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

Subj: RESPONSE TO COMMENTS ON THE RESULTS OF SUBSURFACE RADIATION
INVESTIGATION IN PARCELS B AND E DRAFT FINAL, ENGINEERING FIELD
ACTIVITY, WEST, NAVAL FACILITIES ENGINEERING COMMAND,
HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA

Encl: (1) Response to U.S. Environmental Protection Comments on the Results of Subsurface
Radiation Investigation in Parcels B and E, Draft Final Report dated 8 May 1996,
Hunters Point Shipyard, Engineering Field Activity, West, Naval Facilities
Engineering Command, San Francisco, California

1. Enclosure (1) is forwarded as the Navy's response to comments on the Results of Subsurface
Radiation Investigation in Parcels B and E, Draft Final Report dated 8 May 1996.

2. If you have any questions regarding this enclosure, please contact Ms. Luann Tetirick at
(415) 244-2561, FAX (415) 244-2654.

Original signed by:

RICHARD E. POWELL
By direction of
the Commanding Officer

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**NAVY'S RESPONSES TO U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)
COMMENTS ON THE RESULTS OF SUBSURFACE RADIATION INVESTIGATION
IN PARCELS B AND E DRAFT FINAL REPORT, DATED MAY 8, 1996**

The following are the Navy's responses to EPA comments on the final version of the results of the subsurface radiation investigation in Parcels B and E report. All issues related to the radiation investigation at Hunters Point Shipyard (HPS) will be addressed in the Parcel E remedial investigation draft report. The Navy is pleased to provide the following responses to EPA's comments.

Comment 1 **Page 29, Section 4.1.1: During one of my visits to the IR-1 site, I saw evidence that radium devices and device remnants were actually imbedded in some of the slag. Using a gamma meter I was able to detect elevated gamma readings on some of the slag debris, suggesting that radium contamination was present in the slag materials.**

Response The Navy has not seen evidence of radioactive material, such as radium devices or remnants, in the slag material found in IR-01. The relative count rate changes when encountering slag at the surface were within general count rate changes noted by field technicians during the surface confirmation radiation survey (SCRS) performed in 1991 and 1992. Field technicians observed similar count rate changes when they encountered various types of construction and industrial debris that was scattered throughout Parcel E. In addition, there are no former tenants or industrial operations at HPS that would lead the Navy to believe that any slag material with embedded radium devices would be generated or disposed of at HPS.

Comment 2 **Page 30, Section 4.1.3: The National Air and Radiation Environmental Laboratory (NAREL) is EPA's air and radiation laboratory. The staff and management of that facility are U.S. EPA employees.**

Response Comment noted.

Comment 3 **Using radon flux measurements to detect buried radium devices would prove unsuccessful. This technique can be used only in very limited situations to detect buried radium deposits left by uranium mining operations. The quantities of buried radium have to be much higher than are present in IR-01 for radon flux to be effective.**

Response Using radon flux measurements to identify radium containing material proved to be unsuccessful during the SCRS performed in 1991 and 1992. The Navy concurs with the EPA on the use of radon flux measurement to identify radium contamination. However, the reason that this technique was used by the Navy was due to anecdotal information at the time which indicated that a large amount of radium containing material (6,000 lbs) was disposed of in a small area in what is now known as Parcel E. An evaluation of the results of the radon flux measurements was discussed in the SCRS draft report dated November 3, 1992.

Comment 4

Page 34, Section 4.5: I am pleased to find the inclusion of bioturbation and its effect on the landfill. It is this phenomenon that adds weight to the recommendation for complete removal of radium devices in this area.

Response:

The Navy agrees that bioturbation is a relevant phenomenon to be included in any analysis of potential actions taken in Parcel E.

Comment 5

"EPA petrographic analysis has established that all radioactivity in soils at the sites is due to naturally occurring minerals and is not the result of former HPA disposal activities." The actual statement in the report is "petrographic examination of the minerals in the three soil samples indicates that the radioactivity is from naturally occurring monazite and zircon." In other words, the EPA report merely states that analysis on a limited number of samples showed no evidence of radium contamination at Parcel B. The validity of generalizing the results of the EPA report for all soils at the sites is dubious.

Response

Your comment is noted. In future reports, the Navy will use the following statement: "petrographic examination of the minerals in the three soil samples indicates that the radioactivity is from naturally occurring monazite and zircon," followed by statements concerning what the Navy infers from previous investigations. However, concerning your comment on generalizing the results of the EPA report for all soils at the sites; soil samples were collected by the EPA in IR-07 and IR-18 within the areas that exhibited the highest gamma count rates and ²²⁶Ra concentrations discovered during previous phases of the radiation investigation at HPS. This would allow the EPA and the Navy to establish conditions in the "worst case" areas identified during the SCRS. By determining and evaluating the source terms, activity, local geology, and other physical parameters in these worst case areas, it is reasonable for the Navy to infer that such soils within Parcel B exhibit similar radiological and geological characteristics represented in the samples collected by the EPA. EPA samples provided additional evidence that the elevated activity detected in IR-07 and IR-18 was due to naturally occurring radioactive material (NORM) and confirmed that these areas were not used as a disposal area for industrial or construction debris similar to conditions in Parcel E.