DEPARTMENT OF THE NAVY
PORTSMOUTH NAVAL SHIPYARD
PORTSMOUTH, N.H. 03804-5000

IN REPLY REFER TO:

November 4, 1997

MEMORANDUM

FOR THE MEMBERS OF THE RESTORATION ADVISORY BOARD CERCLA REMEDIAL ACTION PROGRAM, PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Enclosed please find the draft minutes from the August 21, 1997, Restoration Advisory Board meeting for your review and comment. Comments are requested by November 25, 1997. You may provide your comments to me at 207-438-3830.

Sincerely,

Ken Plaisted
Navy Co-Chairman
Restoration Advisory Board

Distribution:
Juanita Bell
Doug Bogen
Jeff Clifford
Michele Dionne
Eileen Foley
Carolyn Lepage
Mary Marshall
Phil McCarthy
Jack McKenna
Guy Petty
Onil Roy
Peter Vandermark
EPA New England Region (M. Cassidy)
NOAA (K. Finkelstein)
MEDMR (D. Card)
USFWS (K. Munney)
NHF&G (J. Nelson)
MEDEP (I. McLeod)
NORTHDIV (F.Evans)
COMSUBGRU TWO (R. Jones)
Brown & Root Environmental (B. Horne, L. Klink)
PNS (Codes 106, 106.3, 106.3R, 100PAO, 105, 105.5, NRRO)

CONTINUOUS IMPROVEMENT THROUGH TEAMWORK

cc: File PNS MHA 5

DEPARTMENT OF THE NAVY
PORTSMOUTH NAVAL SHIPYARD
PORTSMOUTH, N.H. 03804-5000

IN REPLY REFER TO:

December 11, 1997

MEMORANDUM

FOR THE MEMBERS OF THE RESTORATION ADVISORY BOARD CERCLA REMEDIAL ACTION PROGRAM, PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

Enclosed please find the revised minutes from the August 21, 1997, Restoration Advisory Board meeting. They are revised based on comments received from Maine Department of Environmental Protection and the Seacoast Anti-Pollution League. Should you have any questions, call me at 207-438-3830.

Sincerely,

Ken

Ken Plaisted
Navy Co-Chairman
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cc: PNS Meetings

CONTINUOUS IMPROVEMENT THROUGH TEAMWORK

RESTORATION ADVISORY BOARD MEETING
PORTSMOUTH NAVAL SHIPYARD
HOWARD JOHNSON'S, PORTSMOUTH, NEW HAMPSHIRE
AUGUST 21, 1997

The meeting began at 7:22 p.m. and ended at 9:35 p.m.. Community members attending were: Juanita Bell, Doug Bogen, Michele Dionne, Mary Marshall, Guy Petty, and Jack McKenna; regulatory members Meghan Cassidy, EPA, and Iver McLeod, MEDEP; and Navy members Ken Plaisted and Fred Evans. Others attending were Carolyn Lepage, the Seacoast Anti-Pollution League's technical advisor; Denise Messier from the MEDEP; and Marty Raymond, Tom Devaney, and Mary Anne Mascianica (PAO) from the Shipyard. Jeff Clifford, Eileen Foley, Phil McCarthy, Onil Roy, and Peter Vandermark were absent.

INTRODUCTION

Doug Bogen, the Community Co-Chair, welcomed the RAB. Ken Plaisted announced that Jeff Clifford had to attend another meeting, that Onil Roy called to say he would not be able to make the RAB meeting, and that Peter Vandermark was on his way back from Montana. Doug asked that everyone introduce themselves.

Doug mentioned that since none of the RAB members had called to say they no longer wished to be a member, the entire membership would be retained for another 2-year term.

Ken announced that the Shipyard has awarded a $7.8 million contract to convert the Shipyard heating system from No. 6 oil to natural gas. In addition, 200 Naval housing units are slated for underground storage tank removal and conversion to natural gas.

NORTHEAST FEDERAL FACILITIES CLEANUP WORKSHOP

Doug discussed the July Federal Facilities Cleanup Workshop he attended in Amherst, Massachusetts. The session featured workshops on networking, citizen participation, risk assessment limitations, environmental justice, and DOD budgeting and funding. Case studies were featured on Otis Air Force Base, a facility in Puerto Rico, and the Watertown and Rocky Mountain Arsenals. No representative from the Navy attended. Doug requested that future workshops be segmented such that Navy RABs would meet separately, for instance, from Air Force RABs. Those running the sessions pledged more frequent, shorter duration workshops; they are also attempting to link as many RAB members as possible through electronic mail systems.

Comment: In what way is the Shipyard RAB similar to and different from other RABs attending the workshop?

Response: Other RABs, like the one at Otis, have much more severe environmental problems. The extent of their groundwater contamination is enormous; they have had to hire mediators to assist in their efforts. They have also been meeting longer as a group.

At some RABs, membership is open to anyone who attends RAB meetings; others have charters that restrict the number of RAB members. Other differences are for bases that have been or are being closed, or that have unexploded ordnance problems. Different levels of threat can make a difference in how a RAB functions.

Comment: Was there any discussion of HR 1778, the Defense Reform Act, that would abolish RABs?

Response: The workshop organizers used the legislation as a case study to show how e-mail and faxes can be a forceful lobbying tool. It took one week of lobbying to stop the committee from proceeding with the bill.

Comment: Was there an indication that other RABs were having problems with funding cleanup activities?

Response: The Secretary of the Air Force was present, who indicated that the Air Force was committed to funding all the areas that needed cleanup. Apparently, EPA has from 20 to 30 people working on the Otis Air Force Base project. Doug suggested that the Shipyard was lower in funding priority than other bases. Fred Evans stated that the Shipyard receives a sizable amount of the money NORTHDIV receives for Navy facilities cleanup.

STATUS OF WORK

Fred Evans summarized the status of active work. The Navy has received regulator follow-up comments on the Site 10 and 29 workplan. Comments are due on August 22 on the DRMO treatability workplan. An action memorandum/workplan is due on September 2 for Mercury Burial Vault I. Removal work should start in mid-September.

One of the handouts is the paper on the weight-of-evidence process used for the ecological risk assessment. A groundwater fate and transport technical meeting was held in July, to which Carolyn Lepage, the TAG technical advisor, was invited. Since RAB members are also invited to attend these meetings, the Navy will attempt to ensure at least two weeks' notice is provided.

Comment: Is there any kind of document that summarizes the kind of information you just provided? Can we obtain schedules for each operable unit so we can use them as a form of score card to chart cleanup progress? I reviewed the August 1995 minutes, when Lt. Conroy gave his presentation on the site schedules, however, the sites more recently have been bundled into operable units so it is difficult to follow a site's progress since then.

Response: We are working on creating schedules with EPA as part of the negotiations on the Federal Facilities Agreement. The Navy will try to have a copy of the schedules available at the October RAB meeting.

PUBLIC PARTICIPATION IN THE RAB PROCESS

Doug requested that each RAB community member provide comments and suggestions about the communications process. Iver began the discussion by stating that he had sent a letter last spring expressing the MEDEP's concerns about the RAB process at the Shipyard. The major points of the letter: other RABs are more open (everyone is allowed to sit at the table) and take pains to ensure that technical presentations are understandable to a non-technically trained audience. Iver also stated there had been a good discussion on the Ecological Risk Assessment at the previous RAB.

Meghan Cassidy mentioned that she sits on three RABs, all of which are different. The first three years of the Watertown Arsenal RAB meetings were filled with technical presentations; their focus more recently has been on site status discussions. A RAB's needs change over time and depend on what level of detail its community members desire. Many RABs are informal about who sits at the table. The decision was reached after RAB members had taken seats at the table to have other attendees fill in the empty seats.

Mary Marshall indicated that she likes the presentations and would appreciate more of them even though she does not always understand everything or its relevance. She also felt that Fred's status of work summaries are not detailed enough and the format is confusing. Mary also indicated she is confused about what phase a site is in relative to the "chutes and ladders" CERCLA process diagram. Guy Petty suggested presenting the information in the form of a gantt chart for the next RAB.

Guy Petty expressed concern about a sense that the regulatory agencies dictate many of the technical issues and as a result, projects take on their own momentum. Now that Carolyn participates in the technical discussions, he feels that community members are no longer by-standers in the technical decisions and have a presence in policy formation. The purpose of the TAG program is to make that link, but he wonders if Carolyn can undertake all the technical work.

Carolyn reminded the RAB that her contract was with SAPL, not the RAB, but that she can provide a vehicle to assist the RAB. She will consult with SAPL about priorities and TAG funding issues. The scope of technical work at the Shipyard is broad; some is outside her area of expertise so she relies on other professionals for advice.

Jack McKenna seconded Guy's concern about project momentum; the regulatory agencies have already commented on issues by the time they are presented to the RAB. What, then, is the role of RAB community members? An example is the low-flow sampling technique. The regulators have bought off on it, but the community may be concerned because it presents an apples versus oranges dilemma in project phases. Meghan responded that both the state and EPA insisted on use of the low-flow sampling technique and that it did not present an apples versus oranges dilemma. The sampling events are two distinct data sets.

Meghan wondered if the timing of presentations made sense. At the end of a presentation, RAB community members are expected to comment on issues that concern them but no time

is provided for them to reflect on what they have heard. A suggestion was made that presentations should be scheduled for shortly after a document has been released but before the regulators have commented.

Doug recommended that EPA and MEDEP each provide a regular update (perhaps after Fred's discussion of the status of work) on their perspective of Shipyard issues and activities since the last RAB meeting. This would formalize their role in the agenda and provide information from sources other than the Navy. Guy concurred, stating that the Navy "gets the product out of the kitchen" through its presentations but he would like to spend some time in the kitchen itself.

Guy also suggested that community members feel their mission extends beyond being liaisons; they should be playing a policy role. However, in the liaison role, they need to be able to summarize what is going on in RAB meetings. He requested that RAB meetings be boiled down to a paragraph for a news release at the end of each meeting. Ken stated that they try to release a fact sheet after each meeting. It was unclear who was receiving the fact sheets. Subsequent to this RAB meeting, a one page fact sheet was issued on October 14, 1997.

HISTORICAL RADIOLOGICAL ASSESSMENT

Jeff Brann, Director Radiation Health and Radiation Safety Officer, discussed the draft Historical Radiological Assessment (HRA) document. The environmental monitoring program for radioactivity associated with the Naval Nuclear Propulsion Program (NNPP) began in 1958. The results are documented in annual "Blue Books" that have been released since 1967. Copies have been provided to state and EPA officials. [Subsequent to the meeting it was determined the "Blue Books" had been released since 1966.]

Comment: Are these books in the public libraries?
Response: They have been sent to the Kittery and Portsmouth public libraries for the past several years.

The HRA is a detailed, site-specific report that satisfies CERCLA's Preliminary Assessment requirements. It documents radiological operations and environmental monitoring at the Shipyard.

The HRA development process involved:

- reviewing existing environmental documents and past environmental assessments.
- reviewing radiological environmental monitoring records and reports of inadvertent releases.
- reviewing results of state and EPA surveys (the State of Maine conducted monitoring around the Shipyard in the 1960s; in 1975 and 1981, joint Maine

and New Hampshire surveys were conducted; EPA undertook surveys in 1977 and 1989.) As the EPA conducts surveys around NNPP activities approximately every ten years, another EPA survey is scheduled for this September. [It occurred on schedule].

- conducting interviews with present and former Shipyard employees.
- assessing potential exposure pathways (soil, air, etc.).

There are two radiological programs at the Shipyard. The radiological program associated with the NNPP deals with the radioactivity associated with nuclear power plants in submarines. This program started in 1958 prior to initiation of nuclear work. Work is performed consistent with the strict standards used at all nuclear shipyards. For example at two bases recently closed under the Defense Base Closure and Realignment program, the Navy performed extensive surveying and sampling in support of unrestricted radiological release of the property. The total amount of environmental radioactivity requiring remediation at each shipyard, after 30 to 40 years of NNPP activities, was only 2 to 3 microcuries which is about the same amount as that contained in a residential smoke detector.

No radioactive waste was buried on the Shipyard. Planned liquid discharges with radioactivity levels below federal limits occurred, primarily before 1973. (The process has since changed in that all liquids are maintained in an enclosed system and recycled). The most significant unplanned release at the Shipyard was caused by a contractor in 1966 working beside Building 233 at Berth 7. The spill involved a malfunction during a dewatering process. Liquid spilled to a storm drain and a service trench. The amount of radiological material released was less than the amount a typical civilian nuclear power plant releases over the course of a year in accordance with Nuclear Regulatory Commission regulations.

The second radiological program is the Radiation Safety Program which deals with general radiological material (G-RAM), which Mr. Brann heads. This program oversees:

- limited radium dial painting in the 1940s and 1950s
- Nuclear Regulatory Commission-regulated sources (sealed radiographic sources)
- various small, unregulated sources (NRC-exempt quantities like smoke detectors)

Through a review of records, interviews, and surveys, the shipyard found no indication that radioactive waste had been buried at the Shipyard. However, there is no way to ensure that small amounts of G-RAM were not improperly released through regular trash disposal in the past.

Mr. Brann also used an overhead graphic to define some radiological terminology:

- curie - a unit used to define an amount of radioactivity.
- microcurie - one millionth of a curie (a household smoke detector contains up to 5 uCi).
- picocurie - one millionth of a microcurie (soil typically contains 1 to 2 pCi/g of radium; a study in Maine based on wood ash collected by high school students determined that local wood stove ash contains 78 pCi/g of potassium-40 and 6 pCi/g of cesium-137).
- millirem - a unit of radiation dose (people typically receive about 300 mrem a year from natural sources. The average for New Englanders is a bit higher).

Comment: How do millirems relate to curies?
Response: There are four types of radiation: alpha, beta, gamma, and neutron. There are different isotopes that decay at different rates which emit these radiations. There is a conversion for the radiation levels per curie which is radionuclide specific.

Comment: How can you equate these types of radiation?
Response: The process for measuring dose takes into account the equivalent radiobiological effect to equate all the different types of radiation. A millirem of neutron radiation is biologically equivalent to a millirem of x-ray radiation.

HRA Findings:

- only natural radioactivity was detected during environmental sampling of harbor water
- very low levels of cobalt-60 were found in some harbor sediment and seaweed prior to 1970.
- EPA surveys in 1977 and 1989 found no trace of cobalt-60 in sediment, core, biota, or water.
- low levels of cobalt-60 exist in the capped drain pipe and walls of the lower service trench in the Berth 7 area, an exposure level below NRC cleanup standards. (The spill remediation was completed in stages. Two basins and piping were removed, drain pipe capped, and filled with concrete. Some time later part of the service trench was excavated).
- no other indications of residual radioactivity were found in the environment from Shipyard operations.

Comment: How do you know the radioactivity is natural?
Response: The instrumentation is sophisticated enough to show which isotopes are present. Each radionuclide has characteristic radiations.

Assessment Conclusions:

- radiological operations at the Shipyard have had no adverse effect on human health or the environment. EPA surveys came to the same conclusion.
- no measurable exposure levels to the public.
- trace levels of cobalt-60 in the lower service trench/capped drain pipe are radioactively decaying in place and are inaccessible to the public and Shipyard employees.
- Additional characterization or remedial actions are unnecessary.

The MEDEP and EPA have just received their copies of the draft HRA.

Comment: Was the unplanned release [at Berth 7] detected during the survey?
Response: Sampling is conducted quarterly. No routine sampling was underway at the time of the spill. The spill was cleaned up when it occurred. By the time regular environmental sampling was next initiated, there was no trace of the spill in the water because of dilution.

Comment: Could the spill at Berth 7 occur today?
Response: No. Significant process changes have occurred since 1966. They now operate in a closed facility. Also, each time something untoward occurs, the process calls for reviewing the problem and instituting specific corrective actions. We try to learn from our mistakes.

Comment: How was EPA sampling conducted?
Response: It was extensive. They used a dredge to obtain harbor bottom sediment samples. They took radiation measurements, and harbor core, water, biota, and background samples. It was similar to the Shipyard's sampling program but we did not obtain core samples.

Comment: Do you require employees to wear dosimeters?
Response: Yes. We also place them around the Shipyard and in areas away from the Shipyard to obtain background readings. We use this information to conduct statistical tests from quarter to quarter and from year to year.

Comment: Are past copies of the Blue Book available?
Response: I don't know if past copies of all the books are available. We have been providing them to libraries for the past few years. If they are not available in

the libraries, we could put our hands on them. [Subsequent to the RAB meeting, the Shipyard determined past copies of the blue books can be obtained if needed.]

Comment: Can you be sure what procedures the hospital was using when it was operating?

Response: We did not find any records to indicate that the hospital disposed of radiological material. However, the assessment focused only on Shipyard operations. The hospital was decommissioned a long time ago and has been functioning as a clinic. However any clinic records in this area were turned over to my office. [The Shipyard has since determined the hospital did not use radioactive material.]

Comment: Could the assessment have determined the hospital's output based on records from other hospitals?

Response: If the hospital disposed of significant material it would have been detected during the monitoring surveys. The surveys do not discriminate based on the source of radiation. [The Shipyard has since determined the hospital did not use radioactive material.]

Comment: How did you select your interviewees?

Response: There were two sets of interviewees. In 1983, a contractor performed an Initial Assessment and looked for people who had had a connection to radiological operations. The Shipyard's draft HRA survey contained approximately a dozen people who had a good grasp of radiological operations at the Shipyard and asked them to check the HRA tables for completeness.

Comment: You indicated that the most significant spill would be equal to the output from a [civilian] nuclear power plant in one year. Why was it not detected in your survey?

Response: The direction of the tides at the time of the spill would have influenced how it would affect the area.

Comment: What is the half life of cobalt-60?

Response: It is 5.27 years. Cobalt-60 decays to stable nickel.

Comment: Isn't nickel of concern under CERCLA?

Response: The levels of cobalt were very small, pCi or fractions of pCi [minute fraction of one part per billion], so we are talking about atoms of cobalt/nickel which would not be of concern from a hazardous material or CERCLA standpoint.

Comment: Did any of the radiological units decay to any of the Shipyard contaminants of concern?

Response: Only trace levels of radioactivity were present initially, so an insignificant level of decay product would result.

Comment: You indicated there were planned releases during the period 1960 to 1972. Was this to purge cooling water?

Response: Yes. We did not have a closed system then.

Comment: Was every submarine subject to the same overhaul procedures [which generated the water discharged]?

Response: Yes. The water was filtered and discharged. This is a moot issue, however, since no present day radioactivity remains from these operations.

Comment: Have studies been done to determine if any local cancer clusters exist?

Response: Two studies were completed. One, by the National Institute for Occupational Safety and Health was conducted on Shipyard workers. They reviewed cancer rates in the general population (including leukemia and lung cancer) against cancer rates for Shipyard workers. No association due to radiation was found. Johns Hopkins also conducted a study covering all shipyards. They found no health effects due to radiation exposure. Both studies did, however, discover some increase in lung cancer, which is likely attributable to asbestos exposure.

Comment: Were records kept on radiological activities between 1958 when the submarines began using nuclear fuel and 1967 when you began to publish the Blue Books?

Response: Yes. Files were kept. Their contents are discussed in the HRA.

Comment: How do you know no nuclear waste is in the Jamaica Island Landfill? Common rumors are that there is yellow material in the landfill.

Response: The records indicated where the material was disposed of; the waste stream disposition was well characterized. We have a list of disposal contractors and the sites they used, if known. Much of it was shipped to Kentucky, South Carolina, and Nevada. Table 5-5 in the HRA includes this information.

Before the 1950s, G-RAM information is sketchy. We do know that the glass bottles containing radioactive paint were returned to the manufacturer for refilling. At sea disposal was the preferred method for disposal for waste. By the mid-1950's records indicate GRAM material was being collected for off-site disposal.

As to the Jamaica Island Landfill, we used a very sensitive monitor to survey that area; elevated readings were found in some rocks. We have also excavated areas of the landfill for CERCLA work. Only background levels of radiation were found. I understand a rumor circulated that there was radioactive material in the landfill because yellow materials like those used to package low level radioactive waste had been seen in the landfill. What happened is that we had excess stock of these yellow bags and disposed of them, unused and clean, in the landfill. This issue is addressed in the HRA.

Comment: Have any major changes occurred in the nuclear-powered engines used in the submarines since 1968?

Response: No major design changes have occurred. Because people are living on these submarines in close proximity to the reactor plant, the levels of radiation have to be low and releases of radioactivity into that closed environment have to be prevented. Therefore the system design was conservative from the beginning. Principal improvements have been to extend the life of the core.

Jeff was asked to summarize what was most important . He identified the following points from his last transparency:

No adverse efect on human health or the environment.
No measurable exposure to the public.
additional characterization or remedial action is unneccessary.

NEXT RAB MEETING

Marty Raymond announced that the next RAB meeting would be held on Thursday, October 23, 1997 at the Days Inn in Kittery. She shared a list of potential agenda topics. After some discussion, the RAB indicated it would appreciate a presentation on the Phase I/Phase II Human Health Risk Assessment.

DEPARTMENT OF THE NAVY
PORTSMOUTH NAVAL SHIPYARD
PORTSMOUTH, N.H. 03804-5000

IN REPLY REFER TO:

August 12, 1997

MEMORANDUM

FOR THE MEMBERS OF THE RESTORATION ADVISORY BOARD (RAB) CERCLA REMEDIAL ACTION PROGRAM, PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

The next RAB meeting will be held on Thursday, August 21, 1997 at 7 p.m. at the Howard Johnson Inn in Portsmouth. We will discuss the RAB process and have a presentation on the Historical Radiological Assessment.

Your participation is greatly appreciated. If you are unable to attend the meeting, please call me at 207-438-3830. I look forward to seeing you again.

Sincerely,

Ken

Ken Plaisted
Navy Co-Chairman
Restoration Advisory Board

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