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From: Commanding Officer, Engineering Field Activity West, Naval Facilities Engineering
Command
To: Distribution

SUBJ: RADIATION INVESTIGATION MEETING SUMMARY, ENGINEERING FIELD
ACTIVITY WEST, NAVAL FACILITIES ENGINEERING COMMAND, HUNTERS
POINT ANNEX, SAN FRANCISCO, CA, 2 FEBRUARY 1995

Encl: (1) Radiation Investigation Meeting Summary of 2 February 1995, Engineering Field
Activity West, Hunters Point Annex

1. Enclosure (1) is forwarded for your information.
2. If you have any questions, please contact Mr. Dave Song at (415) 244-2571 or
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original signed by:

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By direction of
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RAB Member: Bay Conservation and Development Commission (Attn: Ms. Jennifer Ruffolo)
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RAB Member: Mayor's Hunters Point Shipyard Citizens Advisory Committee
(Attn: Mr. Al Williams)
RAB Member: The New Bayview Committee (Attn: Mr. Samuel Murray)
RAB Member: SEED (Attn: Mr. Sy-Allen Browning)
RAB Member: ARC/Arms Control Research Center (Attn: Mr. Saul Bloom)
RAB Member: Law Offices of Leslie R. Katz (Ms. Leslie Katz)
RAB Member: Mr. Nicholas S. Agbabiaka
RAB Member: Ms. Carolyn Bailey
RAB Member: Ms. Silk Gaudain
RAB Member: Ms. Karen Huggins
RAB Member: Mr. Wedrell James
RAB Member: Ms. Ilean McCoy
RAB Member: Mr. Willie Bell McDowell
RAB Member: Mr. Jeffrey Shaw
RAB Member: Mr. David Umble
RAB Member: Ms. Julia Viera
RAB Member: Mr. Charlie Walker
RAB Member: Ms. Caroline Washington
RAB Member: Ms. Gwenda White
RAB Member: Mr. Michael Harris

Copies to:
PRC Environmental Management, Inc. (Attn: Mr. Jim Sickles)
Harding Lawson Associates (Attn: Mr. David Leland)

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**RADIATION INVESTIGATION MEETING SUMMARY
ENGINEERING FIELD ACTIVITY, WEST (EFA WEST)
SAN BRUNO, CALIFORNIA, BUILDING 101
2 FEBRUARY 1995**

On 2 February 1995, a meeting was held on past, present, and future radiation investigations at Hunters Point Annex (HPA), San Francisco, California. The meeting took place at Building 101, EFA WEST, Naval Facilities Engineering Command, San Bruno, California. A list of attendees and the agenda are attached.

Each meeting participant was issued a package of material consisting of a meeting agenda, a summary of radiation issues, a report detailing the U. S. Environmental Protection Agency's (EPA) results of petrographic analysis of soils from Parcels B and E, a report detailing the results of the radiological survey of Mare Island Naval Shipyard (MINSY)/Alameda Naval Air Station/Hunters Point Annex, a summary of the qualitative radiation survey of Black Beauty sandblast abrasive in Parcel A, and two articles discussing former activities under Operation Crossroads. Meeting participants introduced themselves. The representative from the Nuclear Regulatory Commission (NRC) pointed out that the NRC's jurisdiction does not include remedial investigations of naturally occurring radioactive material (NORM) or naturally occurring accelerator-produced radioactive material (NARM) at federal facilities.

HISTORY OF RADIOLOGICAL OPERATIONS AT HPA

PRC Environmental Management, Inc. (PRC) provided a brief historical review of former radiological operations at HPA. Highlights of this history follow.

Operation Crossroads

PRC provided copies of articles ("The Legacy of Crossroads" and "Bikini, 'Witch's Brew'") and reviewed the history of radioactive material that was generated, stored, and disposed of during radiological decontamination of naval ships returning from Operation Crossroads. It was discussed that all radioactive material generated during the ship decontamination efforts of Operation Crossroads was disposed of at an approved ocean disposal site near the Farallon Islands.

Naval Radiological Defense Laboratory (NRDL) Operations

The Radiological Affairs Support Office (RASO) provided a list of buildings where NRDL and FUD operations occurred. The list included a brief description of former activities at each site, radio nuclide inventories, previous radiological surveys performed, and radiological survey recommendations.

Radioluminescent Instrumentation Disposal and General Licensing

PRC discussed the general license issued to the Navy that allowed possession of ^{226}Ra in the form of radioluminescent instrumentation. When ships at HPA were decommissioned or repaired, the unusable instrumentation and other such materials were disposed of in the Bay Landfill Area (IR-02). All other radioactive material generated at HPA was sent off site for disposal.

COMPLETED RADIATION INVESTIGATIONS

PRC reviewed completed radiation investigations at HPA. Radiation investigations discussed were the following:

- 1989 - EPA/Navy radiological survey of MINSY, Alameda Naval Air Station, and HPA
- 1991 - Survey for airborne alpha- and beta-emitting radioactive particulates
- 1991 - Surface confirmation radiation survey (SCRS)
- 1993 - Survey for tritium at building 816
- 1993 - Subsurface radiation investigation in Parcels B and E
- 1993 - Radiation survey of investigation-derived waste (IDW) from Parcels B and E
- 1994 - Petrographic analysis of soils in Parcels B and E
- 1994 - Radiation survey of Drydock 4

Issues discussed regarding previous radiological investigations include the following:

1991 - SCRS/NRDL Buildings

During the SCRS, open land and building surveys for radiological contamination were performed. During cursory radiological surveys of selected NRDL buildings, Building 364 was found to have a concrete-lined utility trench that exhibited elevated alpha, beta, and gamma radiation. The trench was used as a conduit for piping that drained liquid radioactive wastes into a subsurface tank for decay and disposal. The tank and piping have been removed. All that remains are the utility trench, the subsurface concrete-lined secondary containment sump, and the wood lid covering the sump.

Additional radioactive material was identified to the east of the secondary sump. A peanut-shaped area of approximately 6 by 20 feet on the asphaltic concrete was found to contain ^{137}Cs . This contamination was approximately 15 feet from the secondary containment vault adjacent to Building 364. PRC stated that this site will be investigated during the phase III radiation investigation under CTO 285 and may be a site to remediate via a removal action.

1993 - Parcels B and E IDW

Chem Nuclear is scheduled to perform a second radiological survey of the drums and bins containing potentially radioactive material. RASO indicated that they will screen a minimum of 50 percent of the drums and bins stored at HPA. Chem Nuclear completed a preliminary survey in 1993, which did not identify any drums that contained radioactive material above background.

1994 - Drydock 4 Radiation Survey

Previous radiation investigations performed by MINSY personnel identified a ^{226}Ra point source in the drydock. The point source was not removed by MINSY personnel because it did not contain ^{60}Co . In August of 1994, EFA WEST requested that PRC perform a radiation survey to confirm that no radioactive material associated with nuclear propulsion operations or radium-226 above background levels remained in the drydock. The Navy was able to lease the drydock to a civilian business in September of 1994 after PRC did not find any radioactive material in the drydock above background levels.

The California Department of Toxic Substances Control (DTSC) discussed the issue of the drainage tunnels that may contain a radioactive point source, such as a radium dial. PRC stated that the drainage tunnel sediments were sampled and no radioactive material was detected. If radium-containing point sources were in the drainage tunnels prior to 1981, they would be lodged deep in the sediment clogging the tunnels and would be difficult to detect. However, if the point sources were in the drainage tunnels from the repair or dismantling of ships by MINSY personnel, which was performed after 1981, the point sources would be close to the surface of the sediment in the tunnels and would have more likely been detected during the survey performed by PRC in August of 1994. RASO claimed that the only way to confirm that no point sources remain in the drainage tunnels would be to hydraulically flush the tunnels and monitor the discharged effluent.

Parcel E

PRC discussed that the results of the subsurface radiation investigation in Parcel E indicates that all radioactive material identified to date is in the form of a point source and, in a few cases, a slight amount of diffuse contamination-associated oxidation or fragmentation of the point source or due to the episodic dumping and redistribution of soils and debris. Volume reduction and chemical extraction (VORCE) technology does not appear so far to be a viable option to remediate the landfill since the largest percentage of radioactive material is in the form of a point source. The EPA discussed that if point sources are identified and removed from the landfill, any diffuse radioactive contamination in the soils could be removed using the VORCE technology. PRC said that only a small total volume of soil may contain radioactive material.

The Navy stated that, as part of the fiscal year 1996 budget, it has scoped removal of all surface point sources (0 to 12 inches). EFA WEST will be using a contractor procured through RASO. EFA WEST may fund a remedial design pilot study for point source removal in IR-02. RASO indicated that the removal of point sources and the funding of a pilot study may be inappropriate at this time. RASO stated that it only makes sense to remediate radium-containing material from Parcel E if EFA WEST plans on remediating the site for chemical contamination, especially if chemical contamination presents a greater human health risk.

EPA mentioned that the Agency for Toxic Substances Disease Registry (ATSDR), in its 1994 report on health risks at HPA, found no public health risks due to the radioactive material disposed of in IR-02.

Intertidal and Bay Sediments Off IR-02

DTSC and EPA agreed that the tidal and offshore areas of IR-01 and IR-02 should be investigated for radioactive point sources associated with past disposal activities at these two sites. EFA WEST stated that these areas will be investigated in phase III of the radiation investigation at HPA.

PENDING RADIATION INVESTIGATIONS

IR-07 and IR-18 Radiation Investigation

Based on EPA's petrographic analysis of soil samples from the two sites and the results of the subsurface radiation investigation in Parcels B and E, it has been determined that the elevated gamma count rates observed are due to NORM. EPA agrees with EFA WEST in its decision to request that "no further action be required" at the site for radioactive contamination. The Department of Health Services (DHS), Radiological Health Branch, agrees in principle with the EPA and EFA WEST. However, DTSC requested that EFA WEST submit a technical memorandum discussing the site history, results of the SCRS, and results of the petrographic analysis to justify no further action being taken at the sites. DTSC, in coordination with DHS, will need to provide written comments and a letter acknowledging EFA WEST's and EPA's position before the site can be deleted from the radiation investigation at HPA.

Parcel E

The 1993 subsurface radiation investigation identified an area within IR-02 where radioluminescent dials and equipment were buried. The landfill contains an estimated 5,500 cubic yards of soil that has approximately 2,800 devices with a total activity of ^{226}Ra that is estimated to be 2.8 millicuries.

Several remedial options were discussed by the attendees which include the following options:

- Remove surface point sources (0 to 12 inches)
- EPA volume reduction and chemical extraction (VORCE) technology
- Landfill stabilization and capping
- Deed restrictions

EFA WEST has tentatively scheduled for 1996 the removal of point sources from the surface of IR-01 and IR-02. RASO discussed that all radioactive material must be removed for RASO to release the site for "unrestricted use."

DHS stated that if the property is going to be transferred to the City of San Francisco with radioactive material left on site, the City must obtain a license from the state. In addition, DHS suggested that PRC may need a license to perform radiological investigations. PRC indicated its understanding is that no requirement exists that details the need for a license to store radioactive investigation-derived waste (IDW) before off site disposal or to perform radiation investigations at federal facilities. PRC said, however, this issue will be looked at further.

Radiation Survey of Former NRDL Buildings and Sites

EFA WEST will be submitting a radiation field sampling plan to RASO for review prior to sending the plan to the regulatory agencies.

CURRENT RADIATION ISSUES

Statistical Methods for Radiation Investigations

Nonparametric statistics will be the preferred statistical analytical methodology for evaluating sites for potential radiological contamination. The new guidance is discussed in NUREG 1505, due to be released in the next several months. The standard "T" test does not work well for these types of investigations because it requires a large amount of data points.

Risk Assessment of Radiation Areas

The following risk assessment methods or approaches were discussed as potentially applicable to determine human health risks at sites being investigated for radiation contamination:

- RESRAD
- EPA RAGS Part B
- Applicable or Relevant and Appropriate Requirements (ARAR)

EPA discussed that ARARs could be used as cleanup criteria for radiation sites at HPA. The EPA referenced 40 CFR 192 which uses a total of 5 picocuries per gram (pCi/g) of ^{226}Ra and ^{228}Ra above background as their acceptable cleanup level.

ACTION ITEM

EFA WEST will submit to DTSC a technical memorandum discussing the Navy's position for no further radiation investigations required at IR-07 and IR-18.