DEPARTMENT OF THE NAVY
PEARL HARBOR NAVAL SHIPYARD &
INTERMEDIATE MAINTENANCE FACILITY
667 SAFEGUARD ST. SUITE 100
PEARL HARBOR, HAWAII 96860-5033

N00217.000145
HUNTERS POINT
SSIC NO. 5090.3

IN REPLY REFER TO:

5757
Ser 105/022
28 APR 2000

From: Commander, Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility
To: U.S. Environmental Protection Agency, Region IX (Attn. Steve M. Dean (SFD-8-B))

Subj: PEARL HARBOR RESPONSE TO EPA COMMENTS ON HUNTERS POINT ANNEX HISTORICAL RADIOLOGICAL ASSESSMENT (HRA), VOLUME I, DRAFT

Ref: (a) COMNAVSHIPYD&IMFPEARL ltr Ser 105/003 of 14 Jan 1999
(b) EPA letter of 3 Feb 2000 regarding EPA Review and Comment, Historical Radiological Assessment, Hunters Point Annex, Draft, Volume I, Naval Propulsion Program, 1966-1995
(c) California DTSC letter of 3 April 2000 regarding Department of Health Services review of Historical Radiological Assessment, Hunters Point Shipyard, Volume 1

Encl: (1) Pearl Harbor response to EPA comments

1. Pearl Harbor submitted Volume I of the Historical Radiological Assessment (HRA) for Hunters Point Annex via reference (a) in January 1999. This HRA is intended to serve as a Preliminary Assessment (PA) for radionuclides under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and addresses radiological operations associated with the Naval Nuclear Propulsion Program (NNPP).

2. Reference (b) provided EPA Region IX comments on Volume I of the Hunters Point Annex HRA. These comments, and the Pearl Harbor responses, are presented in enclosure (1).

3. In reference (c) the California Department of Toxic Substances Control (DTSC) stated that, based on the Department of Health Services (DHS) review of the HRA, the DTSC had no further comments for Volume I of the HRA.

4. Pearl Harbor believes that, with the changes discussed in the enclosure to this letter, the HRA will be acceptable for issue in final form. Pearl Harbor would like to complete this process as quickly as practical, to get the document into the public domain. Thus, EPA Region IX is requested to document agreement with issue of the final Volume I of the HRA for Hunters Point Annex as soon as practical. Pearl Harbor notes that all correspondence concerning this HRA, as well as all HRA references, will be

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available along with the HRA in CERCLA public document reading rooms; thus, all EPA Region IX comments concerning the HRA will be readily available to the public.

5. If any further information or clarification is needed, please contact CDR R. K. Fong, MSC, USN at (808) 471-3945; FAX (808) 471-3946.

G. CROWELL
By direction

Copy to:
California Department of Toxic Substances Control,
Region 2 (Attn. Chein Ping Kao)
Naval Facilities Engineering Command, Southwest Division
(David B. DeMars)

Subj: **PEARL HARBOR RESPONSE TO EPA COMMENTS ON HUNTERS POINT ANNEX HISTORICAL RADIOLOGICAL ASSESSMENT (HRA), VOLUME I, DRAFT**

1. **EPA Comment**: *Section 2.3.3, Page 2-4: A laboratory sample containing cesium-137 was accidentally dropped in a parking lot outside of Building 364 some years ago. Remediation of that spill is still ongoing.*

1. **PHNS Response**: The spill of cesium-137 near Building 364 is addressed in Volume II of the HRA, which addresses all general radioactive material (G-RAM) issues not associated with the Naval Nuclear Propulsion Program (NNPP). This cesium radioactivity was associated with National Radiological Defense Laboratory (NRDL) operations (Building 364 was the chemistry laboratory under the NRDL program).

2. **EPA Comment**: Section 4.2.2, *Page 4-4 & Section 4.2.3, Page 4-5: While both tritium and carbon 14 are generated naturally by cosmic neutrons they are still radionuclides listed as hazardous materials in the NCP and are considered by CERCLA to be Group A carcinogens. Tritium and carbon 14 releases from manmade sources to the environment are CERCLA releases. The Navy should provide more convincing arguments than "dilution is the solution" as the appropriate disposal practices for tritium and carbon 14 in this and other NNPP HRAs.*

2. **PHNS Response**:

a. Regulated, limited releases incidental to the normal operation of a nuclear power plant are not properly referred to as "disposal." The Nuclear Regulatory Commission (NRC) specifies water-borne allowable release levels for power plants it regulates. Similarly, the EPA specifies allowable airborne release limits for radioactivity under NESHAPS regulations. This is conceptually similar to allowing certain limited chemical releases in the exhaust of motor vehicles. The EPA comment appears inconsistent with this fundamental regulatory concept.

b. As discussed in the HRA, both liquid and airborne releases from the Naval Nuclear Propulsion Program (NNPP) have historically been and continue to be well below release levels from commercial nuclear plants, and well below NESHAPS limits. In that context, the NNPP has always been extremely careful to protect the environment. That no cobalt-60 has ever been detected in harbor sediment at Hunters Point is evidence of the success of the NNPP policies.

c. Regarding the dilution comment: To the extent that part of the CERCLA process is to evaluate the potential impact of industrial operations on the environment, it is appropriate to discuss what is already present in the environment. It is in that context that the HRA describes the natural background levels of tritium and carbon-14, and why incidental releases of these radionuclides by the NNPP are not detectable. We are not using "dilution as a solution," but rather explaining why we, the NRC,

and other regulatory bodies make reasoned judgements about what levels of release of a given contaminant are acceptably small. The EPA routinely follows the same process for judging acceptable chemical releases from other industries.

d. To better explain tritium (hydrogen-3) and carbon-14 releases from NNPP plants, and in response to previous EPA Region IX comments on the Pearl Harbor Naval Complex HRA, and EPA Region X comments on the Puget Sound Naval Shipyard HRA, sections 4.2.2, 4.2.3, and 5.1.1.1 were extensively revised. The finals of these and other HRAs have subsequently been issued with the agreement of EPA Region IX or other applicable regions. These changes were included in the draft HRA for Hunters Point Annex. These sections explain why the potential environmental impacts of tritium and carbon-14 are evaluated differently from other reactor activation products. An important difference is that these radionuclides are not concentrated in the environment. Sections 5.1.1.1 and 5.1.1.2 of the HRA also describe Navy policy to recycle reactor coolant rather than release it to the environment.

e. Hence, the Navy concludes the current HRA wording is acceptable as-is.

3. **EPA Comment**: Section 5.4, *Page 5-16: Actually the typical home smoke detector contains one microCurie of americium-241, a radionuclide which is considerably less toxic than cobalt-60. Making this comparison is very misleading. Co60 is 440 times more carcinogenic than Am241 per unit of activity based on a contaminated residential site lifetime cancer risk comparison.*

3. **PHNS Response**:

a. The EPA Region IX risk comparison between cobalt-60 and americium-241 appears to be based on an exposure scenario to a future site user consisting of soil contamination over a considerable area and to a significant depth (several inches to several feet), based on similar numbers being documented by the EPA using DOE's RESRAD computer program (see Appendix H of EPA's "Radiation Site Cleanup Regulations: Technical Support Document for the Development of Radionuclide Cleanup Levels for Soil," Review Draft dated September 1994.) A similar ratio exists for soil exposure in EPA's new Federal Guidance Report No. 13, EPA 402-R-99-001 dated September 1999, "Cancer Risk Coefficients for Environmental Exposure to Radionuclides" (FGR 13). However, cancer risk factors for radionuclides are highly dependent on the type of exposure. For exposures by ingestion and inhalation (e.g., if a smoke detector were broken open in the home -- the most likely potential exposure scenario), americium-241 has higher risk than an equivalent amount of cobalt-60, according to ingestion and inhalation scenarios in EPA's FGR 13 and according to release limits for water and air by the Nuclear Regulatory Commission in 10CFR20.

b. Comparing radioactivity quantities with those in common household items is appropriate in a document for the general public. There is no intent to trivialize this information, but rather to try to put it in perspective for the general public without excessive technical detail. (The Navy also notes that, per NCRP 95 (Radiation Exposure of the U.S. Population from Consumer Products and Miscellaneous Sources), typical home smoke detectors may have up to five microcuries of americium-241.)

4. **EPA Comment**: Table 6-2, Page 6-8: What explanation can the Navy provide of why no enhanced analyses were performed at the locations designated from 1978 through 1986?

4. **PHNS Response**: The applicable reports offer no reason for these changes. As shown below Table 6-2, samples from other sampling sites were submitted in place of the tabulated site number samples, resulting in at least three samples having been submitted for enhanced analysis during each year except 1979 (when two were analyzed). In addition, a review of cobalt-60 activity results for samples from sites 3, 19, and 47 showed that all were sampled and found to be below MDA during quarters when other samples were submitted for enhanced analysis.

5. **EPA Comment**: Table 6-3, Page 6-9: Why are the average concentrations of Co60 consistently between 0.3 and 0.45 pCi/g over the sampling period from 1978 to 1995? The half-life of Co60 is 5.3 years so there should have been a substantial decline in its sediment concentration over 17 years.

5. **PHNS Response**: The data cited are results of radioactivity over an energy range of 1.1 MeV to 1.4 MeV. This is a wide spectrum range, as discussed in section 2.3.1 of the HRA, which includes the two major cobalt-60 peaks. As with the data shown for gross gamma, this range also includes photopeaks from naturally-occurring radionuclides. Since no cobalt-60 was actually present, as shown in the table on page 6-10, the consistent data represents a constancy of radioactivity levels from natural radionuclides with long half-lives and their shorter-lived daughter products.

6. **EPA Comment**: Table 6-5, Page 6-15: This table has several data gaps: Averaging the data from just two samples, footnote (b), makes the data point under represent the bioaccumulation of Co60. Can the Navy offer an appropriate explanation of why no mollusks or crustaceans were sampled in 1983, footnote (c), or why no data is available, footnote (d) for 1980?

6. **PHNS Response**:

a. Although no cobalt-60 was actually present in any of these samples, the tabulated data will be changed to show the minimum detectability levels in each of two samples, where applicable, thereby eliminating footnote (b).

b. Information present in this table was obtained from analyses results from Knolls Atomic Power Laboratory (KAPL). The 1983 KAPL results for Hunters Point Annex show that seaweed was the only marine life analyzed in 1983. Based on information from other NNPP sites and historical practices, it is likely that crustacea and mollusks were not available for sampling during the 1983 sampling period. The 1980 KAPL results show that only sediment samples were analyzed. However, a Mare Island environmental monitoring report for 1980 states that marine life samples were collected at Hunters Point Naval Shipyard, in the vicinity of nuclear powered ship berthing areas, and that analysis results showed no indication of non-naturally occurring radionuclides attributable to Naval nuclear power operations. This fact will be added to the applicable footnote.

7. **EPA Comment**: *Section 6-2, Page 6-17: The dredge materials disposed of in the industrial landfill likely contain radioactive materials accidentally dropped, or intentionally thrown, overboard from ships berthed at HPA. Just recently huge metallic masses some weighing 5 tons or more have been uncovered at Mare Island Naval Shipyard. These were formed in dredge ponds when the heavy objects precipitated out of the dredge material and formed these masses. Radioactive devices are easily detectable on the surface of these masses which were obviously discarded overboard along with other metal objects such as welding rods, hand tools, metal scraps. The radioactivity levels of the embedded radium devices are well above background.*

7. **PHNS Response**: Volume II of the Hunters Point Annex HRA discusses remediation actions at Parcel E landfill areas, which are expected to include capping or removal of material in the Industrial Landfill (IR-01/21) and Industrial Bay Fill Area (IR-02). Since radioactivity surveys have been conducted at these sites to identify radioactive sources from NRDL operations, the fourth paragraph of section 6.2 will be modified as follows:

> Remediation action is currently underway at the Industrial Landfill to identify radioactivity associated with operations of the National Radiological Defense Laboratory (NRDL). Although radium, possibly from buried radium-containing instruments, has been detected at this site, no radionuclides associated with the Naval Nuclear Propulsion Program have been found.