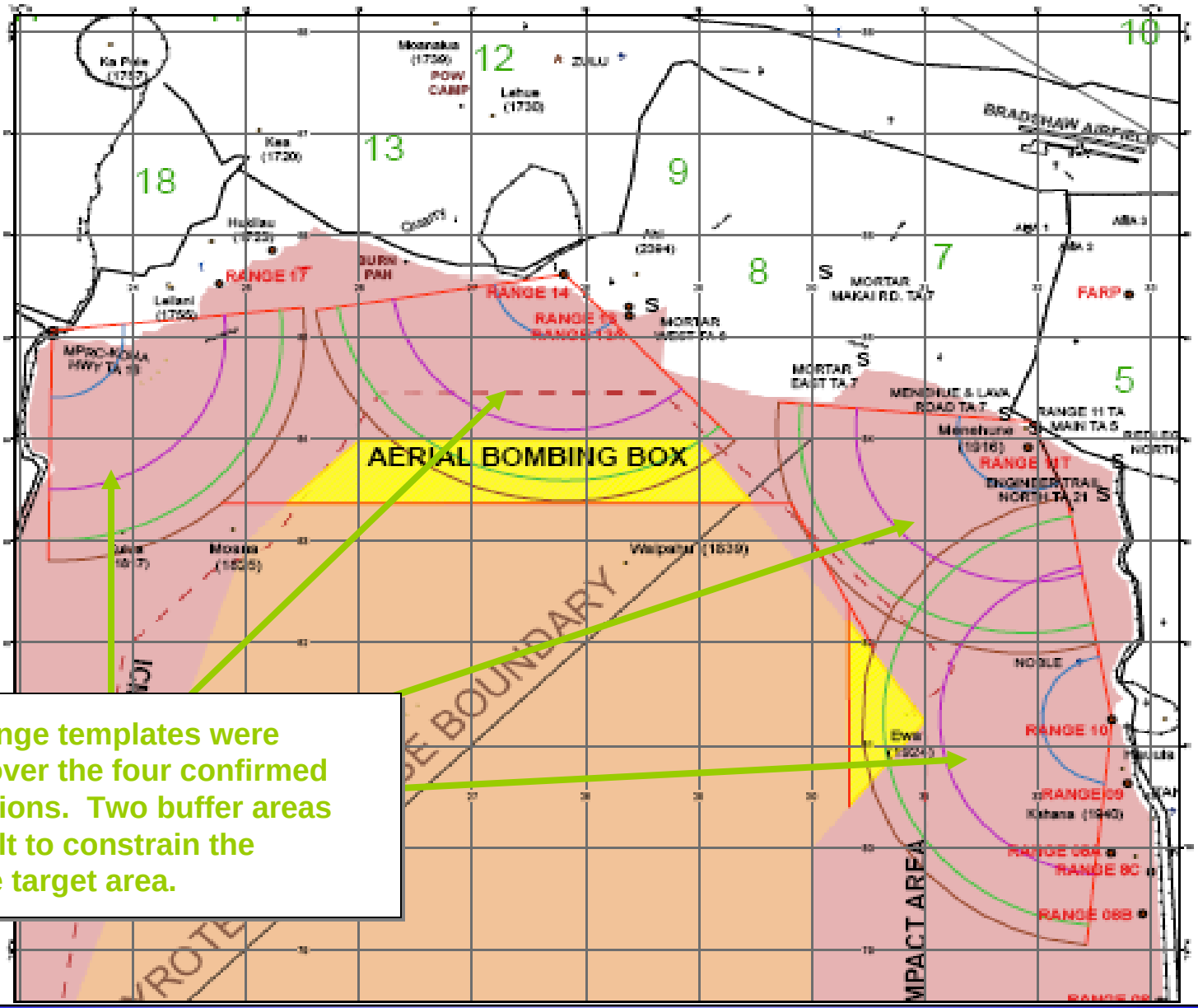
FIGURE 4-3: LOCATIONS OF PISTONS SUGGESTING PAST DAVY CROCKETT RANGE AT PTA

PTA Survey 29-31 JAN 08

Aerial visual and gamma spectroscopy surveys were conducted from the air using a Bell Long Ranger helicopter equipped with an RSI Model 701 large volume NaI detector. These surveys were augmented by visual and beta/gamma surveys using a Ludlum 44-9 probe-14C Scalar Rate meter and a Bicron µRem Meter. In areas where evidence of Davy Crockett system components were identified, more extensive ground surveys were conducted in an approximately 50 to 100 meter radius from the find as well as several 100 meters in a line directly down range direction from the projected firing point.

A Radiation Solutions Incorporated RSI-701 system with a single 4 Liter NaI detector was mounted inside the Bell Long Ranger helicopter and flown at a distance of between 10 and 25 foot elevations above the areas in multiple range areas (DC Area 4, Range 13, Range 10, Range 11T) and along Redleg Trail to the East of the PTA and Hilo Kona Road to the South of suspected Davy Crockett launch areas.

PTA Survey 29-31 JAN 08

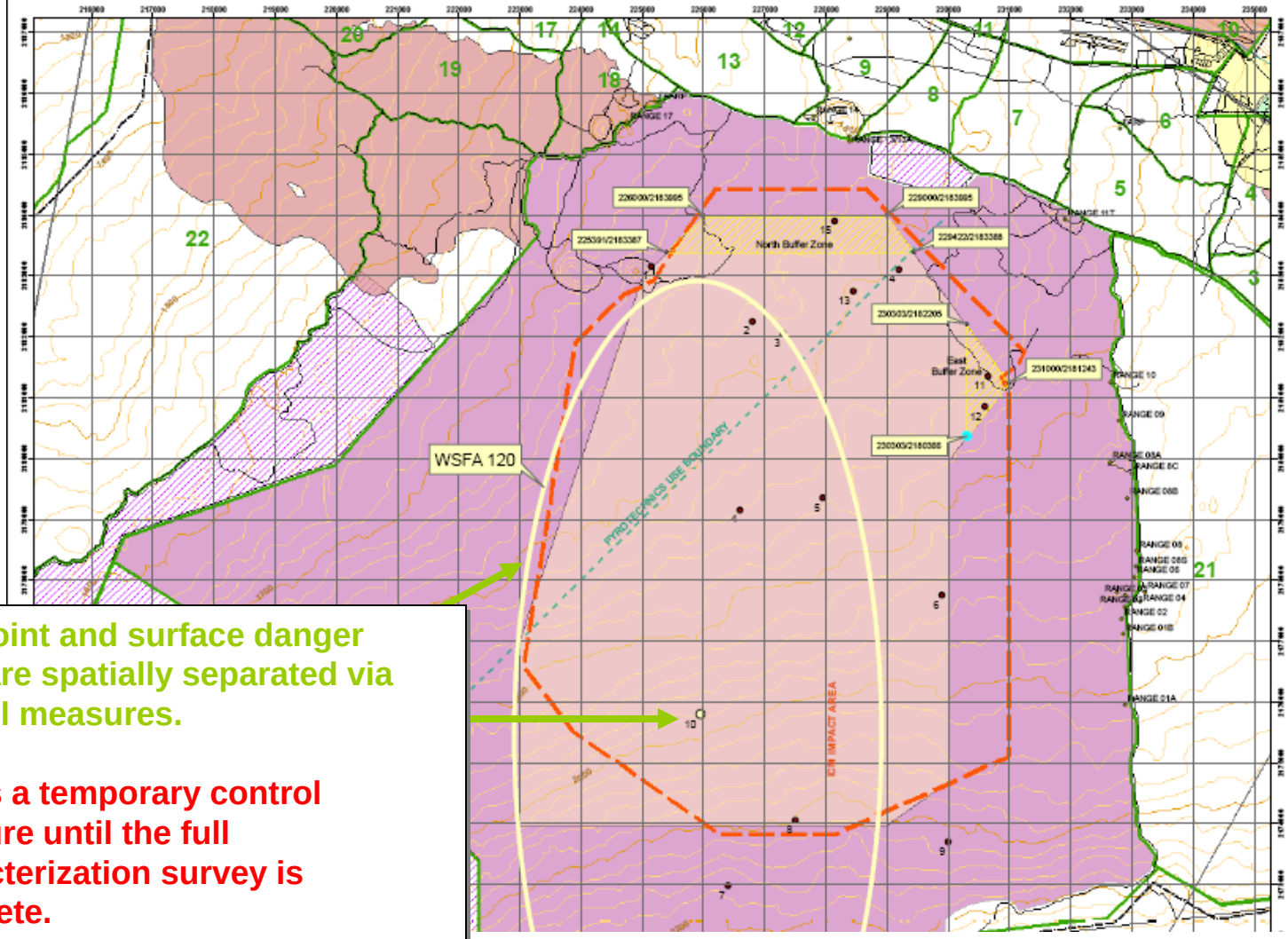


Know range templates were plotted over the four confirmed DU locations. Two buffer areas were built to constrain the available target area.

B-2 Bombing Deconfliction

B-52 GBU 10/12 Inert WSFA 120 with Buffers

Pohakuloa Training Area, Hawai'i

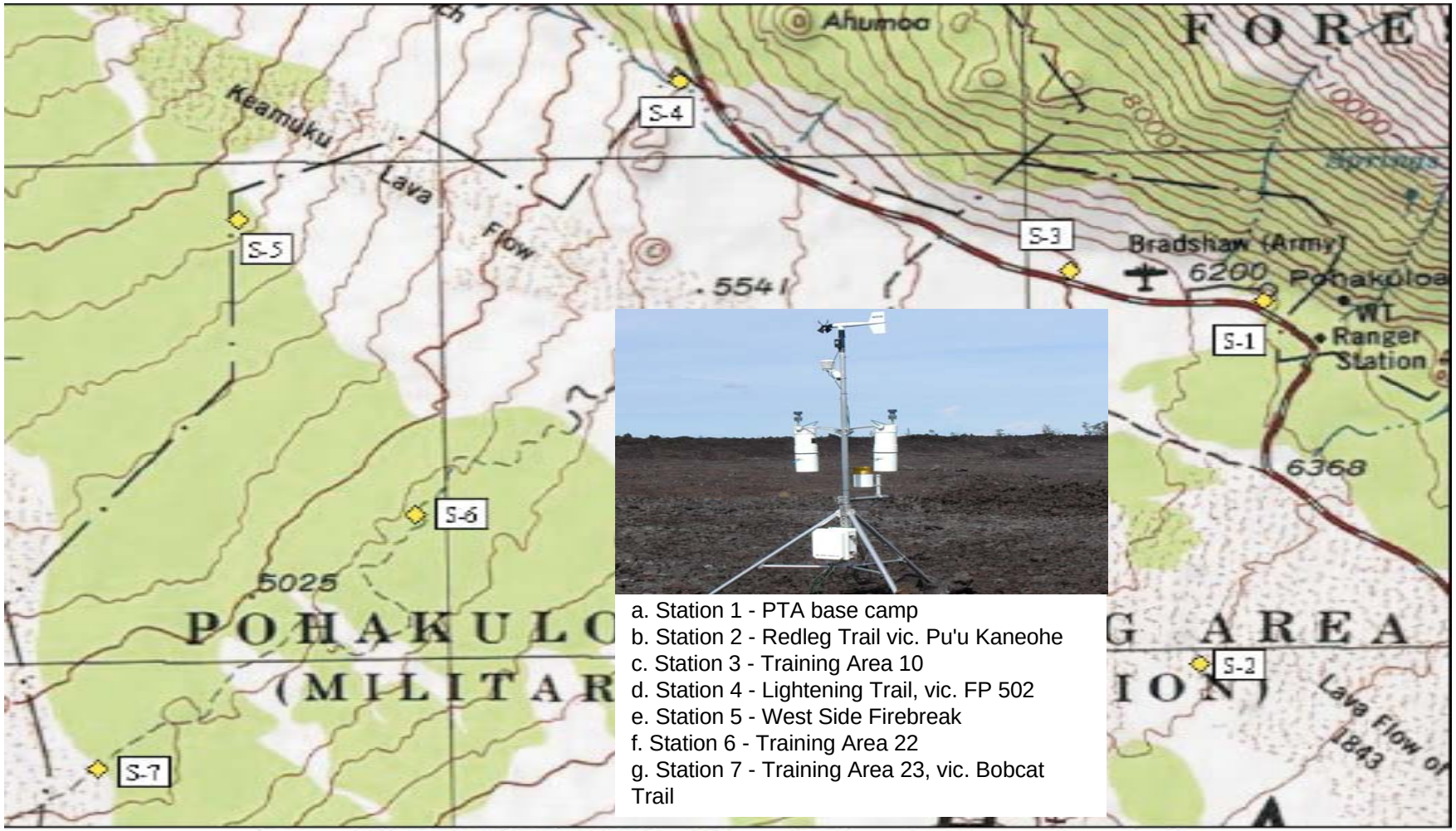


Aim point and surface danger zone are spatially separated via control measures.

This is a temporary control measure until the full characterization survey is complete.

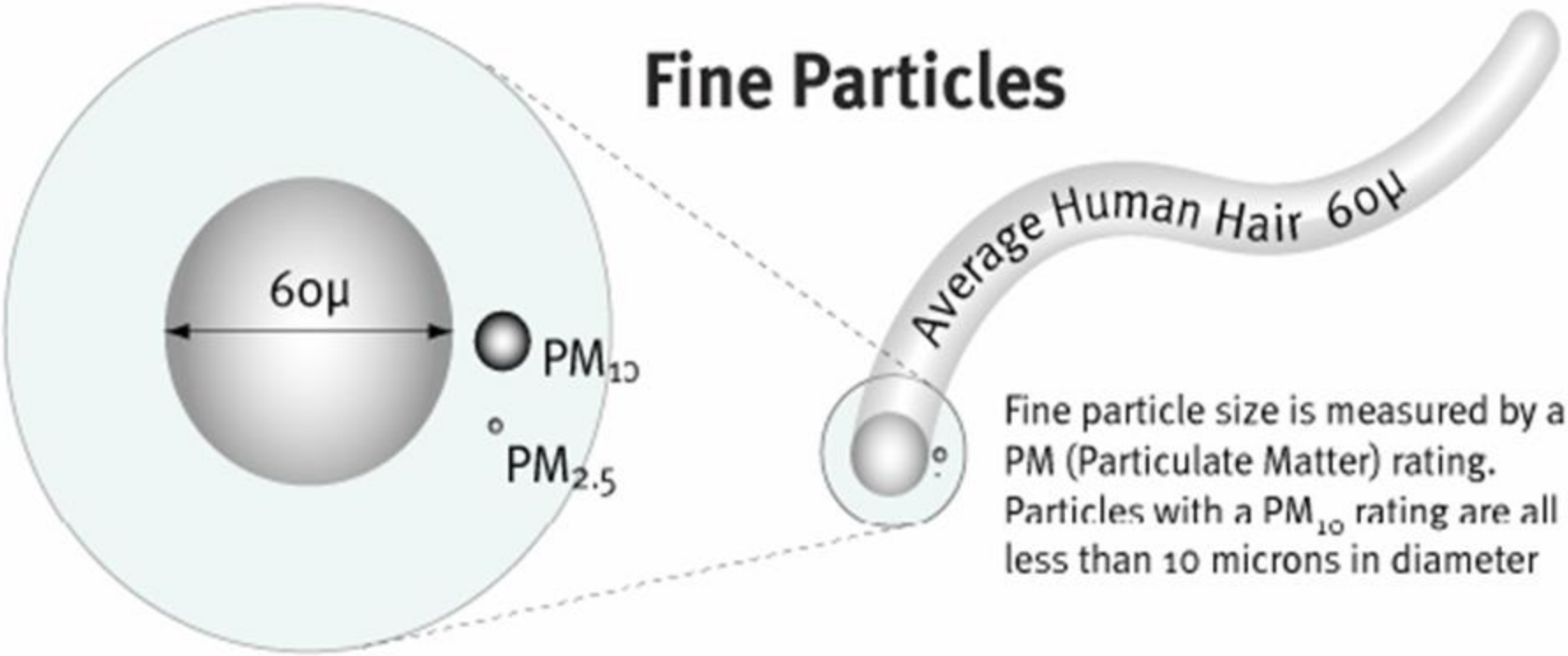
PTA Air Monitoring Test

PM sampling commenced on 29 Jan 06 and terminated on 30 Jan 07

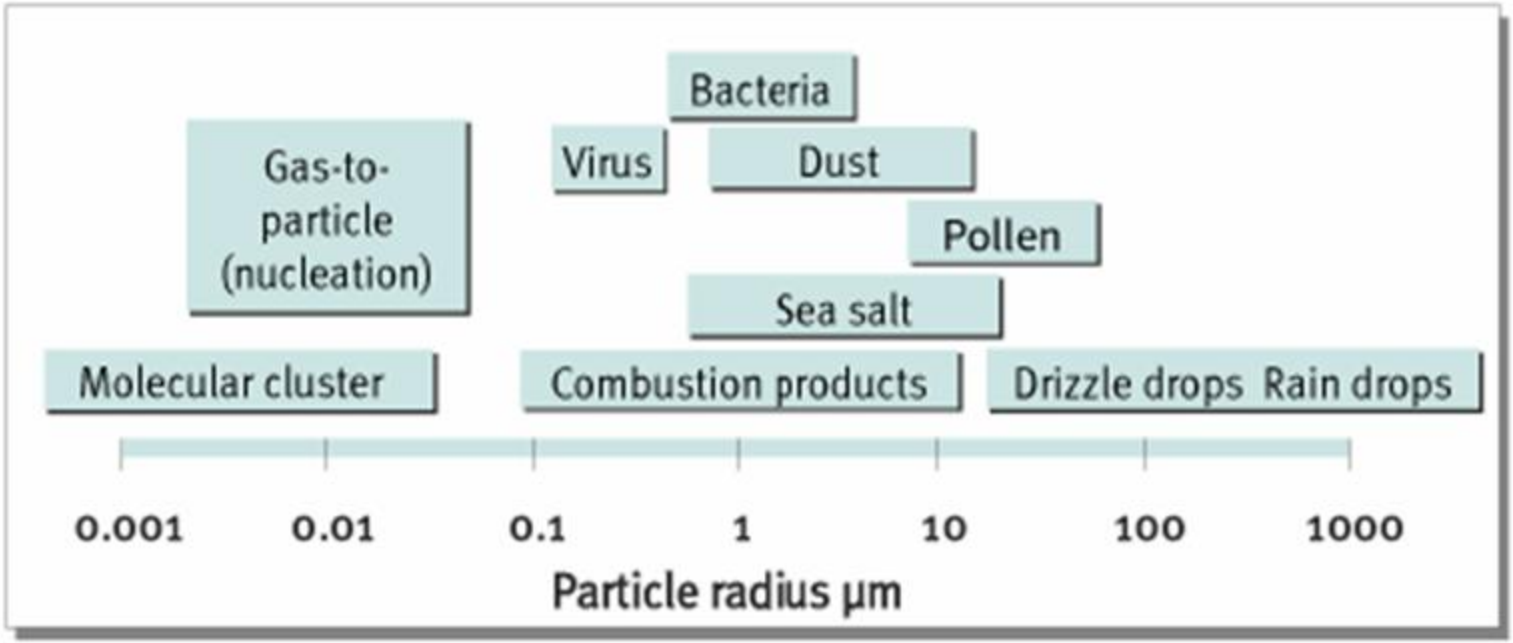


a. Station 1 - PTA base camp
b. Station 2 - Redleg Trail vic. Pu'u Kaneohe
c. Station 3 - Training Area 10
d. Station 4 - Lightening Trail, vic. FP 502
e. Station 5 - West Side Firebreak
f. Station 6 - Training Area 22
g. Station 7 - Training Area 23, vic. Bobcat Trail

Fine Particles



Fine particle size is measured by a PM (Particulate Matter) rating. Particles with a PM_{10} rating are all less than 10 microns in diameter



Dust Monitoring Study

Method

- EPA Reference Method – PM10 & TSP
- Hawaii DOH (Regulator Approved)
- Perimeter Sampling Method
- One (1) full year of data (daily collection)
- Co-located Samplers
- Ambient and Training Sampling
- Small Study Capabilities

Regulatory

- Clean Air Act Requires the Environmental Protection Agency to set National Ambient Air Quality Standards (NAAQS) for Particulate Matter smaller than 10 microns in size (PM10).
- Standard is currently 150 ppm (or ug/m3) over a 24 hour average

Dust Monitoring Study

What are we seeing so far?

Approximately 10 ppm

(standard is 150 ppm)

Environmental Study

- Kenneth H. Rubin, Ph.D., Professor and Chair of the Volcanology, Geochemistry and Petrology Division, Department of Geology and Geophysics, School of Ocean and Earth Science and Technology, University of Hawaii

- The high binding affinity that U has for Fe-rich particulates found in Hawaii soils should help immobilize the U (i.e., oxidized DU particles) near the point of impact.

- U metal and U oxide particles are 3 to 6 times denser than soil particles, so they are not easily mobilized from soils by wind.

- Although chemical analysis of environmental samples in the affected areas will ultimately demonstrate the stability and extent of migration of U in the local environment, general geochemical arguments suggest U is generally not easily leached from rocks and soils in Hawaii.

HI State Department of Health Radiation Levels

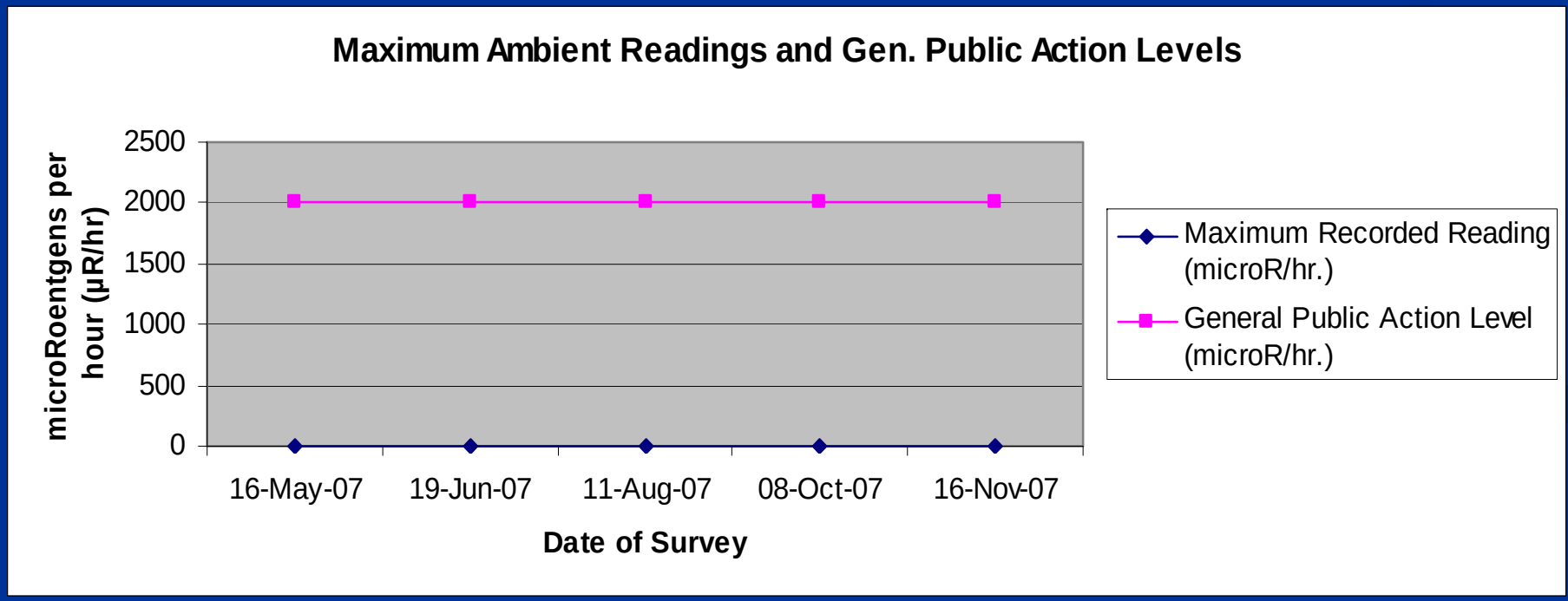
- Since May 2007, average ambient levels have been ≤0.005 milliroentgens per hour (mR/hr).
- Action level for general public protection is 2.000 mR/hr (2000 μR/hr) (400x greater) to meet limit of 2 mrems in any one hour.
  - Action level set by National Council on Radiation Protection & Measurements (NCRP), NRC, and State Rules (HAR, ch 11-45).

DOH Big Island Ambient Survey – Girl Scout Camp near Pohakuloa

DOH AMBIENT RADIATION SURVEYS ON THE BIG ISLAND OF HAWAII

General Public Action Level (microR/hr.)	2000				
Date of Survey:	16-May-07	19-Jun-07	11-Aug-07	08-Oct-07	16-Nov-07
Maximum Recorded Reading (microR/hr.)	**8**	**7**	**7**	**7**	**6**
SITE:	µR/hr.	µR/hr.	µR/hr.	µR/hr.	µR/hr.
1 - Konawaena HS	3-4	3-5	2-4	2-4	2-4
2 - Kona Comm. Hospital	3-4	3-4	2-4	2-3	2-3
3 - Bishop Road	3-4	2-4	2-4	2-4	2-3
4 - Waiono Meadows	3-4	2-4			
5 - Keopu Mauka	3	2-4	2-3	2-3	2-4
6 - Puulani Drive	6-7	5-7	3-5	3-5	3-4
7 - Waikii Ranch	4-5	3-5	2-3	2-4	2-3
8 - Waikoloa Villages	7-8	4-6	2-3	2-3	2-4
9 - Girl Scout Camp		3-6	2-3	2-3	2-4
10 – Puuanahulu Ranch		3-6	5-7	5-7	3-6

***** Maximum Recorded Reading (microR/hr.) based on highest reading at any given site during monitoring period.**



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4 - Waiono Meadows	3-4	2-4	N/A	N/A	N/A
5 - Keopu Mauka	3	2-4	2-3	2-3	2-4
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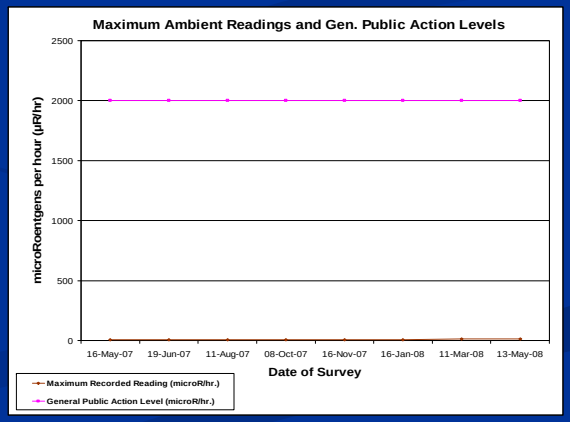
9 - Girl Scout Camp	N/A	3-6	2-3	2-3	2-4
10 – Puuanahulu Ranch	N/A	3-6	5-7	5-7	3-6

Date of Survey:	16-Jan-08	11-Mar-08	13-May-08
Maximum Recorded Reading (microR/hr.)	**7**	**12**	**12**
SITE:	µR/hr.	µR/hr.	µR/hr.
1 - Konawaena HS	3-4	3-4	5-6
2 - Kona Comm. Hospital	2-3	1-2	1-3
3 - Bishop Road	2-3	2-3	2-4
4 - Waiono Meadows	2-3	1-3	2-4
5 - Keopu Mauka	2-3	1-3	1-3
6 - Puulani Drive	3-5	7-8	7-8
7 - Waikii Ranch	2-3	3-4	3-4
8 - Waikoloa Villages	2-4	4-5	5-6
9 - Girl Scout Camp	2-3	3-4	3-5
10 – Puuanahulu Ranch	5-7	11-12	10-12



***** Maximum Recorded Reading (microR/hr.) based on highest reading at any given site during monitoring period.**

Public Uranium Exposure Limits

- NRC
  - 10 CFR 20 Effluent Limits ^{238}U
  - 5E-14 to 3E-12 µCi/ml
  - 25 mrem/yr for residual radiation after cleanup
- EPA
  - 15 mrem/year residual radiation after cleanup
- World Health Organization
  - 1 µg/m^3 inhalation of DU

Air Sampling Strategies

- DOH has the PTA training schedule to inform their monitoring efforts.
- DOH has 1 monitor installed in Kona and the the Army is procuring 4 more. 2 will be operated by the DOH and 2 will be operated by the Army
- Low-High Volume Sampling; Uranium Analysis Sensitivity w/Gross alpha analysis (10-15 Ci/m3)
- 4 Stations Around “Site”
- At least 1 local “background” station
- Radiochemistry with Isotopic Uranium
- Split Samples with Independent Regulator
- Chemical Uranium Analysis can also be performed
- Highest Sensitivity-Lowest Cost

DIGITAL AIR MONITORING SYSTEM
F&J Model DH-804V.2 for Emergency Preparedness

Field Work Summary

- Over 5000 man-hours
- Over 1600 samples collected (air, vegetation, soil)
- Work completed ahead of schedule
- Over $2.4m spent to date
- Weekly Team Synchronization Teleconference

Follow on Actions

THE BOTTOM LINE:

DU present on Hawaii's ranges does not pose an imminent or immediate threat to human health, but Army is working in concert with state and federal agencies to thoroughly assess the risk and determine actions required to address

- Continue access restrictions and environmental monitoring
- Operate training programs sustainably
- Manage use of impact areas to minimize an potential for dispersal, even though dispersal of DU from impact areas is unlikely
- Maintain community engagement efforts
- Complete the investigative process at PTA
- Work with the DOH to establish PTA air monitoring network
- Determine best approach to evaluate presence of DU at Makua
- Given presence of unexploded ordnance and environmental damage associated with complete removal, leave DU in place
- Obtain NRC license application to "possess" residual DU at the site
- Remediate DU residue within any construction areas, as necessary

Any Questions?

http://www.imcom.pac.army.mil/du/

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AVAILABLE REPORTS

SCHOFIELD BARRACKS IMPACT RANGE
BASELINE HUMAN HEALTH RISK ASSESSMENT
FOR RESIDUAL DEPLETED URANIUM

CHARACTERIZATION REPORT
Schofield Barracks Davy Crockett Impact Area

TECHNICAL MEMORANDUM
Schofield Barracks Firing Range
Monitoring of Air Quality During Burning of Vegetation

TECHNICAL MEMORANDUM
Depleted Uranium Scoping Investigations
Makua Military Reservation
Pohakuloa Training Area
Schofield Barracks Impact Area
Islands of Oahu and Hawaii