DEPARTMENT OF THE ARMY
U.S. ARMY LABORATORY COMMAND
MATERIALS TECHNOLOGY LABORATORY
WATERTOWN, MASSACHUSETTS 02172-0001

REPLY TO ATTENTION OF

Base Realignment and Closure Office

March 16, 1992

Docket No. 50-47

Mr. Alexander Adams
Nuclear Regulatory Commission
OWFN MS: 11B20
Washington, D.C. 20555

Dear Mr. Adams:

Responses to the questions you raised in your correspondence of February 5, 1992, regarding the U.S. Army Materials Technology Laboratory Research Reactor are enclosed.

As you know, we are in the design phase of this project and will not proceed to the construction phase until the Decommissioning Order has been received. Under the value engineering clause of our design contract, our designer has proposed to give the construction contractor more flexibility during decommissioning in an effort to save time and cost. For example, they suggest requiring the contractor to take core samples of the vessel to determine the extent of contamination. If the area is heavily contaminated, the entire containment vessel and platforms would need to be removed as explained currently in the decommissioning application. If negligible contamination is encountered however, the reactor vessel could be decontaminated by removing selected concrete surfaces thereby eliminating the need to remove the entire reactor vessel and platforms during decommissioning. This type of flexibility is also reflected in our response to your comments 2 and 19. Does the Decommissioning Order process leave us value engineering flexibility?

For further coordination on this application, contact either Laura Rodman in the Base Realignment and Closure Office on 617-923-5320, or Peter Cornetta in the Hazards Management and Safety Office on 617-923-5225.

Finally, as you requested in accordance with 10 CFR 50.30(b), this response is executed in a signed original under oath or affirmation. Please note that Major Adams has retired and effective March 1, 1992, Major James T. Naughton assumed all the former commander's duties. An assumption of command letter is attached for your information.

A020

Sincerely,

James T. Naughton

JAMES T. NAUGHTON
MAJ, OD
Deputy Diorector/Commander

Enclosure:
As Stated

CC w/enclosure:

Commander
U.S. Army Toxic and Hazardous Materials Agency
ATTN: CETHA-BC (Mr vatore Torrisi)
Aberdeen Proving Grounc, Maryland 21010-5401

Commander
U.S. Army Corps of Engineers, New England Division
ATTN: CENED-PD-L (Mr. Dennis Waskiewicz)
424 Trapelo Road
Waltham, Massachusetts 02254-0149

Headquarters, Department of the Army
ATTN: SAILE-ESOH (Colonel Chris Conrad)
Washington, D.C. 20310-0110

Mr. Robert M. Hallisey, Director
Radiation Control Program
Department of Public Health
The Commonwealth of Massachusetts
150 Tremont Street
Boston, Massachusetts 02111

Massachusetts ss
Middlesex

Subscribed and sworn to before me this 16th day of March, 1992.

Linda L Frazier
Notary Public

My commission expires August 22, 1997

Comment 1: Reference to U.S. Nuclear Regulatory Commission, Guidelines For Decontamination of Facilities and Equipment Prior To Release For Unrestricted Use or Termination of Licenses For By-product, Source, or Special Nuclear Material, August 1987, will be replaced with the referenced Regulatory Guide 1.86 (RG 1.86), Termination of Operating Licenses For Nuclear Reactors. Additionally, the Army will commit to the unrestricted use acceptance criteria of 5 uR/hr above background at one meter from the surface.

The Army also will comply with the Commonwealth of Massachusetts requirement that the final reactor site shall not cause exposure to any individual who would be continuously present that exceeds an annual dose of 10.0 millirem. This requirement is consistent with the NRC Guidance and Discussion of Requirements For An Application To Terminate A Non-Power Reactor Facility Operating License, Revision 1, September 15, 1984. Furthermore, the Army will also comply with the State Regulation 105 CMR 120. Consistent with 105 CMR 120.460, the State Radiation Control Program Manager will be notified within 24 hours of any known or suspected release of radioactive contamination. In addition, the Army will notify the State Radiation Control Program Manager 24 hours in advance of any shipment of radioactive materials.

Comment 2: The radiation survey of the US AMTL Research Reactor Facility indicates that most of the remaining radioactive materials are inside the reactor pool and in the reactor building basement. The metal components inside the pool, (e.g. the reactor pedestal, grid plate, steel racks, remaining pipes/tubes, primary coolant hold-up tank below the reactor, as well as the stainless steel pool liner) and some of the components in the basement are all considered radioacitve waste and will be radiologically characterized before being packaged and shipped for land disposal as low-level waste. The information included below contains the type of information that will be in the contractor's radiological program and used to protect workers and the public during the decommissioning.

Properly trained technicians, wearing appropriate protective clothing, safety glasses, etc., will characterize radiation fields present at the work site before work commences. They will time the dismantling tasks and monitor personnel exposure in order to keep these exposures within the limits prescribed in Section 2.1.4 and Table 2-1 of the Decommissioning Plan. Personnel will wear pocket ion chambers (gamma dosimeters) inside their protective clothing to periodically monitor whole body gamma exposure. These dosimeters will be calibrated in accordance with the information provided in Section 8.4 of the Decommissioning Plan.

High range field instruments such as an Eberline RO-2 ion chamber will be used initially to locate and characterize high radiation fields. A suitable check source will be used periodically to ascertain that instruments are functioning properly. Staging areas designed to control any spread of contamination will be used. Metal structures will be removed as stated in Section 3.4.1 of the Decommissioning Plan. Appropriate respiratory protection will be used if contaminated or radioactive materials, are mechanically or torch cut as indicated in Section 3.4.2 of the Decommissioning Plan. If decontamination of any metal parts is feasible and undertaken, liquids will be collected and processed as stated in Section 6.2 of the Decommissioning Plan.

After the removal and packaging of highly radioactive structures, more sensitive instruments will be used to detect radiation levels in the mR/hr and uR/hr ranges. Typical lower limits of detection for these instruments are given in Comment 26.

All waste generated during the decommissing of the MTL reactor will be surveyed, sampled, and analyzed prior to disposal. The criteria to be used to determine if waste is to be released to a clean landfill or disposed of as radioactive waste will depend on whether the material is surface contaminated, volume contaminated, activated, or a combination of these. The waste generated during decommissioning of the facility will be generated from three different categories of materials.

The first category includes materials that were subjected to the reactor neutron flux, materials and components that were near the reactor core during operations. Examples include the stainless steel pool liner, reactor pedestal, grid plate and parts of the biological shield.

The second category includes materials that were in contact with the reactor coolant water (some of the materials are also in the first category). The second category includes the surface of the concrete that makes up the annulus and pool as well as concrete within part of the biological shield. This part of the biological shield is assumed to be contaminated due to coolant water leakage.

The third category includes materials not in the other two categories. This category includes structural materials that must be removed in order to access other potentially contaminated materials. Examples are concrete platforms surrounding the reactor pool monolith and the concrete surrounding the N-16 hold-up tank beneath the reactor.

The criteria described below will be used to determine if the waste in each of the categories will be released to a clean landfill or disposed of as radioactive waste.

(1) Category 1: It is expected that all category one waste will be disposed of as radioactive waste. The determination will first be based on surface activity measurements. These measurements will be compared with the levels specified in IC Circular No. 81-07, Control of Radioactively Contaminated Materials. If the measured surface activities exceeds those levels specified in IC Circular 81-07, the material will be disposed of as radioactive waste. However, if the levels are below those specified in IC Circular 81-07, volume activity of the potentially activated material will be determined to provide reasonable assurance that no licensed material will be released for unrestricted disposal. The determination of volume activity of category one material will be accomplished by sampling the material and performing a gamma spectrum analysis. The gamma spectrum analysis will be performed using a system that is sensitive down to the environmental lower limit of detection. If man-made radionuclides are detected in the potentially activated material, (the release criteria for the concrete is discussed under category two), it will be disposed of as radioactive waste.

(2) Category Two: The material in the second category consists of concrete or other porus material that is contaminated on the surface and/or within the material volume. The determination of whether this material is contaminated will first be based on the levels specified in IC Circular No. 81-07. If the surface radioactivity measurements of the concrete exceed the levels specified in IC Circular 81-07, the concrete will be scrabbled and the measurement repeated. However, when the concrete block that is being surveyed meets the releasable levels specified in IC Circular No. 81-07, the volume activity must be determined before disposing of the waste. The determination of volume activity will be determined by sampling representative blocks of concrete and performing a gamma spectrum analysis using a system that is sensitive down to the environmental lower limit of detection. If a correlation between surface readings and volumetric activities can be established, surface readings will be used instead of volume activities. These results will be compared with concentrations of man-made gamma emitting radionuclides found in background concrete. If the radionuclide concentrations exceed background by greater than three standard deviations, the concrete will be disposed of as radioactive waste. Concentrations of man-made gamma emitting radionuclides in background concrete will be determined by collecting and analyzing several concrete samples outside MTL. The background analysis will also be performed by using gamma spectrometer system that is sensitive down to the environmental lower limit of detection.

(3) Category Three: The release criteria for category three materials will be the surface activity levels specified in IC Circular No. 81-07. Since this material is only potentially contaminated on the surface, no analysis is required to determine volume activity.

Comment 3: The activation of the other materials in the concrete was not considered for three reasons. The first reason is because the materials used in the high density concrete were not known. The second reason is the presence of unknown amounts of contamination in the biological shield as a result of the leakage from the pool makes the use of activation calculations of little use. Thirdly, after twenty years of decay, the specific activity of the remaining activated nuclides in the concrete is considerably smaller than that in the stainless steel beam tube and the carbon steel rebars. This section of the Decommissioning Plan is used to support the estimates of waste and worker radiation exposure. The Army is aware that activation would have taken place and will address these activation products during material characterization.

Comment 4: The NRC comment referred to Eu-159 which was not refered to within the Decommissioning Plan.

There was no verification performed during site surveys to confirm the assumptions made in the neutron activation analysis. The neutron activation analysis was performed many months after the site surveys, and the activation analysis was based on reasonable assumptions with the limited, known information.

In Section 1.3.2.5, the Plan states that the only gamma-emitting and long-lived nuclides expected from the neutron activation of stainless steel and iron are Co and Mn. The detection of the radionuclides europium in the reactor annulus is not surprising because Eu could be a fission product or an activation product. However, radionuclides of europium are not expected activation products of stainless steel or iron.

Comment 5: The assumption that 50% of the biological shield is contaminated is based on the fact that the reactor pool leaked primary coolant through the biological shield during a long period of time (see Section 1.2.2. in the Decommissioning Plan).

The assumption that Cistern 242 is not contaminated is based on the low-level radioactive liquid contained by Cistern 242. During excavation and removal of the cistern, the concrete will be surveyed using appropriate instrumentation, and if it is found to be contaminated, it will be disposed of as radioactive waste. In addition, it is assumed that any contamination in Cistern 242 will be surface contamination and can be removed by scabbling the concrete surface.

Both assumptions are the basis for waste volume estimates. If the assumptions prove to be invalid, the waste volume estimates and the waste disposal cost estimates would be either higher or lower than the actual volume.

Comment 6: The Decommissioning Plan states that during decommissioning of the reactor monolith, lead "with fixed contamination . . . will be packaged and given to the licensee for storage as a mixed waste. If mixed waste is determined to be present, the waste will be either kept for less than 90 days or arrangements will be made for longer term storage in coordination with EPA and the Commonwealth of Massachusetts under the requirements of RCRA. Any interim storage area at MTL will be an indoor area with restricted access. The RPO will maintain control of the facility and will monitor the area to determine the dose rate at unrestricted areas near the storage area to ensure that they are less than the administrative limits given in Table 2-1 of the Decommissioning Plan. Eventually, the mixed waste will be shipped from MTL to either a licensed/permitted long term storage area or a disposal facility.

Comment 7: The tank located directly beneath the reactor pool was used to allow the decay of nitrogen and other short lived activation products. The flow of coolant water was through the fuel elements and down into this nitrogen decay primary coolant hold-up tank.

Comment 8: The MTL Radiation Protection Officer (RPO) will be responsible for ensuring the application of radiation safety principles to reactor decommissioning operations. He will report any radiation safety violations to the Commanding Officer. The MTL Technical Monitor will also be informed. The RPO will observe on-going operations during periodic work site visits and utilizes QAE/HP reports (verbal & written information) to assure that work is progressing in accordance with the Decommissioning Plan and NRC order as well as being in compliance with any other NRC regulations. He will provide recommendations as to how safety matters are handled, and shall have the authority to stop work at anytime. Furthermore, the RPO will keep the Radiation Control Committee advised of the status of the effort. (See attached organizational Figure 2-19)

The QAE/HP will report to the MTL RPO at the beginning of each work day. He will also report to the Project Technical Monitor and the Contracting Officer's Representative. Information regarding daily operations, any violations of the ALARA principle, questionable RC&SO guidance for workers and any non-compliance items will be reported to the MTL RPO and COR by the QAE/HP. The MTL RPO will follow-up and assure any violations and compliance issues are corrected appropriately.

The RC&SO will provide the immediate on-site radiation safety guidance to workers, and will brief the RPO whenever necessary, at least on a weekly basis, providing pertinent informtion regarding daily operations. The Contractor's Project Manager and RC&SO shall have authority to stop work in the event that proper safety is not employed and/or if a violation is detected or suspected.

Resumes of key contractor personnel will be provided upon contract award.

Comment 9: The Radiation Control Committee (RCC) consists of the following personnel:

a. Chairman: This MTL employee has training and experience in industrial radiography (X-Ray machines) and is appointed by the Director to Chair the Committee.

b. Alternate Chairman: Radiation Protection Officer

c. Two assistant health physicists to the RPO (one being the military representative)

d. An Industrial Hygienist

e. The MTL Safety Officer (Technical Monitor)

f. A physicist

g. A division supervisor

h. Union representatives (non members) also attend meetings

The RCC will be involved in the preparation, review, and approval of work packages by providing oversight and assistance as requested by MTL management or the RPO. Otherwise, information will be provided to the RCC by the RPO at quarterly meetings or on an as necessary basis.

Comment 10: Applicable sections of Regulatory Guides 8.31 and 8.29 will be incorporated into the training program. The same information will also be incorporated into the General Employee Training (GET).

Comment 11: Personnel exempt from the GET and Respiratory Protection (RP) training must document the most recent training which meets or exceeds these requirements. Regardless of previous training, all workers will be required to take and pass the GET and RP test before they will be allowed into a radioactive work environment. Workers who do not pass the test will be required to attend the training course until they pass or are determined not qualified to perform the assigned tasks. Training requirements in excess of the GET and RP will be implemented on a case by case basis as described in Section 2.1 of the Decommissioning Plan.

Comment 12: The distinction between radiation and non-radiation workers is intended to be used for both management and safety reasons. The Army realizes that all workers, regardless of their job assignments, have the potential to be working in the vicinity of radioactive materials, either known or unknown. Therefore, the Army has decided that the GET and associated testing shall be required for all workers entering a radiation control area.

Comment 13: The additional training as outlined in Section 2.1.3 of the Decommissioning Plan will be applied for areas at or above 100 mR/hour. Additional training will also be required for individuals performing jobs where the total exposure received during that job would be at or above 100 mrem.

Comment 14: A copy of the agreement between AMC and NRC concerning 10 CFR 20 requirements is enclosed. If implementation of this standard is delayed until January 1994, the Army will comply with the new implementation date.

Comment 15: See response to Comment 2.

Comment 16: An agreement concerning the transport and treatment of possibly contaminated, injured personnel from MTL to the Massachusetts General Hospital has been negotiated. The remediation contractor will have prepared, prior to any work, a Site Safety and Health Plan (SSHP) to identify, evaluate and control safety, health and radiological hazards and to provide contingency plans for emergency response. The Response Plan will be written consistent with requirements of 29 CFR 1910.120(l). The Plan will respond to all regulations, guides and standards and will consist of the required policies and procedures to protect workers, MTL personnel, the general public and the environment. We will provide the NRC a copy of the Emergency Response Plan when it is completed.

Comment 17: Most of the unlicensed material/items, i.e. furniture, cabinets, block and brick, were removed from the facility during January 1992. Personnel working in the reactor were issued radiation dosimetry badges to record possible exposures. They were denied access to areas where ambient radiation fields or 16"contamination possibly existed within the reactor building. These areas included the Californium-252 Facility and the access area to the top of the reactor pool. Both of these areas are locked-up unless someone who has access approval is working in the area. Only background levels of radiation exist in other areas of the reactor outside to core area. Prior to commencing this work, personnel were instructed as to the location and type of radioactive materials in the reactor and associated hazards.

Prior to the removal of any equipment, or furniture (unlicensed materials) etc., such items were monitored to determine if any contamination was present. None is known to be in these areas. Items such as cement or lead shielding bricks were monitored with a Pancake GM prior to being removed from the building. Information provided in Regulatory Guide 1.86 and the May 1987 N.R.C. document entitled "Guidelines For Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for By-product, Source, or Special Nuclear Material", was utilized. The removal of property was coordinated with the MTL Logistics Division and the equipment turn in papers were documented as to the release of these items as being free of any radioactive contamination.

In the near future, the Californium source (By-product Material License Number 20-01010-04) will be returned to the Department of Energy. All associated equipment or materials will be monitored prior to release. No contamination is suspected.

Finally, MTL is waiting for approval of an NRC amendment request to move the Kaman Neutron Generator from the reactor experimental floor area to another building for storage prior to transferring to another licensee.

Comment 18: The statement in Section 3.4 of the Decommissioning Plan was meant to apply to the steel containment vessel below grade line. However, in response to the question, ventilation will be maintained, air will exit the reactor through HEPA filtration. The existing reactor building HVAC system may be used to the extent feasible prior to dismantling it. After it is removed, a temporary ventilation system shall be installed (including exhaust fans, HEPA filters, monitors, and alarms) which will allow for monitored release from the reactor building. Under normal operation, the reactor building doors shall be closed. In the event of a high radiation signal, the fan flow will be isolated and the reactor building door, if opened, shall be closed. The air will then be recirculated through filters and released after the level of radiation has been reduced below acceptable limits. This will allow for monitored release from the reactor building.

Containment enclosures shall be erected around dismantling activities likely to create airborne contamination. To clean airborne contamination, each enclosure shall be provided with a ventilation system which will permit the recirculation of air through a fan, monitor, alarm, and HEPA filter and will be configured to admit fresh air. While the reactor building doors are opened to permit removal of contaminated material, the local enclosures will prevent the dispersal of airborne contamination to the reactor building environment and to the environment through the open reactor building doors. In the event of a high radiation signal the fan flow will be isolated. The air will then be recirculated through filters and released after the level of radiation has been reduced below the appropriate limits. This will allow for monitored release from the containment enclosure.

Comment 19: Based upon the observations listed below, no structural analysis was judged to have been required to ensure safe disassembly of these structures. The platform concrete slabs and supporting steel framing were designed for live loads of 250 lbs/sf. This load is approximately 3.5 times the dead load of the slab which is typically 6 inches deep (7 inches adjoining the pool). As the concrete slabs are cut, the continuity over the steel support beams will be disrupted and, in the worst case, the slab will be spanning as a simply supported one way beam strip. In this case, the slab will be supporting its self weight and, in the worst case, the personnel and equipment (circular saws, most likely) equivalent to an uniform occupancy load of 25 psf, resulting in total load of 100 psf. The mid-span moment will be proportional to 100/8. The design basis mid-span moment, based on the slab dead load of 75 psf and 250 psf live load, is proportional to 325/24, or 108/8. Therefore, the loss of continuity will not result in moments in excess of those used in the original design which was based upon the working stress method. (The structure was designed in 1958).

Precautions will be taken by the Contractor to shore the slab sections being removed. The existing overhead crane has a load capacity of 10 tons and can support a concrete panel 7 ft wide and 10 ft long (the span of the slab between the steel beams).

A similar assessment of the operating floor slab results in the following observations. The 2.5 ft thick portion of the slab (dead weight equal to 375 psf) was designed for a live load of 3000 psf and the 1 ft thick slab (dead weight equal to 150 psf) was designed for a live load of 1000 psf. The dismantling operations which result in the transformation of a slab section from a continuous structure to one that is simply supported and loaded by its self weight and nominal occupancy load will not result in an overstressed condition. The structural steel has been designed for the 250 psf live loads in addition to the slab dead loads. Precautions will be taken by the Contractor to shore the slab sections being removed. These are expected to be of a size no larger than the existing door opening (approximately 7 ft by 7 ft).

The removal of the coolant equipment enclosure wall will be performed after a portion of the operating floor slab has been removed. The entire enclosure wall will not be removed. Only a section of the wall where it is attached to the pool structure will be removed to permit the installation of the scaffolding required for dismantling the pool. The portions to be removed will not be supporting the floor slab. The available survey data indicates that the coolant equipment enclosure walls are not contaminated.

Comment 20: The security at MTL consists of a secured site perimeter with a site entrance security station and locked reactor building. The provisions for additional security during the decommissioning include the provision of a fence around the construction site with a locked gate and security watches provided by contractor. Access into the construction site will be through a gate which will have its own security station staffed by contractor security forces. The contractor will arrange with MTL to provide security passes for the decommissioning work force. At the conclusion of each days work the gate in the construction site fence will be locked and the reactor building doors will be locked.

Comment 21: The second sentence of Chapter 5 is in error. As pointed out in the first sentence, an accident analysis is not required since there is no fuel present at the site.

Comment 22: The technical specifications will be written using the word "shall."

Comment 23: During the characterization of the soil surrounding the reactor facility and its supporting auxillary structures, isotopes of Co and Cs were found. These are the primary man-made isotopes suspected to be present in this area. If radionuclides are detected in the soil at concentrations that exceed background levels by three standard deviations, an assessment will be performed to determine if additional soil must be removed. This determination will be based on a pathway exposure analysis to individuals of no greater than 10 mrem per year above background due to the detected radionuclides in the soil.

The methodology described above will be applied after the trenches and pits have been backfilled and when the surveying, sampling, and analysis described in Secion 8.3 of the DP have been performed. However, the soil area to be surveyed and sampled as described in Section 8.3 will be expanded to include the entire 42 by 48 meter area around the reactor.

Comment 24: The contact radiation level is expressed in dpm/100 cm for use during surface contamination level measurements following excavation. In addition, gamma spectrometry shall be performed for each sample and the results will be expressed in units of pCi/g.

Comment 25: Prior to conducting the grid-square surveys required as part of the reactor building termination survey, a quick scan of the facility and surrounding area will be conducted. The scan will focus on areas with a potential for the collection of contaminated materials. This would include areas potentially contaminated during operation such as concrete expansion joints or cracks. Other areas selected for scanning would include items and materials adjacent to areas which had been involved in decontamination activities.

Comment 26: Table 8-1 should note field survey instruments most often used for detecting low-level alpha and beta-gamma radioactivity. A revised Table 8-1 is shown below. The instruments listed here are only a few of the field instruments capable of measuring alpha and beta-gamma fixed surface radioactivity at reasonable levels above background.

Nuclides	Instrument Type, Model and Manufacturer	Detection Levels
Gross Alpha	ZnS(Au) PAC-4F-Eberline	$\geq$ 30 dpm
	Gas Proportional PAG-4G-Eberline	$\geq$ 50 dpm
Gross Beta-gamma	Gieger-Mueller (GM) RM-14-Eberline Radiation Monitor	$\geq$ 1000 dpm
	GM-Model 12-Ludlum	$\geq$ 1000 dpm
	GM-Model 2A-Ludlum	$\geq$ 1000 dpm
Beta-gamma & x-ray	Ion Chamber RO-2-Eberline	$\geq$ .01 mR/hr
gamma & x-ray	Pressurized Ion Chamber Model 450P-Victoreen	<25 keV x-rays mR/hr
Beta	Pressurized Ion Chamber Model 450P-Victoreen	<1 MeV & <1 uRem/hr

Comment 27: In the event that decommissioning work extends beyond NRC required implementation date, MTL would prefer to continue using the old 10 CFR Part 20 regulations until the work is completed. However, a statement requiring the contractor to abide by the regulations that are in effect for the Army at that time will be included in the Scope of Work.

Comment 28: If access to a commercial-licensed burial facility is lost, the following contingencies are planned:

(1) If the characteristics of the reactor waste qualify, the waste will be sent to Envirocare of Utah, Inc. This commercial company will not be affected by the compact-legislation closing date.

(2) The U.S. Army Armament, Munitions and Chemical Command is in negotiations with the Department of Energy to use their facilities if access to all commercial sites is lost.

(3) Waste could be shipped to the Defense Consolidation Facility in Snelling, SC, compacted, and returned to the installation for storage until Massachusetts is permitted to dispose of the waste in compliance with compact legislation.

(4) Package the waste and store on the installation for the specified period of time, then turn the waste over to the Commonwealth of Massachusetts IAW compact legislation.

Radiological Program for Characterizing the Demolished Concrete & Metal Wastes

As noted in the Decommissioning Plan, the radiation survey of the US AMTL Research Reactor facility indicates that most of the remaining radioactive materials are inside the reactor pool and in the reactor building basement.

The metal components inside the pool, (e.g. the reactor pedestal, grid plate, steel racks, remianing pipes/tubes,primary coolant holdup tank below the reactor, as well as the stainless steel pool liner) and some of the components in the basement are all considered readioactive waste and will be radiologically characterized before being packaged and shipped for land disposal as low-level waste.

The information included here contains the type of information that will be in the contractors radiological program, and used to protect workers and the public during the decommissioning.

Properly trained technicians, wearing appropriate protective clothing, safety glasses, etc., will characterized radiation fields present at the work site before work commences. They will time the dismantling tasks and monitor personnel exposure in order to keep these exposures within the limits prescribed in Section 2.1.4 and Table 2-1 of the D.C. Plan.

Personnel will wear pocket ion chambers (gamma dosimeters) inside their protective clothing to periodically monitor whole body gamma exposure. These dosimeters will be calibrated in accordance with the information proveded in Section 6.4.

High range field instruments such as an Eberline RO2 ion chamber will be used initially to locate and characterize high radiation fields. A suitable check source will be used periodically to ascertain that instruments are functioning properly.

Staging areas designed to control any spread of contamination will be used.

Metal structures will be removed as stated in Section 3.4.1. Appropriate respiratory protection will be used if contaminated or radioactive materials etc., are mechanically or torch cut as indicated in Section 3.4.2.

If decontamination of any metal parts is feasable and undertaken, liquids will be collected and processed as stated in Section 6.2.

After the removal and packaging of highly radioactive structures, more sensitive instruments will be used to detect radiation levels in the mR/hr and uR/hr ranges. Typical lower limits of detection for these instruments are given in Comment 26.

The biological shield wall is suspected to be partially radioactive and to contain both activation and contamination sources. The activation source would be limited to the portion near the reactor core elevation, especially in the neighborhood of the neutron beam penetrations. The activation nuclides considered to be present are Co-60, Eu-154 in the concrete and Co-60, Ni-63, and Fe-55 in the steel rebar.

Prior to breaking up the concrete a determination as to whether there is any removable contamination on the surface will be made. Subsequent measurements will be made to detect and characterize radionuclides within the cement.

Any material with radiation levels above background levels will be handled and packaged as radioactive waste.

DEPARTMENT OF THE ARMY
U.S. ARMY LABORATORY COMMAND
MATERIALS TECHNOLOGY LABORATORY
WATERTOWN, MASSACHUSETTS 02172-0001

REPLY TO
ATTENTION OF

SLCMT-D (340)

28 February 1992

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Assumption of duties as Deputy Director/Commander

1. Effective, 1 March 1992, the undersigned assumes command of the U.S. Army Materials Technology Laboratory (2HMAA) Watertown, MA 02172-0001 vice Melvin E. Adams, MAJ, AR.

2. Authority: Paragraph 3-4 and 3-5, AR 600-20.

3. Period from: 1 March 1992 to an indefinite period.

JAMES T. NAUGHTON
MAJ, OD
Deputy Director/Commander

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DEPARTMENT OF THE ARMY
U.S. ARMY LABORATORY COMMAND
MATERIALS TECHNOLOGY LABORATORY
WATERTOWN, MASSACHUSETTS 02172-0001

REPLY TO
ATTENTION OF

SLCMT-DD (340) 2 March 1992

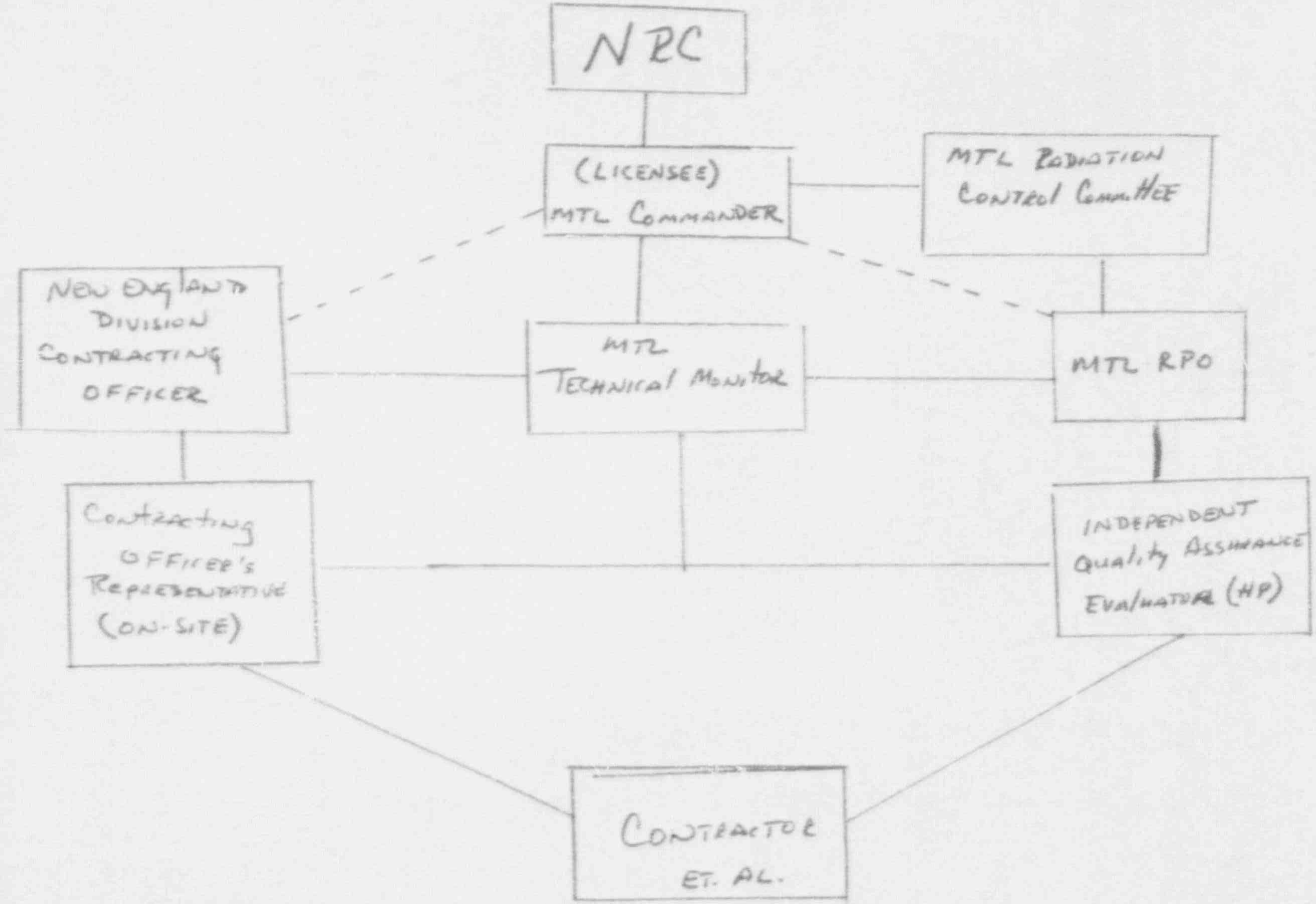
MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Signature Block, Deputy Director/Commander

As of 2 March 1992 all correspondence for the signature of the Deputy Director/Commander, MTL will be as follows:

JAMES T. NAUGHTON
MAJ, OD
Deputy Director/Commander

DISTRIBUTION;
D



ENCL TO COMMENT 8