



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
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NO0236.001342
ALAMEDA POINT
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VIA FACSIMILE

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15 November 1996

OPTIONAL FORM 95 (7-90)

FAX TRANSMITTAL

of pages = 5

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NSN 7540-01-317-7308	5089-101
GENERAL SERVICES ADMINISTRATION	

**Re: U.S. Environmental Protection Agency
Radiation Survey Report and Field Sampling Work Plan
for Naval Air Station (NAS) Alameda; Draft Sites 1 and 2
Radiation Survey Report, Addendum to the Remedial
Investigation/Feasibility Study Data Transmittal Memorandum
for NAS Alameda.**

Dear Camille:

The U.S. Environmental Protection Agency (EPA) acknowledges receipt of your letter dated 8 November 1996 requesting the Agency technical review comments for the subject documents. As you are aware, the Navy and regulatory agencies (U.S. EPA and California EPA) have been engaged in extensive discussions and negotiations to resolve issues associated with the informal Dispute Resolution process initiated by CAL EPA against the Navy.

Due to the saliency of these issues, EPA informed the Navy that we would reallocate limited resources in order to participate in the formation of a short-term work group dedicated exclusively to the resolution of the issues in dispute. EPA is very pleased to note that our collective and diligent efforts have resulted in reaching conceptual agreements relative to approaches for determining background and for assessing risk for the human health tiered-screening methodology proposed by the Navy.

As a result, the Agency has resumed its technical focus on the ongoing remedial investigation tasks at NAS Alameda. Accordingly, the Agency's general and specific technical review comments for the subject documents are discussed extensively under the attachment.

Our major concern regarding the radiation survey focuses on issues of quality assurance relative to instrument calibration and methodology used for survey Sr 90. The specific questions we have identified for clarification are crucial because of the potential implications relative to reliability of the survey's methodology and the validity of its conclusions.



EPA acknowledges the importance of achieving closure on the subject documents in order to proceed with future radiological work. Therefore, in order to expeditiously discuss and clarify the issues cited in the attachment, EPA recommends scheduling a teleconference with appropriate technical staff this week at a time that is mutually agreeable.

EPA reaffirms its commitment to working with the Navy to facilitate environmental remediation in a manner that is protective human health and the environment and, equally important, that is timely for community reuse.

Should you have any questions regarding EPA's review comments or require additional information, please contact me at (415) 744-2402.

Sincerely,

James A. Ricks, Jr.
Project Manager

cc/w enclosures: G. Kikugawa EPA/West
S. Edde, NAS Alameda
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**U.S. Environmental Protection Agency
Draft Sites 1 and 2 Radiation Survey Report, Addendum to
the Remedial Investigation/Feasibility Study Data
Transmittal Memorandum**

**and
Draft Final Radiation Survey Field Sampling Work Plan
for NAS Alameda**

Review Comments

Page 4, Section 3.0, last paragraph: EPA is please to read that "the Navy's surplus radioactive material program provides for proper disposal of such radioactive waste." Proper disposal of radioactive waste has been a point of contention at several Navy facilities in the Bay Area.

Page 7, Section 3.3, last paragraph: "It has been shown that Bremsstrahlung radiation can be detected..." The Navy has never demonstrated this to EPA nor has it given EPA the opportunity to duplicate its experiment. Relying on Bremsstrahlung X-rays as the only method of detecting strontium 90 (Sr^{90}) in field surveys is not currently an EPA approved method. Naval Air Station - Alameda has a history of strontium contamination and serious investigation of this contaminate should incorporate other more scientifically defensible methods as well.

Page 8: Polonium 218, not polonium 210, is the daughter of radon 222.

Page 11, Section 4.1, last paragraph: It should also be noted that changes in soil density would alter the results as well.

Page 22, last sentence: If the radiation survey meters are capable of detecting radium devices buried up to 18 inches deep it seems odd that they only found devices within the first 5 inches. This raises the concern that the Ludlum 2221 was not calibrated properly for the gross gamma mode and the 2x2 detector. Can the contractor provide the current calibration data for this instrument? In addition, the Bench Test Data for the (2x2 sodium iodide) Detector calibration sheet would be most useful information. If PRC used more than one 2x2 detector in its surveys, then the Bench Test Data sheet for the others would be useful as well. This data sheet is usually supplied by the manufacturer or the calibration laboratory.

Page 23, Table 5-2: Performing a removal action of radium sources of 2 milliRoentgen per hour (mR/hr) or greater was the most prudent action to take.

Page 25 Section 6.1 second paragraph: Relying on bismuth 214 (Bi^{214}) to quantify Ra^{226} can underestimate the radium concentration. Radon 222, a gas, is the daughter of Ra^{226} . If it

can diffuse rapidly from the radium source before decaying to polonium 218, then Bi²¹⁴ may not be in secular equilibrium with Ra²²⁶.

Page 34, Section 7.1: EPA recommends providing PRC with four gamma spectrometry samples for a Quality Assurance (QA) check of their HPA radiation laboratory's analytical practices. This would give EPA confidence that PRC is performing quality gamma spectroscopy on NAS Alameda soil samples. EPA can make these QA samples available within one week of the Navy's request.

Page 45, Section 7.2: The National Air and Radiation Environmental Laboratory (NAREL) should be included in any quality control analyses for PRC's on-site field laboratory. Split samples or reanalysis of the samples is appropriate NAREL QA checks.

All cesium 137 is anthropogenic.

Page 50: The elevated gamma counts in the Building 5 storm sewer line indicates possible contamination particularly at Survey Point One. Can the 2x2 NaI detector be lead shielded to give directional readings? Hopefully this or some other method can be employed to determine the extent of the radium contamination in the drain line.

Page 53: Sites One and Two need to be fully characterized for radium contamination using RASO's new Ultrasonic Ranging and Detection System (USRADS) radiation survey ASAP. USRADS has been extremely effective in generating gamma surveys at other Navy facilities and should be utilized here as well.

Page 54: Bremsstrahlung radiation as means of detecting strontium 90 (Sr^{90}) is not an approved EPA method and needs careful scrutiny. EPA Region IX has discussed this phenomenon with the National Air and Radiation Environmental Laboratory (NAREL). IN sum, both Region IX and NAREL have some level of discomfort with using this as the main method of performing Sr^{90} field surveys. The high-energy betas emitted from Sr^{90} and Y^{90} do cause X-rays to emit from the electron shells of atoms of surrounding matter. However, one of the limiting factors in the efficiency of this phenomenon is the density of the surrounding material. If the Sr^{90} is in close proximity to dense metal the X-ray emission could be adequate for detection with field survey instruments. However, there is no way to predict the density of the material surrounding buried Sr^{90} contamination. Therefore, potential for great variability in the effectiveness of this technique exists, thus, its reliability needs confirmation testing.

NAREL has recommended two things: First, there is at least one commercially available beta survey probe (Eberline HP380) now on the market that exhibits high efficiency for the Sr^{90}/Y^{90} beta energy spectrum range. It would be prudent to survey directly for Sr^{90} using a probe of this kind, particularly when surveying for Sr^{90} surface contamination, rather than to rely exclusively on bremsstrahlung X-rays.

The second recommendation is that the Navy loan NAREL a Sr^{90} deck marker. NAREL would like to characterize Sr^{90} bremsstrahlung in its own laboratory experiments. Evidently, the Navy's Radiation Affairs Support Office (RASO) performed bremsstrahlung experiment using a Sr^{90} deck marker and found the method acceptable to them. NAREL would like to duplicate RASO's test methods and procedures to see if the results are reproducible and in keeping with good scientific methods.

The Sr^{90} characterization is an extremely important issue at NAS. There is an established history of Sr^{90} contamination at the site, and thus, using survey methods that cannot be endorsed by EPA must be examined very closely.