Certification Docket for the Remedial Action Performed at the Associate Aircraft Site, Fairfield, Ohio, 1994–1995

Department of Energy
Former Sites Restoration Division
Oak Ridge Operations Office

October 1996

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CERTIFICATION DOCKET

FOR THE

REMEDIAL ACTION PERFORMED AT THE

ASSOCIATE AIRCRAFT SITE, FAIRFIELD, OHIO, 1994-1995

OCTOBER 1996

Prepared for

UNITED STATES DEPARTMENT OF ENERGY

Oak Ridge Operations Office

Under Contract No. DE-AC05-91OR21949

By

Bechtel National, Inc.

Oak Ridge, Tennessee

Bechtel Job No. 14501

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ACRONYMS

AEC	Atomic Energy Commission
ALARA	as low as reasonably achievable
BNI	Bechtel National, Inc.
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DCG	derived concentration guide
DOE	U. S. Department of Energy
DOE-FSRD	DOE Former Sites Restoration Division
EPA	U. S. Environmental Protection Agency
FUSRAP	Formerly Utilized Sites Remedial Action Program
HEPA	high-efficiency particulate air
HSP	health and safety plan
IVC	independent verification contractor
LLRW	low-level radioactive waste
MED	Manhattan Engineer District
NEPA	National Environmental Policy Act
NLO	National Lead of Ohio
NRC	Nuclear Regulatory Commission
ORNL	Oak Ridge National Laboratory
PIC	pressurized ionization chamber
PMC	project management contractor
PPE	personal protective equipment
RCRA	Resource Conservation and Recovery Act
RSS	radiological support subcontractor
TNS	ThermoNuclear Services, Inc. (now Thermo NUtech)

UNITS OF MEASURE

cm	centimeter
cpm	counts per minute
dpm	disintegrations per minute
ft	foot
g	gram
gal	gallon
h	hour
in.	inch
lb	pound
m	meter
μCi	microcurie
ml	milliliter
μR	microroentgen
mR	milliroentgen
mrad	millirad
mrem	millirem
pCi	picocurie
yd	yard
yr	year

INTRODUCTION

The U.S. Department of Energy (DOE), Office of Environmental Management, Division of Off-Site Programs and/or predecessor agencies, offices, and divisions conducted a remedial action project at the former Associate Aircraft Tool and Manufacturing Company in Fairfield, Ohio, from December 1994 to June 1995. The work was administered by DOE's Formerly Utilized Sites Remedial Action Program (FUSRAP) under the direction of the Deputy Assistant Secretary for Environmental Restoration.

The United States Congress authorized DOE to initiate FUSRAP in 1974 to identify and clean up or otherwise control sites where chemical contamination and/or residual radioactive material (exceeding the current guidelines and criteria) remains from the early years of the nation's atomic energy program or from commercial operations causing conditions that Congress has authorized DOE to remedy. The objectives of FUSRAP as they apply to the Associate Aircraft site are to

- identify and assess sites formerly utilized in support of early Manhattan Engineer District/Atomic Energy Commission (MED/AEC) nuclear work to determine whether further decontamination or control is needed;

- decontaminate or apply controls to the sites, where needed, to permit conformance to current applicable guidelines;

- dispose of or stabilize all generated radioactive waste residues in an environmentally acceptable manner while minimizing waste volumes;

- accomplish work in accordance with appropriate landowner agreements and local and state environmental and land-use requirements to the extent required by federal law and applicable DOE orders, regulations, standards, policies, and procedures;

- certify, at the completion of the remedial action, that the condition of the site complies with guidelines and that the release of the site without radiological restrictions is appropriate; and

- remove hazardous waste that is mixed with radioactively contaminated waste resulting from MED/AEC-related work, regardless of its characteristics as listed under the Resource Conservation and Recovery Act (RCRA).

FUSRAP is managed by the DOE Oak Ridge Operations Office, Former Sites Restoration Division (DOE-FSRD). Bechtel National, Inc. (BNI) is the project management contractor (PMC) for FUSRAP. ThermoNuclear Services, Inc. (TNS) (now Thermo NUtech) serves as the

radiological support subcontractor (RSS) for sampling and analysis and provides health physics technological support for site activities. Oak Ridge National Laboratory (ORNL) was the independent verification contractor (IVC) for the Associate Aircraft site.

Environmental Regulations Applicable to FUSRAP

To assess the environmental impacts of federal actions, Executive Order 11991 empowered the Council on Environmental Quality (CEQ) to issue regulations to federal agencies for implementing the procedural provisions of the National Environmental Policy Act (NEPA) that are mandatory under law. In June 1979, CEQ issued regulations containing guidance and specific requirements. DOE guidelines for implementing the NEPA process and satisfying the CEQ regulations were subsequently issued and became effective on March 28, 1980. These regulations were revised April 24, 1992 (57 FR 15122).

The NEPA process requires FUSRAP decision-makers to identify and assess the environmental consequences of proposed actions before beginning remedial action, developing disposal sites, or transporting and emplacing radioactive wastes. For the remedial activities discussed in this certification docket, the NEPA requirements were satisfied by the preparation and approval of a categorical exclusion for the remedial action. This NEPA document confirmed that there would be no adverse effects on the environment from the remedial activities.

The cleanup of radioactively contaminated soil and building debris at the former Associate Aircraft Tool and Manufacturing Company was conducted under the authority of the Atomic Energy Act of 1954, as amended, and subsequent related legislation (Ref. 1).

Work performed under FUSRAP by the PMC, construction and service subcontractors, or other project subcontractors is governed by the provisions of the quality assurance program developed for the project and is in compliance with DOE Order 5700.6C. The effectiveness of the quality assurance program is assessed regularly by the BNI quality assurance organization, DOE-FSRD, and other DOE assessment organizations.

Property Identification

The Associate Aircraft site consists of an operating machine shop with a total area of approximately 1,900 to 2,400-m^2 (20,000 to 25,000-ft^2). The building is located at 3660 Dixie Highway in Fairfield, Ohio. Approximately 3 m^2 (27 ft^2) in the northern parking lot and 74 m^2 (792 ft^2) on the adjacent southern side of the building also required remediation.

A removal action was conducted from December 1994 to May 1995. Post-remedial action surveys and samples have demonstrated, and DOE has certified, that the locations remediated are in compliance with applicable DOE and proposed Environmental Protection Agency (EPA) and

Nuclear Regulatory Commission (NRC) standards and criteria that protect human health and safety and the environment. A notice of certification of the radiological condition of the site was published in the *Federal Register* on September 16, 1996.

Docket Contents

The purpose of this docket is to document the successful decontamination of radioactively contaminated areas at the former Associate Aircraft site in 1994 and 1995. The material in this docket consists of documents supporting DOE certification that conditions at the subject property are in compliance with the criteria and standards determined to be applicable to the property. Furthermore, this certification docket provides the documents certifying that the use of the property will not result in any significant radiological hazard to the general public from residual radioactivity that originated during activities conducted by DOE or its predecessor agencies.

Exhibit I of this docket is a summary of remedial activities conducted at the Associate Aircraft site. The exhibit provides a brief history of the origin of the contamination at the site, the radiological characterization activities conducted, the remedial action performed, post-remedial action survey and soil sample results, and independent verification activities. Cost information from all phases of the remedial actions conducted at the site is also included in Exhibit I. Appendix A of Exhibit I contains the DOE guidelines for residual radioactive materials at FUSRAP sites as well as the site-specific soil concentration criteria for total uranium derived for the Associate Aircraft site.

Exhibit II consists of the letters, memos, and reports that were produced to document the entire remedial action process from designation of the site under FUSRAP to the certification that no radiological restrictions limit the future use of the site. Documents that are brief are included in Exhibit II. Lengthy documents are referenced in the exhibit and are provided as an attachment to the certification docket at publication.

Exhibit III provides diagrams of the site identifying the areas of contamination that were remediated during cleanup activities.

The certification docket and associated references will be archived by DOE through the Assistant Secretary for Management and Administration. Copies will be available for public review between 9:00 a.m. and 4:00 p.m., Monday through Friday (except federal holidays), at the DOE Public Reading Room located in Room 1E-190 of the Forrestal Building, 1000 Independence Avenue, SW, Washington, D.C. Copies will also be available in the Public Document Room, Federal Building, 200 Administration Road, Oak Ridge, Tennessee. A copy will be placed in the Lane Public Library, Fairfield Branch, 701 Wessel Drive, Fairfield, Ohio.

EXHIBIT I

SUMMARY OF REMEDIAL ACTION ACTIVITIES AT THE ASSOCIATE AIRCRAFT SITE FAIRFIELD, OHIO, 1994 - 1995

1.0 INTRODUCTION

Exhibit I summarizes the activities culminating in the certification that radiological conditions at the former Associate Aircraft site are in compliance with applicable guidelines and that future use of the site will not result in exposure to radioactivity above DOE criteria and standards or the proposed EPA and NRC guidelines to protect members of the general public and occupants of the site. These activities were conducted under FUSRAP (Ref. 2). This summary includes a discussion of the remedial action process at the Associate Aircraft site, including

- radiological characterization of the site,
- designation of the property for remedial action,
- performance of the remedial action, and
- verification that residual radioactivity above guidelines has been removed.

Further details of each activity described in Exhibit I are included in the referenced documents.

The Associate Aircraft site is located approximately 24 km (15 mi) northwest of Cincinnati, Ohio, on Dixie Highway (State Route 4) in Fairfield, Ohio (Figure I-1). The remedial action took place in the former Associate Aircraft building and an exterior area of a common parking lot shared by two other businesses (Figure I-2).

2.0 SITE HISTORY

In 1956, AEC and National Lead of Ohio (NLO) contracted with Associate Aircraft Tool and Manufacturing Company, a Cincinnati area machine shop, to machine hollow slugs from natural uranium (i.e., neither depleted or enriched) from February to September 1956 for the Hanford and Savannah River reactors. The primary activities included machining, hollow drilling, reaming, and turning slugs to a final outside diameter. Records show that approximately 95,000 slugs were machined during the 8-month contract period; during the last 3 months of the contract, Associate Aircraft machined approximately 10,000 to 15,000 slugs per month. In September, AEC decided that the capability provided by Associate Aircraft was no longer necessary, and the contract was allowed to expire.

From October through November 12, 1956, the site was decontaminated to levels considered acceptable under the regulations in effect at that time. The decontamination was performed by Associate Aircraft under NLO supervision and health physics support. The final contract amendment required Associate Aircraft "to decontaminate its plant and equipment as required by the contractor's representative . . ." and to return all machining equipment to NLO (Ref. 3).

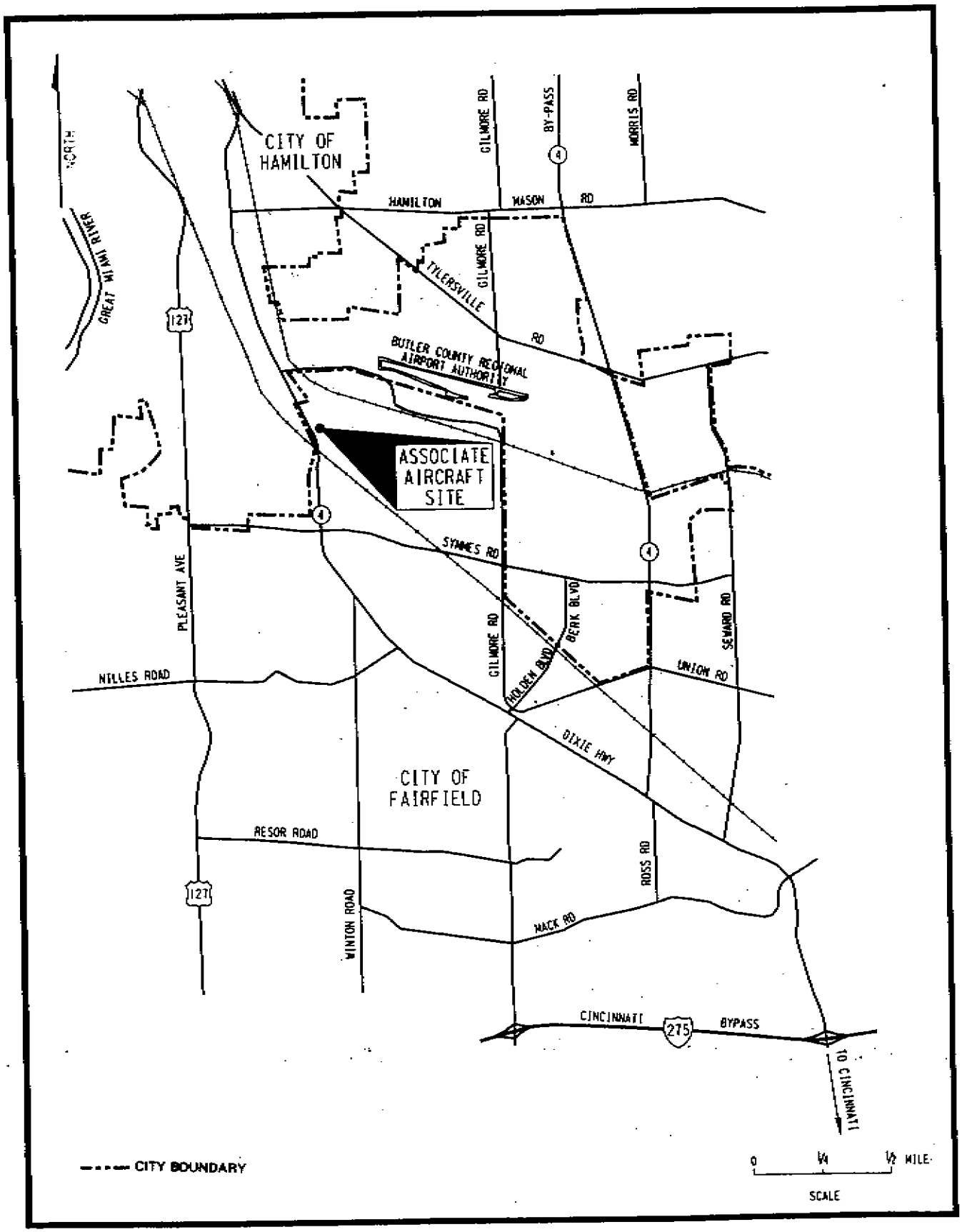

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Figure 1-1
General Site
Location

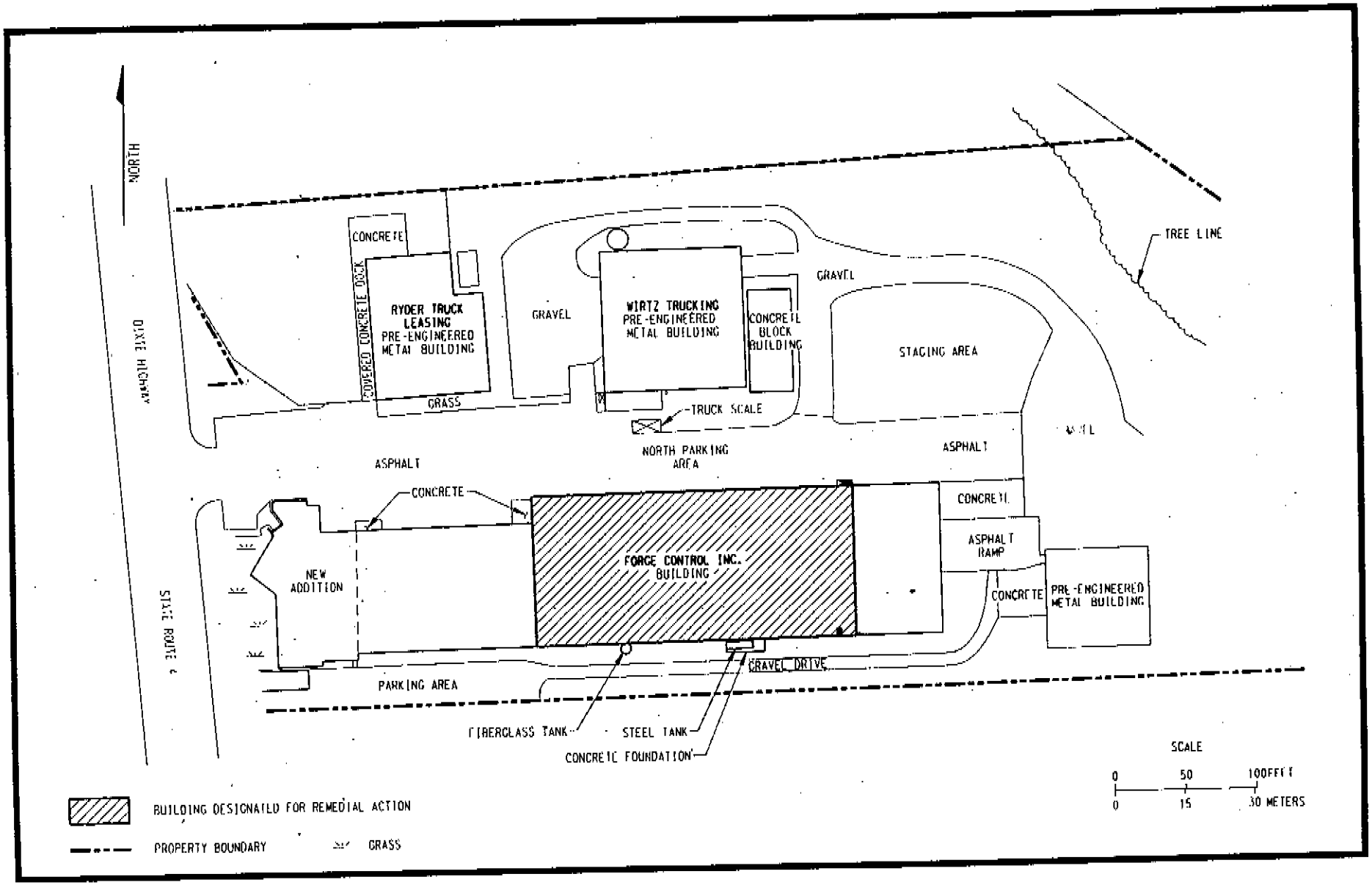

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Figure I-2
Site Plan

3.0 SITE DESCRIPTION

The Associate Aircraft site, at 3660 Dixie Highway in Fairfield, Ohio, is currently an operating machine shop with an area of approximately 1,900- to 2,400-m^2 (20,000- to 25,000-ft^2) (Figure I-2). The current owner and occupant, Force Control Industries Inc., purchased the site in 1969 from Dixie Machinery. Based on an interview with a former worker of the Associate Aircraft facility, the site has not changed extensively since the 1950s, but some minor changes include new partition walls and an addition to the front of the building.

A radiological survey in July 1992 verified that the front portion of the property did not contain residual uranium contamination above background concentrations (Ref. 3). This determination allowed a planned construction project to begin. The construction involved adding an office area to the front of the existing structure and landscaping the remaining area between the new building and Dixie Highway (Figure I-2).

4.0 RADIOLOGICAL HISTORY AND STATUS

This section briefly describes the sequence of events that led to designation of the property for remedial action under FUSRAP.

4.1 RADIOLOGICAL SURVEYS

Radiological surveys were conducted by NLO during the machining operations and as part of an intensive decontamination campaign. Alpha readings were not excessive; the highest reading was 207 dpm/100 cm^2 during the operations. The December 1956 decontamination report notes that site remediation required 5 weeks. Survey measurements of alpha radiation were well below the applicable guidelines, while one external gamma exposure rate was at the current guideline of 20 μR/h above background for inhabitable structures. The maximum beta exposure rate recorded was 0.8 mR/h. Contamination levels on machine surfaces as recorded in 1956 exceeded current guidelines; final disposition of the equipment is uncertain but is assumed to have complied with contractual requirements.

During a limited radiological survey in June 1992, uranium contamination was found in some concrete expansion joints and on several overhead horizontal surfaces. Beta dose rate measurements as high as 3 mrad/h in concrete expansion joints and 0.5 mrad/h on the roof supports were detected with portable survey instruments. One spot in a concrete expansion joint had a beta/gamma exposure rate of 120 μR/h at contact. In July 1992, one small area of elevated radioactivity found outside at the southwestern corner of the building was removed by the sampling, and no other contamination was found in that portion of the property. A radiological survey of the remainder of the property was conducted during September 14-18, 1992; this survey identified additional residual uranium contamination inside the building. Several small isolated

subgrade contaminated areas were found around the building. A complete radiological survey report, *Results of the Radiological Survey at the Former Associate Aircraft Tool and Manufacturing Company Site, Fairfield, Ohio*, was prepared and published by ORNL (Ref. 3).

4.2 REMEDIAL ACTION GUIDELINES

Residual radioactive contamination at the site is believed to have originated from the machining of natural uranium (neither depleted or enriched) slugs. Standards and criteria governing the release of properties for future use are included in DOE Order 5400.5 (summarized in Table I-1), "Radiation Protection of the Public and Environment," and are comparable to those proposed by EPA and NRC. The remedial action guidelines for alpha activity from natural uranium, uranium-235, uranium-238, and associated decay products on indoor and outdoor structure surfaces are 5,000 dpm/100 cm^2 averaged over the whole surface area; 15,000 dpm/100 cm^2 maximum; and 1,000 dpm/100 cm^2 removable. The site-specific criterion for residual radioactivity in soil is 35 pCi/g for total uranium averaged over the remediated area. This soil criterion was based on the DOE comparison of the as-low-as-reasonably-achievable (ALARA) principle with site-specific scenarios. These scenarios and concentrations were well below the concentrations of 280 pCi/g total uranium (for residential use) and 970 pCi/g total uranium (for current use - industrial workshop) that could result in an exposure rate of 30 mrem/yr as derived by Argonne National Laboratory (Ref. 4). The soil concentration of 35 pCi/g, applied under extremely conservative exposure scenarios, could result in a maximum dose of approximately 2 mrem/yr to the public, a level that is indistinguishable from background and insignificant when compared to the 100 mrem/yr guideline.

Because only trace concentrations of radium and thorium remain in uranium metal after ore refinement processing, extremely low concentrations of these two radionuclides were detected in characterization samples. Uranium isotopes accounted for all the radioactive contamination above the DOE criteria at the site.

All lead-containing paint that was contaminated with residual radioactive material above the site-specific criteria was removed from the site and managed as a mixed waste stream in accordance with applicable hazardous waste regulations. Asbestos-containing floor tiles contaminated with radioactive materials were removed, packaged, and shipped to a commercial low-level radioactive waste disposal. Both materials were found within the office and bathroom areas of Zone V. These constituents were the only nonradioactive, regulated materials mixed with radioactive materials that required removal.

4.3 POST-REMEDIAL ACTION STATUS

All residual radioactive materials exceeding the site-specific guidelines were removed from the Associate Aircraft site and disposed of as low-level radioactive waste at Envirocare of Utah,

Table I-1

Summary of DOE Guidelines for Residual Radioactive Contamination

Base Dose Limits

The basic limit for the annual radiation dose (excluding radon) received by an individual member of the general public is 100 mrem/yr. In implementing this limit, DOE applies ALARA principles to set site-specific guidelines.

External Gamma Radiation Limit for Structures

The average level of gamma radiation inside a building or habitable structure on a site that has no radiological restrictions on its use must not exceed the background level by more than 20 μR/h and will comply with the basic dose limits when an appropriate-use scenario is considered.

Site-Specific Soil Guidelines

The site-specific criterion for soil is 35 pCi/g of total uranium (Reference 3).

Indoor/Outdoor Structure Surface Contamination

The residual contamination guidelines for fixed and transferable radioactive contamination (dpm/100 cm^2) (DOE 5400.5):

Radionuclide	Average	Maximum	Removable
Uranium-natural, uranium-235, uranium-238, and associated decay products	5,000 (alpha)	15,000 (alpha)	1,000 alpha
Beta-/gamma-emitters (radionuclides with decay modes other than alpha emissions)	5,000 (beta/gamma)	15,000 (beta/gamma)	1,000 (beta/gamma)

except for a 167-m^2 (200-yd^2) area immediately east of the eastern wall roll-up door of Zone VIII. The depth [1.2 m (4 ft) sub-slab] and concentrations of the low-level radioactivity, predicted future use, and costs of remediation (relocation of equipment, lost productivity for Force Control, Inc., volume for shipping, labor, etc.) were evaluated by performing a hazard assessment. Sample results indicated that the maximum total uranium contamination in soil is 134 pCi/g. This level exceeds the ALARA-based site-specific soil criterion of 35 pCi/g total uranium but not the concentration guidelines derived by Argonne National Laboratory for this site [260 and 960 pCi/g (Ref. 4)] that would limit public dose to less than 100 mrem/yr. Therefore a hazard assessment was conducted and approved by DOE (Refs. 5 and 6); the assessment describes the effects of this localized area of residual radioactive material under reasonable future use scenarios. The findings of the hazard assessment were that a total uranium concentration of 134 pCi/g is equal to a potential dose of 4.15 mrem/yr, which is less than 5 percent of the 100 mrem/yr dose limit. The results of the hazard assessment and the cost of any additional action indicate that no further characterization or remediation is necessary in this isolated area.

The post-remedial action survey data indicated that all areas of the Associate Aircraft site determined to be contaminated during characterization surveys are now in compliance with standards applicable to residual radioactive contamination. After reviewing post-remedial action measurements, survey procedures, and quality assurance data, the IVC confirmed on May 20, 1995, that the site had been decontaminated to the site-specific radiological and guidelines.

After completing verification activities, the IVC notified DOE-Headquarters, Division of Facility and Site Decommissioning, and DOE-FSRD, of its findings and recommendations. DOE reviewed the data to determine whether the remedial action was successful. Based on this review, radiological conditions at the site were determined to be in compliance with DOE decontamination criteria and standards to protect health, safety, and the environment, and DOE declared the site as being appropriate for future use without radiological restrictions.

5.0 SUMMARY OF REMEDIAL ACTION

The following sections describe the remedial action process and the actions taken to protect the public and the environment.

5.1 PRE-REMEDIAL ACTION ACTIVITIES

After the appropriate real estate instrument (or documented permission) was obtained from the property owner but before remedial action began, each work area was surveyed to define the boundaries of radioactive contamination more accurately. These surveys supplemented existing characterization information and provided the analytical data necessary to classify the waste to be generated during remediation, so that it could be accepted at the low-level radioactive waste disposal facility, Envirocare, in Clive, Utah.

Each work area was enclosed with plastic sheeting draped from the ceiling to the floor to prevent any inadvertent migration of contaminants during the decontamination process. Absorbent socks were placed around areas that required the use of water as a cooling or lubricating agent or for dust minimization (water mist). Appropriate signs were placed and areas roped off to limit access to work zones and prevent potential inadvertent exposures during decontamination. A control point was established to regulate and survey equipment and personnel entering and exiting the work area.

5.2 DECONTAMINATION ACTIVITIES

To accomplish remedial action tasks without adversely affecting ongoing site production activities, the contaminated portions of the building were subdivided into zones, and remedial action proceeded in a phased approach (Figure I-3). As work in each zone neared completion, the next zone was prepared for decontamination work. Preparation activities included relocating machinery and equipment, covering fixed structures with plastic, and establishing an access control point (with plastic curtains, etc.).

The sequence of decontaminating an area began with the interior roof decking and proceeded down the walls to the floors and expansion joints, then to sub-slab soils as indicated by direct surveys (Figure I-4). The contaminated interior roof decking, steel trusses, ventilation fans, and lighting fixtures in zones I, II, III, IV, and V were vacuumed, cleaned with dry rags, and where necessary, spot wiped with soapy rags, degreasing solution, or an approved equivalent. Any remaining contaminated areas were decontaminated by wire brushing or grinding down to the bare metal surface with a vacuum attachment on the surface grinder.

The contaminated glass window panes were remediated by vacuuming and/or wiping with soapy rags, degreasing solution, or equivalent. When the decontamination efforts failed to reduce the contamination level of a window, the window was replaced. Walls were decontaminated with a Vacublast™ system, chipping hammer, or surface grinder. The Vacublast™ system uses steel shot to mechanically pulverize and remove the top 0.32- to 0.64-cm (0.13- to 0.25-in.) layer of the wall or floor; the depth of the removal can be adjusted by the operator. All radioactively contaminated lead-containing paint was removed during this action, and the waste stream was treated in accordance with applicable federal regulations.

The concrete floors in zones II, III, IV, and V were decontaminated using vacuuming, surface abrasion with a Blastrac™ unit, or grinding and vacuuming. The radioactively contaminated asbestos-containing vinyl flooring of Zone V was removed in accordance with the asbestos abatement program (Ref. 7). The exposed concrete floor was then resurveyed and decontaminated as necessary using the same techniques as used in previous zones.

Some equipment supports embedded in the floors were not successfully decontaminated by Blastrac™ operations; these supports were removed with a light-weight (60-lb) jackhammer. All

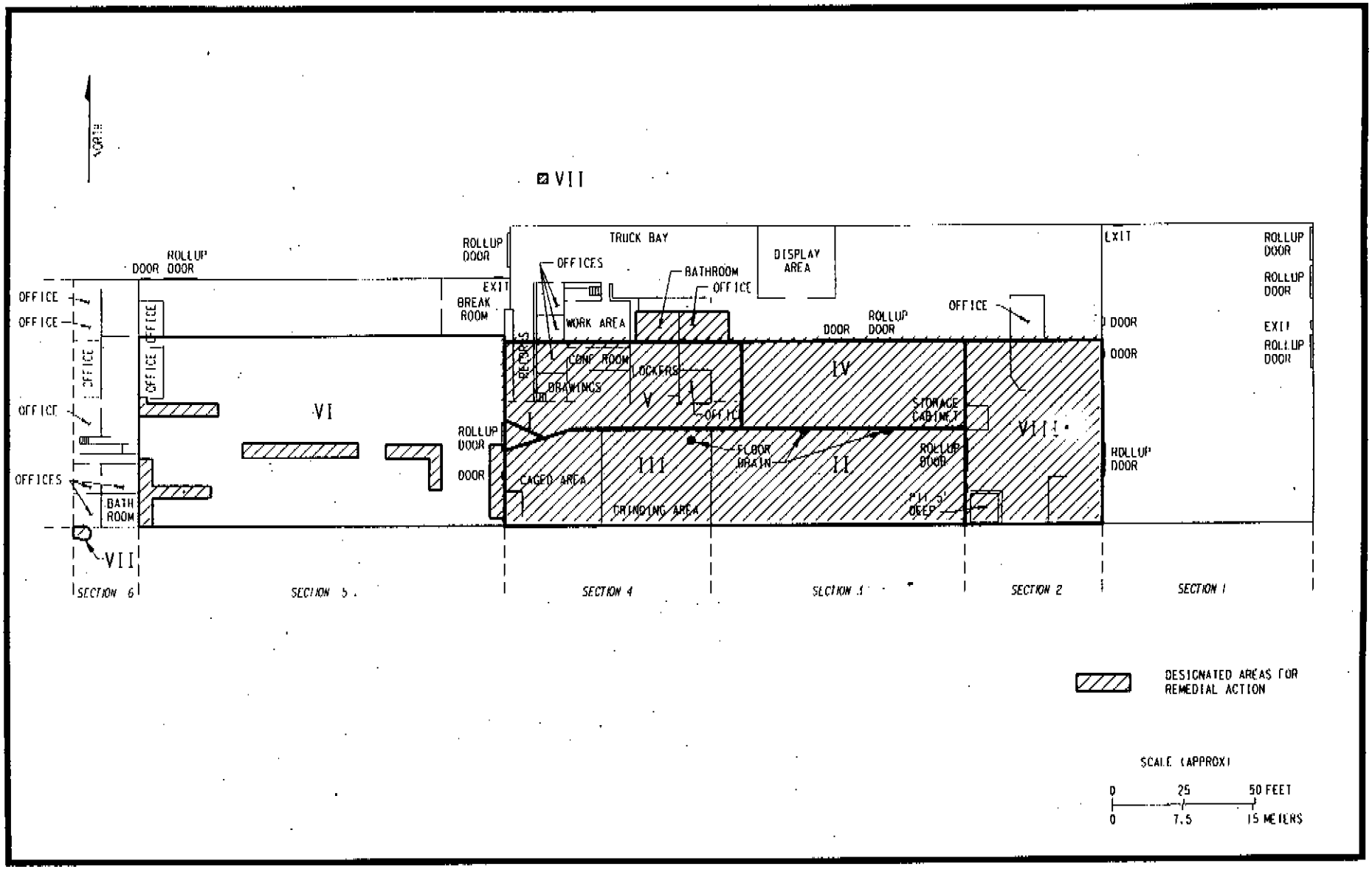

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Figure I-3
Sequence of Work

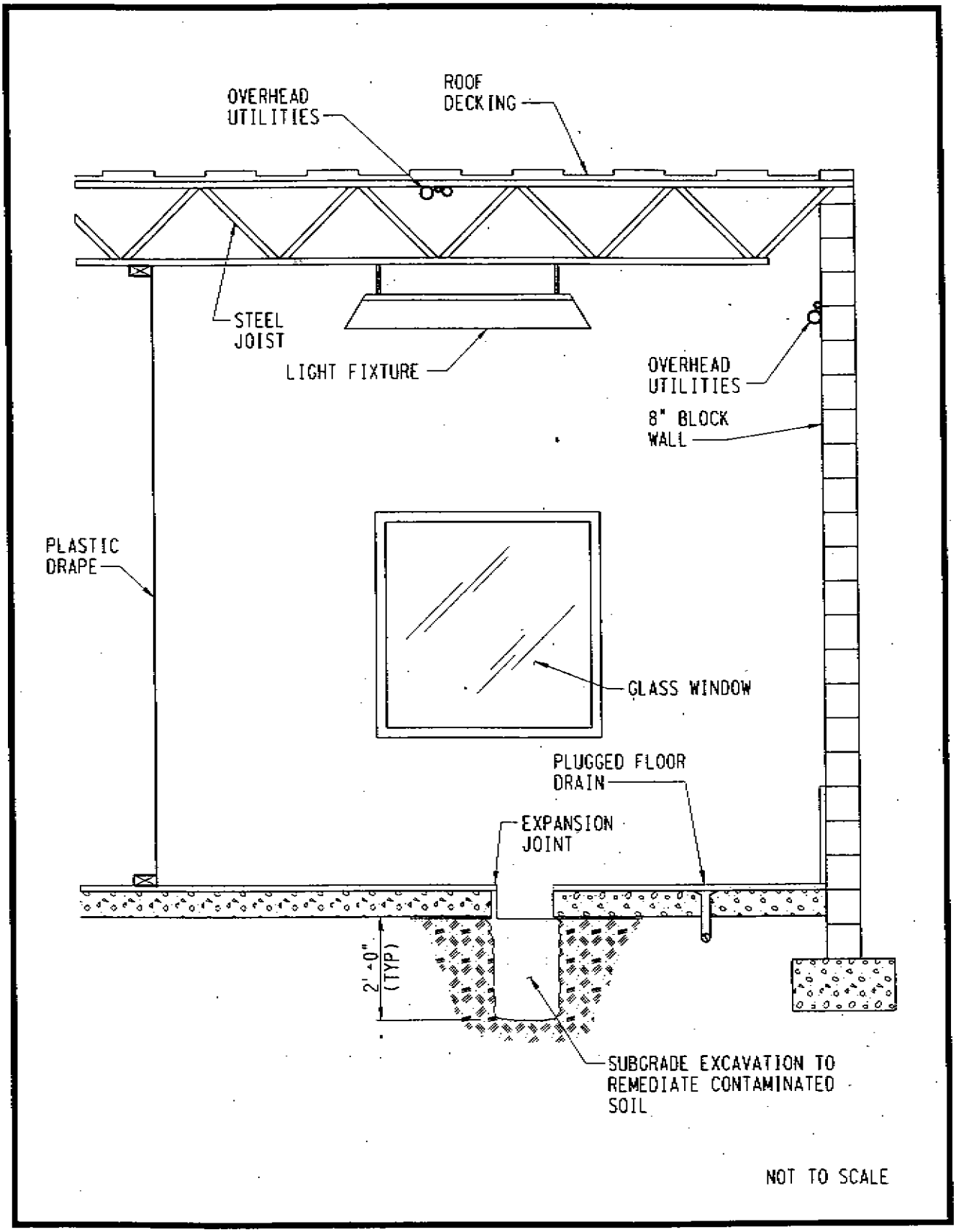

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Figure I-4
Typical Components within a Zone

contaminated lead anchor and sleeve inserts embedded in the floor were removed with a coring bit. The radioactively contaminated lead waste and lead-containing paint were treated with the alternate treatment technology of immobilization (i.e., macroencapsulation) in accordance with 40 CFR Part 268 before being shipped for commercial disposal.

All radioactively contaminated expansion joint material in zones II, III, IV, V, VI, and VIII was removed and disposed of as low-level radioactive waste. The trenches remaining after concrete removal were surveyed to ensure that all radioactively contaminated soil above the guideline had been removed. Any residual radioactive contamination above the site-specific criterion in the soil beneath the floor slabs was excavated and disposed of as low-level radioactive waste.

All below-grade and exterior soils found to be contaminated above the 35-pCi/g guideline were removed, except for the 167-m^2 (200-yd^2) area below Zone VIII (Ref. 8). This sub-grade concentration was above the ALARA criterion of 35 pCi/g but well below the criterion of 260 pCi/g derived by Argonne National Laboratory.

The exterior areas consisted of a 74-m^2 (792-ft^2) area along the southern side of the building and an approximately 3-m^2 (27-ft^2) area in the parking lot north of the Force Control building. All soils and material removed from the building and from the exterior areas were disposed of as low-level radioactive waste. All soils were surveyed during excavation and sampled for gamma spectral analysis as excavations were completed to ensure that all residual uranium contamination above guidelines had been removed.

The bathroom and office area in Zone V contained radioactively contaminated lead-based paint that exceeded the RCRA limits for leachable lead. Asbestos-containing floor tiles contaminated with residual radioactive contamination were found in the office area. These areas were enclosed in a high-density plastic negative-pressure containment, in compliance with the EPA regulations for containment during remediation. The radioactively contaminated lead-containing paint and asbestos-containing floor tile were removed, solidified, or bagged (which rendered them non-hazardous for shipment), packaged, and shipped offsite for commercial disposal.

The main interior floor drain system (in zones II, III, and IV exiting the southern side of the building) and bathroom floor drain (in the Zone V bathroom) were surveyed and found to contain levels of radioactivity significantly above guidelines. These drain lines were excavated and the remaining areas surveyed to ensure that all contaminated piping, debris, and soil were removed. The resulting trenches were surveyed to determine the residual radioactive contaminant concentration and then backfilled with clean material. None of the excavated material was used as fill.

After remedial actions were complete in each area and the IVC had verified the area to be free of any residual radioactive contamination above applicable guidelines, BNI restored the area to the original or comparable condition and decontaminated the equipment used in the remedial action to make it suitable for further use at the site. The roof and trusses were surfaced with a rust-inhibiting coating; the walls were patched, epoxied, and painted; the concrete floors and trenches were filled; and the concrete slab flooring was replaced and top coated. The exterior areas were backfilled with clean fill material, graded, and seeded. The parking area was restored to the original condition after the excavation was backfilled.

The primary exposure pathways to radioactive material for members of the general public during the remedial action were inhalation and ingestion of radioactively contaminated airborne dust generated during soil excavation and decontamination activities. During remedial action the potential for contaminant migration was minimized by:

- wet dust suppression (using water mist) as needed during soil or concrete removal and transport;
- use of intermodal boxes with metal lids to prevent loss of the contents during shipment;
- placement of silt fences around exterior contaminated work areas;
- enclosure of work areas of the interior zones with plastic sheeting and establishment of a high-efficiency particulate air-filtered (HEPA), negative-pressure containment;
- use of Vacublast™ with HEPA attachment; and
- placement of large sheets of plastic in and around contaminated work areas where practicable.

5.3 POST-REMEDIAL ACTION MEASUREMENTS

Before post-remedial action samples were collected or surveys were performed, radiological surveys and soil analyses were conducted at three remote background locations. These locations (Table I-2) were selected because they were near the Associate Aircraft site and can provide radiological data representative of the area but are not influenced by the Associate Aircraft work. Background measurements and soil samples provide a reference with which analytical results obtained before, during, and after the remedial action may be compared.

To verify that no radioactivity exceeding guidelines remained in the remediated areas, BNI conducted radiological surveys as remedial actions were completed in each zone. These surveys included direct surface measurements on interior surfaces such as the roof decking, trusses, walls, concrete, piping, and the trenches that remained after the expansion and crack control joints were removed. Gamma spectroscopy analyses were conducted on post-remedial action soils from excavated areas (interior trenches and exterior excavations), and external gamma exposure rates were determined using a pressurized ionization chamber (PIC). Soil analyses were performed both onsite and in the laboratory.

Table I-2

Total Uranium Concentrations and External Gamma Radiation Exposure Rates at Background Locations

	Location	Gamma Radiation Exposure Rate (μR/h)	Total Uranium (pCi/g)
1.	Ohio National Guard Armory, Corner of Gilmore Rd. and Symmes Rd., Hamilton/Fairfield	8.5	[a]
2.	Butler County Fairgrounds, Youth Activities Building, 1715 Fairgrove Ave., Hamilton. Middle interior room at the intersection of expansion joints.	7.6	[a]
3.	Hamilton City Fire Department, House #6, Truck Bay	9.9	[a]
Average Background Radioactivity		8.7	0.41
Guidelines:		[b]	35.0

[a]All soils from background locations were composited and analyzed to obtain an average background result.

[b]Less than 20 μR/h above background in habitable structures, or maximum of 100 mrem/yr for all pathways, excluding radon.

Direct surface contamination is the total amount of radioactive contamination on a surface; therefore, a survey of direct surface contamination will quantify both the removable and the permanently fixed contamination. Transferable contamination is the removable component of the total contamination on the surface and is the material that could conceivably be picked up on clothing or skin upon contact.

To quantify direct surface contamination, radiation detection instrumentation is placed directly on the surface to measure the radioactivity emitted from a known surface area. Direct alpha radiation is measured with an alpha scintillation detector connected to a scaler, an instrument that counts the number of radioactive disintegrations (decays) detected in a specified amount of time. Direct beta/gamma radiation measurements are obtained with a Geiger-Mueller probe attached to a scaler. The probe is placed on the surface to be surveyed, and pulses are allowed to accumulate for one minute on the scaler, resulting in a measurement of counts per minute (cpm) for the surface area. These measurements are then converted, with appropriate calibration and conversion factors, to dpm/100 cm^2, a commonly used measurement in health physics.

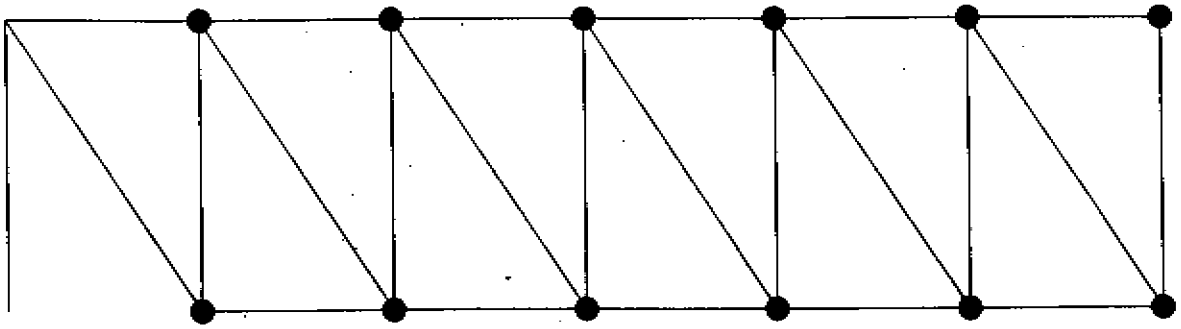
Transferable contamination is the loose radioactive material that can be easily removed from a surface when it is wiped with a soft absorbent paper. The paper is placed in a portable smear counter, and alpha and beta/gamma radiation are each counted for one minute. The resulting measurements in counts per minute are then readily converted to dpm/100 cm^2.

The external gamma exposure rates were measured using a PIC. The measurement is taken at a height of 1 m (3 ft). Readings collected at this elevation provide an estimate of the potential exposure from gamma radiation to the critical body organs near the ground or floor.

The soil samples from each exterior area of the site (Zone VII) were collected at a frequency of 25 equally spaced plugs per 100-m^2 surface area; the plugs had a depth of 15 cm (6 in.) and diameter of 2.5 cm (1 in.). This sampling method produces a reproducible and reliable sample of the 100-m^2 area in accordance with DOE Order 5400.5.

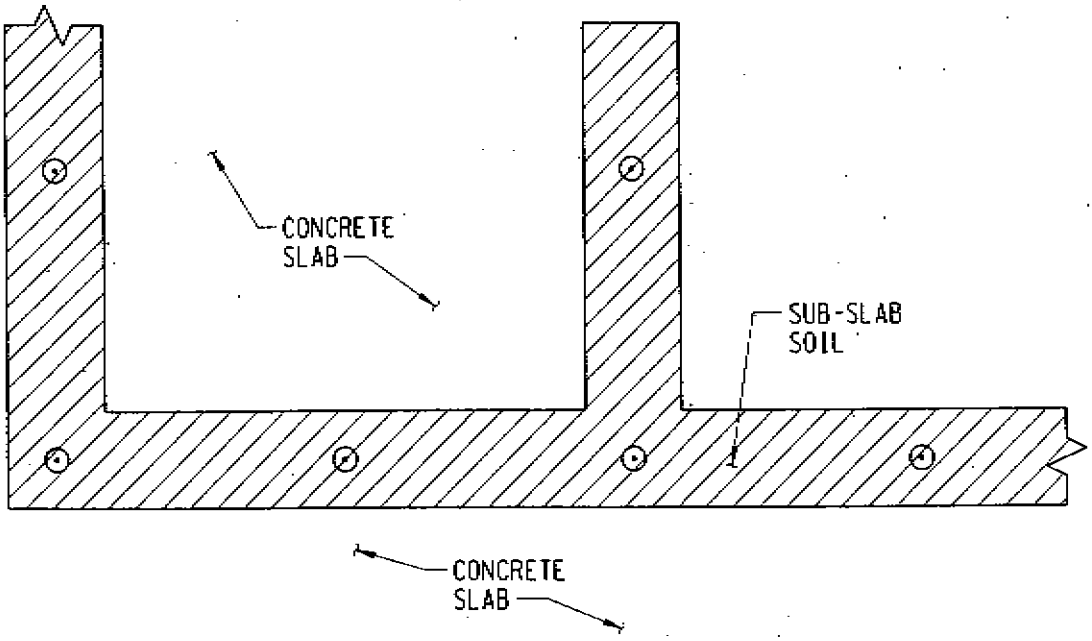
Interior (sub-slab) soil samples were also collected from each trench created by the removal of contaminated expansion or crack control joints. The method used was similar to that for exterior soil sampling in Zone VII. A 100-m^2 area was determined by considering the 6-in.-(15-cm-) wide trench formed when a contaminated expansion or crack control joint was removed and the total width and length of the trench (Figure I-5). Twenty-five plug soil samples were collected from each 100-m^2 (120-yd^2) area and composited for gamma spectroscopy analysis to ensure that the average residual uranium contamination was below 35 pCi/g total uranium.

Post-remedial action surveys were conducted by TNS, the RSS, on behalf of BNI. Survey techniques used during the post-remedial action and verification surveys included measurements of direct and transferable surface contamination, walkover gamma scans, exposure rate measurements, and soil sampling. Survey techniques are described in the *Associate Aircraft Site*



TYPICAL SURVEY LOCATIONS OF A TRUSS

(CROSS-SECTIONAL VIEW)



TYPICAL SAMPLING LOCATIONS OF AN EXPANSION JOINT

(PLAN VIEW)

● DIRECT AND TRANSFERABLE SURVEY LOCATION

⊙ SOIL SAMPLING LOCATION

RT3F11.DGN

Figure I-5
Typical Survey and Sampling Locations

Post-Remedial Action Survey Plan (Ref. 8). The RSS also provided analytical support for the post-remedial action soil samples both onsite and at the laboratory. The IVC performed independent verification surveys of the remediated areas using similar survey techniques (Ref. 9). The IVC survey data will be issued as a separate report by ORNL. When remedial action was completed, the property was restored to its original condition.

Because the interior of the building was remediated by zone, the following section presents the post-remedial action results from Zone I to Zone VIII. The components decontaminated in each interior zone included roof trusses, floors, and expansion and crack control joints; the components are listed in Table I-3 with the number of samples collected and the analytical results.

Zones III and IV, the former machining areas, were the most contaminated areas within the building. These were believed to have been the major areas of production during MED/AEC activities. Each area was decontaminated, using the methods discussed in Section 3.1, to levels below applicable guidelines and criteria.

Post-remedial action direct surface contamination measurements and sub-slab soil samples were used to verify the removal of the residual radioactive material. External gamma exposure rate measurements were taken within each zone to ensure that the exposure rates were well below the guideline of 20 μR/h above background for habitable structures. The results listed in Table I-3 include background readings for the Fairfield, Ohio, area.

5.4 VERIFICATION ACTIVITIES

After remedial action was completed in each zone, the IVC conducted surveys and obtained soil samples to verify that the work zone was remediated to levels below the applicable guidelines. The objective of the independent verification survey was to confirm that surveys, sampling efforts, and analyses conducted during the remedial action process provided an accurate and complete description of the radiological status of the total property upon completion of the last zone.

The IVC's activities included two types of verification reviews, type A and type B. The IVC conducted both types, as specified in the draft verification plan. Type A verification consisted of reviewing the post-remedial action survey results and collecting and analyzing additional samples if necessary. For the type B verification review, the IVC conducted an independent survey of the site, including direct measurements. The IVC also reviewed the methods and results of the post-remedial action survey activities and the soil sample results. In addition to its independent surveys and samples, the IVC reviewed the quality assurance data to determine whether the measurements verified that these areas complied with the established DOE guidelines for the site. After the results were verified, the site was released by the IVC as appropriate for future use without radiological restrictions (Ref. 9), and BNI restored the site to its original condition.

Table I-3
Post-Remedial Action Radiological Survey Results for the Associate Aircraft Site

Zone	Component	Number of Samples/ Measurements	Direct Surface Contamination[a] Alpha (dpm/100 cm²)	Direct Surface Contamination[a] Beta/Gamma (dpm/100 cm²)	Transferable Surface Contamination Alpha (dpm/100 cm²)	Transferable Surface Contamination Beta/Gamma (dpm/100 cm²)	External Gamma Exposure Rate (μR/h)[a,b]	Total Uranium Concentration (pCi/g)[b]
I	Roof trusses	40	–[c]	52 - 2,716	<1 - 63	<1 - 205	–[c]	–[c]
II	Roof trusses	282	<2 - 444	27 - 3,070	<1 - 66	<7 - 247	6.9	
	Walls	19	<10 - 31	402 - 1,054	<-1 - 2[f]	<-4 - 29[f]		
	Floor	547	<-4 - 114[f]	<31 - 957	–[c]	–[c]		
	Eastern wall roll-up door	7	169 - 845	–[c]	–[c]	–[c]		
	Trenches		–[c]	–[c]	–[c]	–[c]		1.06 - 22.40
III	Roof trusses	198	<2 - 94	<25 - 1,898	<5 - 28	<39 - 102	6.9	
	Floor	465	<4 - 131	<29 - 914	–[c]	–[c]		
	Trenches		–[c]		–[c]	–[c]		8.94[d]
IV	Roof trusses	297	<2 - 69	<24 - 569	–[c]	–[c]	6.9	
	Walls	153	<4 - 141	<25 - 781	–[c]	–[c]		
	Floor	290	<2 - 142	<24 - 1,680	<1 - 5	<86 - 90		
	Trenches	88	<2 - 52	146 - 1,485	<1 - 8	<5 - 90		9.78[d]
V	Roof trusses	251	<2 - 1,013	<29 - 3,481	<1 - 36	<3 - 62	7.7	
	Walls	266	<2 - 192	<31 - 2,416	<1 - 5	<7 - 18		
	Floors	1,145	<2 - 110	<43 - 2,947	<1 - 5	<3 - 52		
	Trenches	27	<2 - 92	<29 - 922	–[c]	–[c]		23.06[d]
VI	Trenches	27	<2 - 92	<29 - 922	–[c]	–[c]	6.8	16.52[d]
VII	Northern parking lot	10	<2 - 65	54 - 265	–[c]	–[c]		6.86[d]
	Southern side Force Control building	198	<2 - 89	50 - 695	–[c]	–[c]		
	Southern side trenches	5	<-36 - (-7)[e]	553 - 829	–[c]	–[c]		4.36[d]
VIII	Trenches	69	<9 - 74	<27 - 1,740	<-1 - 5[e]	<-4 - 44[e]	6.4	0.86 - 1.3
DOE Guideline:			5,000	5,000	1,000	1,000	<20[c]	35

Table I-3
(continued)

[a]The external gamma exposure rate was measured for the zone listed.
[b]Results include background levels for the Fairfield area.
[c]Measurement unobtainable or unnecessary.
[d]One measurement or composite sample collected due to limited area remediated.
[e]"<-" sign indicates that the measurement was less than the MDA and that after background was subtracted, the numerical value was negative (e.g., <MDA result minus >MDA background = negative result indicated by "<-").

5.5 PUBLIC AND OCCUPATIONAL EXPOSURES

5.5.1 Public Exposure

During the remedial action, engineering controls, administrative controls, established work practices, and monitoring were used to protect remediation workers and members of the general public from potential exposure to radiation in excess of applicable standards. These controls are outlined in the health and safety work instructions for the Associate Aircraft site.

Site perimeter air particulate sampling was performed to determine the potential dose rate the general public may have been exposed to by airborne radioactivity downwind of the site activities. The airborne radioactivity limits in DOE Order 5400.5 are derived concentration guides (DCGs); a DCG is the concentration of a particular radionuclide that would yield a committed effective dose equivalent of 100 mrem/yr, the DOE basic dose limit, to an individual continuously exposed to the radionuclide by the inhalation pathway for an entire year. This guideline was established to protect the environment and members of the general public against undue risk from radiation. High-volume air samplers collected samples that were analyzed to determine the air particulate concentration. The filters were accumulated daily and counted after sufficient time was allowed for radon progeny decay. Concentrations of uranium-238 measured by area particulate air samplers ranged from background to 7.2×10^{-14} μCi/ml (0.000077 pCi/L), more than 25 times less than the DCG of 2.0×10^{-12} μCi/ml (0.002 pCi/L) for uranium-238.

5.5.2 Occupational Exposure

All personnel working in contaminated areas were required to wear personal protective equipment (PPE), consisting of disposable coveralls, safety glasses, disposable booties, gloves, and hard hats. When conditions warranted, additional protective clothing and equipment such as hoods and respirators were required, as specified in the health and safety work instructions.

Workers exiting radioactively contaminated work areas were subjected to a whole-body scan (frisked) at the control point under health physics technician direction. The frisk was conducted with a hand-held radiation detection instrument to ensure that personnel were not contaminated and to prevent the potential spread of radioactive material from the work area. A frisk is simply a search for radioactive material that may have rubbed off onto the clothing of individuals inside the work area. The hand-held radiation detection instrument is held approximately 2 inches away from the area to be "frisked" and moved slowly (about 2 inches per second) to scan the portion of the body or clothing being examined. Boots and hands of personnel were resurveyed outside the support area to ensure that no material was transferred to uncontaminated areas. Contaminated PPE was disposed of properly and sent to Envirocare.

5.6 WASTE MANAGEMENT

The decontamination of the Associate Aircraft site was conducted in a manner that minimized waste while expediting the remedial action. Refining contamination boundaries, decontaminating walls rather than demolishing them, and surveying PPE for disposal as clean trash were a few of the measures used.

The volume and waste streams that were used for the Associate Aircraft site are listed in Table I-4. This table shows that the total volume shipped for disposal and the total volume generated during the decontamination are the same. None of the excavated material was used as fill material; all material was disposed of as low-level radioactive waste. The cost and time required for separating uncontaminated debris from "clean" material were not justified by any need for separation.

5.7 COSTS

The final cost of the remedial action at the Associate Aircraft site was approximately $2 million; itemized costs are presented in Table I-5.

Table I-4

REMEDIAL ACTION SUMMARY

WBS 124

REMEDIATION AUTHORITY

SITE Associate Aircraft Tool and Manufacturing Company

- ■ NEPA/CERCLA
- ☐ SUPERFUND
- ☐ RCRA

OWNER Mr. James L. Besl

SITE ADDRESS 3660 Dixie Highway

CITY, STATE Fairfield, Ohio

ACTION	DATE	RESPONSIBLE ENTITY	DOCUMENT
DESIGNATION	05-03-1993	DOE	Designation/Authorization Report
CHARACTERIZATION	03-15-1993	ORNL	Results of Radiological Survey at the Former Associate Aircraft Tool and Manufacturing Company, Fairfield, Ohio.
FINAL RA	TBD (projected date 12-1995)	DOE/ORNL/ BNI	Post-Remedial Action Report for the Former Associate Aircraft Tool and Manufacturing Company, Fairfield, Ohio

TOTAL VOLUME 115.6 yd^3

To Remain In Situ 0

Volume Reduction 0

Net Disposal 115.6 yd^3

Documentation Used: N/A

TYPE OF WASTE FOR NET DISPOSAL:

REGULATORY		VOLUME	DISPOSAL SITE
■	LLRW	107.6 yd^3	Clive, Utah
☐	11(E)2		
■	MIXED	8 yd^3	Clive, Utah
☐	CHEMICAL		
PHYSICAL			
☐	BUILDING RUBBLE		
☐	SOIL		
☐	LIQUID		
☐	OTHER		

TREATMENT TECHNOLOGIES APPLIED AT THE SITE:

Macroencapsulation and stabilization.

Table I-5
Associate Aircraft
Total Remedial Action Costs

Description	Cost
Design engineering	66,000
Remedial action operations	1,257,600
Waste transport and disposal	137,400
Final Engineering Reports	32,000
Project support	521,000
Total	**$2,014,200**

REFERENCES

1. Memorandum from D. Sexton to G. Palau, Seeping Notice: Former Associate Aircraft Tool and Manufacturing, Inc. Site, Fairfield, Ohio, BNI CCN 122494, November 1, 1994.

2. DOE. Description of the Formerly Utilized Sites Remedial Action Program, ORO-777, Oak Ridge, Tenn., September 1980.

3. Oak Ridge National Laboratory (ORNL), Results of the Radiological Survey at the Former Associate Aircraft Tool and Manufacturing Company Site, Fairfield, Ohio, BNI CCN 103272, March 1993.

4. Memorandum from J. Wagoner to L. Price, "Uranium Guidelines for the Associate Aircraft Site, Fairfield, Ohio," BM CCN 126469, February 10, 1995.

5. Memorandum from J. Wagoner to L. Price, "AAS - Hazard Assessment for Radioactive Contamination," BNI CCN 130903, June 5, 1995.

6. Bechtel National, Inc. (BNI), Associate Aircraft Site Hazard Assessment for Identified Soil Contamination, May 1995.

7. DOE. Verification and Certification Protocol for the Office of Environmental Restoration FUSRAP and D&D Program, Revision 3, November 1990.

8. BNI. Associate Aircraft Site Post-Remedial Action Survey Plan, December 1994.

9. ORNL, Results of the Independent Radiological Verification Survey at the Fortner Associate Aircraft Tool and Manufacturing Company Site, Fairfield, Ohio (F011-001), ORNL/RASA-95115, May 1996.

10. DOE. Design Criteria for Formerly Utilized Sites Remedial Action Program (FUSRAP) and Surplus Facilities Management Program (SFMP), 14501-00-DC-01, Rev. 2, Oak Ridge, TN, March 1986:

11. Memorandum from I. Wagoner (DOE-HQ) to L. Price (DOE-FSRD), "Authorization for Remedial Action at the Former Associate Aircraft Site in Fairfield, Ohio," BNI CCN 103598, April 15, 1993.

12. Letter from W. Williams to J. Besl, "Notification of Designation of the Former Associate Aircraft Site: BNI CCN 103748, May 3, 1993.

R E F E R E N C E S
(Continued)

13. Memorandum from M. Keller to G. Drexel, "AAS - Determination of Additional Contaminated Areas," BNI CCN 128071, April 3, 1995.

14. Memorandum from J. La Grone to T. P. 'Grumbly, "Categorical Exclusion (CX) Determination - Associate Aircraft Site Removal Action," BNI CCN 123194, November 17, 1994.

15. Memorandum from D. Sexton to Distribution, "EIN: Ohio Hazardous Waste Regulations," BNI CCN 125008, January 10, 1995.

16. Memorandum from L. C. Marz to J. A. Turi, "Exemption from DOE Order 5820.2A for Radioactive Waste from FUSRAP," BNI CCN 125570, January 19, 1995.

17. Letter from M. L. Besl to K. Kates, "Real Estate License for AAS," BNI CCN 123072, November 10, 1994.

18. BNI, Post-Remedial Action Report for the Associate Aircraft Site, Fairfield, Ohio, DOE/OR/21949-343, July, 1996.

19. Letter from W. Williams to J. Best, "AAS - Radiological Survey of the Former Associate Aircraft Tool and Manufacturing Company," BNI CCN 103088, April 15, 1993.

20. Letter from W. Williams to J. Besl, "AAS - Notification of Designation of the Former Associate Aircraft Tool and Manufacturing Company," BNI CCN 103748, May 3, 1993.

21. Letter from W. Williams to M. Besl, "AAS - Trip Report - Radiological Survey on May 31, and June 1, 1994 - Forwarding," BNI CCN 118023, June 29, 1994.

22. Letter from D. Adler (DOE) to G. Mitchell (OEPA), "AAS - Hazard Assessment for Residual Contamination," BNI CCN 132318, July 18, 1995.

23. Letter from the Ohio EPA to D. Sexton, "EPA ID Number for Hazardous Wastes Associated with the AAS," BNI CCN 125062, January 3, 1995.

24. Letter from G. Hartman to S. Gleiser, "NHPA [National Preservation Act] (Section 106) Determination," BNI CCN 120674, September 19, 1994.

25. Memorandum from D. Sexton to Distribution, "Ohio Hazardous Waste Regulations," BNI CCN 126290, February 6, 1995.

APPENDIX A

DOE ORDER 5400.5, CHAPTER IV
RESIDUAL RADIOACTIVE MATERIAL

CHAPTER IV

RESIDUAL RADIOACTIVE MATERIAL

1. PURPOSE. This chapter presents radiological protection requirements and guidelines for cleanup of residual radioactive material and management of the resulting wastes and residues and release of property. These requirements and guidelines are applicable at the time the property is released. Property subject to these criteria includes, but is not limited to sites identified by the Formerly Utilized Sites Remedial Action Program (FUSRAP) and the Surplus Facilities Management Program (SFMP). The topics covered are basic dose limits, guidelines and authorized limits for allowable levels of residual radioactive material, and control of the radioactive wastes and residues. This chapter does not apply to uranium mill tailings or to properties covered by mandatory legal requirements.

2. IMPLEMENTATION. DOE elements shall develop plans and protocols for the implementation of this guidance. FUSRAP sites shall be identified, characterized, and designated, as such, for remedial action and certified for release. Information on applications of the guidelines and requirements presented herein, including procedures for deriving specific property guidelines for allowable levels of residual radioactive material from basic dose limits, is contained in DOE/CH 8901, "A Manual for Implementing Residual Radioactive Material Guidelines, A Supplement to the U.S. Department of Energy Guidelines for Residual Radioactive Material at FUSRAP and SFMP Sites," June 1989.

   a. Residual Radioactive Material This chapter provides guidance on radiation protection of the public and the environment from:

      (1) Residual concentrations of radionuclides in soil (for these purposes, soil is defined as unconsolidated earth material, including rubble and debris that might be present in earth material);

      (2) Concentrations of airborne radon decay products;

      (3) External gamma radiation;

      (4) Surface contamination; and

      (5) Radionuclide concentrations in air or water resulting from or associated with any of the above.

b. Basic Dose Limit. The basic dose limit for doses resulting from exposures to residual radioactive material is a prescribed standard from which limits for quantities that can be monitored and controlled are derived; it is specified in terms of the effective dose equivalent as defined in this Order. The basic dose limits are used for deriving guidelines for residual concentrations of radionuclides in soil. Guidelines for residual concentrations of thorium and radium in soil, concentrations of airborne radon decay products, allowable indoor external gamma radiation levels, and residual surface contamination concentrations are based on existing radiological protection standards (40 CFR Part 192; NRC Regulatory Guide 1.86 and subsequent NRC guidance on residual radioactive material). Derived guidelines or limits based on the basic dose limits for those quantities are used only when the guidelines provided in the existing standards are shown to be inappropriate.

c. Guideline. A guideline for residual radioactive material is a level of radioactive material that is acceptable for use of property without restrictions due to residual radioactive material. Guidelines for residual radioactive material presented herein are of two kinds, generic and specific. The basis for the guidelines is generally a presumed worst-case plausible-use scenario for the property.

(1) Generic guidelines, independent of the property, are taken from existing radiation protection standards. Generic guideline values are presented in this chapter.

(2) Specific property guidelines are derived from basic dose limits using specific property models and data. Procedures and data for deriving specific property guideline values are given by DOE/CH-8901.

d. Authorized Limit. An authorized limit is a level of residual radioactive material that shall not be exceeded if the remedial action is to be considered completed and the property is to be released without restrictions on use due to residual radioactive material.

(1) The authorized limits for a property will include:

(a) Limits for each radionuclide or group of radionuclides, as appropriate, associated with residual radioactive material in soil or in surface contamination of structures and equipment;

(b) Limits for each radionuclide or group of radionuclides, as appropriate, in air or water; and

(c) Where appropriate, a limit on external gamma radiation resulting from the residual material.

(2) Under normal circumstances expected at most properties, authorized limits for residual radioactive material are set equal to, or below, guideline values. Exceptional conditions for which authorized limits might differ from guideline values are specified in paragraphs IV-5 and IV-7.

(3) A property may be released without restrictions if residual radioactive material does not exceed the authorized limits or approved supplemental limits, as defined in paragraph IV.7a, at the time remedial action is completed. DOE actions in regard to restrictions and controls on use of the property shall be governed by provisions in paragraph IV.7b. The applicable controls and restrictions are specified in paragraph IV.6 and IV.7.c.

e. ALARA Applications. The monitoring, cleanup, and control of residual radioactive material are subject to the ALARA policy of this Order. Applications of ALARA policy shall be documented and filed as a permanent record.

3. BASIC DOSE LIMITS.

a. Defining and Determining Dose Limits. The basic public dose limits for exposure to residual radioactive material, in addition to natural occurring "background" exposures, are 100 mrem (1 mSv) effective dose equivalent in a year, as specified in paragraph II.1a.

b. Unusual Circumstances. If, under unusual circumstances, it is impracticable to meet the basic limit based on realistic exposure scenarios, the respective project and/or program office may, pursuant to paragraph II.1a(4), request from EH-1 for a specific authorization for a temporary dose limit higher than 100 mrem (1 mSv), but not greater than 500 mrem (5 mSv), in a year. Such unusual circumstances may include temporary conditions at a property scheduled for remedial action or following the remedial action. The ALARA process shall apply to the selection of temporary dose limits.

4. GUIDELINES FOR RESIDUAL RADIOACTIVE MATERIAL.

a. Residual Radionuclides in Soil. Generic guidelines for thorium and radium are specified below. Guidelines for residual concentrations of other radionuclides shall be derived from the basic dose limits by means of an environmental pathway analysis using specific property data where available. Procedures for these derivations are given in DOE/CH-8901. Residual concentrations of radioactive material in soil are defined as those in excess of background concentrations averaged over an area of 100 m^2.

(1) Hot Spots. If the average concentration in any surface or below-surface area less than or equal to 25 m^2, exceeds the limit or guideline by a factor of $(100/A)^{0.5}$, [where A is the area (in square meters) of the region in which concentrations are elevated], limits for "hot-spots" shall also be developed and applied. Procedures for calculating these hot-spot limits, which depend on the extent of the elevated local concentrations, are given in DOE/CH-8901. In addition, reasonable efforts shall be made to remove any source of radionuclide that exceeds 30 times the appropriate limit for soil, irrespective of the average concentration in the soil.

(2) Generic Guidelines. The generic guidelines for residual concentrations of Ra-226, Ra-228, Th-230, and Th-232 are:

(a) 5 pCi/g, averaged over the first 15 cm of soil below the surface; and

(b) 15 pCi/g, averaged over 15-cm-thick layers of soil more than 15 cm below the surface.

(3) Ingrowth and Mixtures. These guidelines take into account ingrowth of Ra-226 from Th-230 and of Ra-228 from Th-232, and assume secular equilibrium. If both Th-230 and Ra-226 or both Th-232 and Ra-228 are present and not in secular equilibrium, the appropriate guideline is applied as a limit for the radionuclide with the higher concentration. If other mixtures of radionuclides occur, the concentrations of individual radionuclides shall be reduced so that either the dose for the mixtures will not exceed the basic dose limit or the sum of the ratios of the soil concentration of each radionuclide to the allowable limit for that radionuclide will not exceed 1. Explicit formulas for calculating residual concentration guidelines for mixtures are given in DOE/CH-8901.

b. Airborne Radon Decay Products. Generic guidelines for concentrations of airborne radon decay products shall apply to existing occupied or habitable structures on private property that are intended for release without restriction; structures that will be demolished or buried are excluded. The applicable generic guideline (40 CFR Part 192) is: In any occupied or habitable building, the objective of remedial action shall be, and a reasonable effort shall be made to achieve, an annual average (or equivalent) radon decay product concentration (including background) not to exceed 0.02 WL. [A working level (WL) is any combination of short-lived radon decay products in 1 L of air that will

result in the ultimate emission of 1.3 x 10^5 MeV of potential alpha energy.] In any case, the radon decay product concentration (including background) shall not exceed 0.03 WL. Remedial actions by DOE are not required in order to comply with this guideline when there is reasonable assurance that residual radioactive material is not the source of the radon concentration.

c. External Gamma Radiation. The average level of gamma radiation inside a building or habitable structure on a site to be released without restrictions shall not exceed the background level by more than 20 μR/h and shall comply with the basic dose limit when an "appropriate-use" scenario is considered. This requirement shall not necessarily apply to structures scheduled for demolition or to buried foundations. External gamma radiation levels on open lands shall also comply with the basic limit and the ALARA process, considering appropriate-use scenarios for the area.

d. Surface Contamination. The generic surface contamination guidelines provided in Figure IV-1 are applicable to existing structures and equipment. These guidelines are generally consistent with standards of the NRC (NRC 1982) and functionally equivalent to Section 4, "Decontamination for Release for Unrestricted Use," of Regulatory Guide 1.86, but apply to nonreactor facilities. These limits apply to both interior equipment and building components that are potentially salvageable or recoverable scrap. If a building is demolished, the guidelines in paragraph IV.6a are applicable to the resulting contamination in the ground.

e. Residual Radionuclides in Air and Water. Residual concentrations of radionuclides in air and water shall be controlled to the required levels shown in paragraph II.1a and as required by other applicable Federal and/or State laws.

5. AUTHORIZED LIMITS FOR RESIDUAL RADIOACTIVE MATERIAL.

a. Establishment of Authorized Limits. The authorized limits for each property shall be set equal to the generic or derived guidelines unless it can be established, on the basis of specific property data (including health, safety, practical, programmatic and socioeconomic considerations), that the guidelines are not appropriate for use at the specific property. The authorized limits shall be established to (1) provide that, at a minimum, the basic dose limits of in paragraph IV.3, will not be exceeded under the "worst-case" or "plausible-use" scenarios, consistent with the procedures and guidance provided in DOE/CH-8901, or (2) be consistent with applicable generic guidelines. The authorized limits shall be consistent with limits and guidelines established by other applicable Federal and State laws. The authorized limits are developed through the project offices in the field and are approved by the Headquarters Program Office.

Figure IV-1
Surface Contamination Guidelines

Radionuclides[2/]	Allowable Total Residual Surface Contamination (dpm/100 cm²)[1/] Average[3/,4/]	Maximum[4/,5/]	Removable[4/,6/]
Transuranics, I-125, I-129, Ra-226, Ac-227, Ra-228, Th-228, Th-230, Pa-231.	~~RESERVED~~ 100*	~~RESERVED~~ 300*	~~RESERVED~~ 20*
Th-Natural, Sr-90, I-126, I-131, I-133, Ra-223, Ra-224, U-232, Th-232.	1,000	3,000	200
U-Natural, U-235, U-238, and associated decay product, alpha emitters.	5,000	15,000	1,000
Beta-gamma emitters (radionuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.[2/]	5,000	15,000	1,000

1/ As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute measured by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

2/ Where surface contamination by both alpha- and beta-gamma-emitting radionuclides exists, the limits established for alpha- and beta-gamma-emitting radionuclides should apply independently.

3/ Measurements of average contamination should not be averaged over an area of more than 1 m². For objects of less surface area, the average should be derived for each such object.

4/ The average and maximum dose rates associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/h and 1.0 mrad/h, respectively, at 1 cm.

5/ The maximum contamination level applies to an area of not more than 100 cm².

* Because no values are presented in this order, FUSRAP uses the values shown based on "DOE Guidelines for Residual Radioactive Materials at FUSRAP and Remote SFMP Sites, Revision 2, March 1987 (CCN 046176).

6/ The amount of removable material per 100 cm^2 of surface area should be determined by wiping an area of that size with dry filter or soft absorbent paper, applying moderate pressure, and measuring the amount of radioactive material on the wiping with an appropriate instrument of known efficiency. When removable contamination on objects of surface area less than 100 cm^2 is determined, the activity per unit area should be based on the actual area and the entire surface should be wiped. It is not necessary to use wiping techniques to measure removable contamination levels if direct scan surveys indicate that the total residual surface contamination levels are within the limits for removable contamination.

7/ This category of radionuclides includes mixed fission products, including the Sr-90 which is present in them. It does not apply to Sr-90 which has been separated from the other fission products or mixtures where the Sr-90 has been enriched.

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b. Application of Authorized Limits. Remedial action shall not be considered complete until the residual radioactive material levels comply with the authorized limits, except as authorized pursuant to paragraph IV.7 for special situations where the supplemental limits and exceptions should be considered and it is demonstrated that it is not appropriate to decontaminate the area to the authorized limit or guideline value.

6. CONTROL OF RESIDUAL RADIOACTIVE MATERIAL. Residual radioactive material above the guidelines shall be managed in accordance with Chapter II and the following requirements.

a. Operational and Control Requirements. The operational and control requirements specified in the following Orders shall apply to interim storage, interim management, and long-term management.

(1) DOE 5000.3, Unusual Occurrence Reporting System

(2) DOE 5440.1C, Implementation of the National Environmental Policy Act

(3) DOE 5480.4, Environmental Protection, Safety, and Health Protection Standards

(4) DOE 5482.1B, Environmental, Safety, and Health Appraisal Program

(5) DOE 5483.1A, Occupational Safety and Health Program for DOE Employees at Government-Owned, Contractor-Operated Facilities

(6) DOE 5484.1, Environmental Protection, Safety, and Health Protection Information Reporting Requirements

(7) DOE 5820.2A, Radioactive Waste Management.

Vertical line denotes change.

b. Interim Storage.

(1) Control and stabilization features shall be designed to provide, to the extent reasonably achievable, an effective life of 50 years with a minimum life of at least 25 years.

(2) Controls shall be designed such that Rn-222 concentrations in the atmosphere above facility surfaces or openings in addition to background levels, will not exceed:

(a) 100 pCi/L at any given point;

(b) An annual average concentration of 30 pCi/L over the facility site; and

(c) An annual average concentration of 3 pCi/L at or above any location outside the facility site.

(d) Flux rates from the storage of radon producing wastes shall not exceed 20 pCi/sq.m-sec., as required by 40 CFR Part 61.

(3) Controls shall be designed such that concentrations of radionuclides in the groundwater and quantities of residual radioactive material will not exceed applicable Federal or State standards.

(4) Access to a property and use of onsite material contaminated by residual radioactive material should be controlled through appropriate administrative and physical controls such as those described in 40 CFR Part 192. These control features should be designed to provide, to the extent reasonable, an effective life of at least 25 years.

c. Interim Management.

(1) A property may be maintained under an interim management arrangement when the residual radioactive material exceeds guideline values if the residual radioactive material is in inaccessible locations and would be unreasonably costly to remove, provided that administrative controls are established by the responsible authority (Federal, State, or local) to protect members of the public and that such controls are approved by the appropriate Program Assistant Secretary or Director.

(2) The administrative controls include but are not limited to periodic monitoring as appropriate; appropriate shielding; physical barriers to prevent access; and appropriate radiological safety measures during maintenance, renovation, demolition, or other activities that might disturb the residual radioactive material or cause it to migrate.

(3) The owner of the property should be responsible for implementing the administrative controls and the cognizant Federal, State, or local authorities should be responsible for enforcing them.

d. Long-Term Management.

(1) Uranium, Thorium, and Their Decay Products.

(a) Control and stabilization features shall be designed to provide, to the extent reasonably achievable, an effective life of 1,000 years with a minimum life of at least 200 years.

(b) Control and stabilization features shall be designed to limit Rn-222 emanation to the atmosphere from the wastes to less than an annual average release rate of 20 pCi/m²/s and prevent increases in the annual average Rn-222 concentration at or above any location outside the boundary of the contaminated area by more than 0.5 pCi/L. Field verification of emanation rates shall be in accordance with the requirements of 40 CFR Part 61.

(c) Before any potentially biodegradable contaminated wastes are placed in a long-term management facility, such wastes shall be properly conditioned so that the generation and escape of biogenic gases will not cause the requirement in paragraph IV.6d(1)(b) to be exceeded and that biodegradation within the facility will not result in premature structural failure in violation of the requirements in paragraph IV.6d(1)(a).

(d) Ground water shall be protected in accordance with legally applicable Federal and State standards.

(e) Access to a property and use of onsite material contaminated by residual radioactive material should be controlled through appropriate administrative and physical controls such as those described in 40 CFR Part 192. These controls should be designed to be effective to the extent reasonable for at least 200 years.

(2) Other Radionuclides. Long-term management of other radionuclides shall be in accordance with Chapters II, III, and IV of DOE 5820.2A, as applicable.

7. SUPPLEMENTAL LIMITS AND EXCEPTIONS. If special specific property circumstances indicate that the guidelines or authorized limits established for a given property are not appropriate for any portion of that property, then the Operations Office may request that supplemental limits or an exception be applied. The responsible Operations Office shall document the decision that the subject guidelines or authorized limits are not appropriate and that the alternative action selected will provide adequate protection,

giving due consideration to health and safety, the environment, costs, and public policy considerations. The Operations Office shall obtain approval for specific supplemental limits or exceptions from Headquarters as specified in paragraph IV.5, and shall provide to the Headquarters Program Element those materials required by Headquarters for the justification as specified in this paragraph and in the FUSRAP and SFMP protocols and subsequent guidance documents. The Operations Office shall also be responsible for coordination with the State and local government regarding the limits or exceptions and associated restrictions as appropriate. In the case of exceptions, the Operations Office shall be responsible for coordinating with the State and/or local governments to ensure the adequacy of restrictions or conditions of release and that mechanisms are in place for their enforcement.

a. Supplemental Limits. Any supplemental limits shall achieve the basic dose limits set forth in Chapter II of this Order for both current and potential unrestricted uses of a property. Supplemental limits may be applied to any portion of a property if, on the basis of a specific property analysis, it is demonstrated that

   (1) Certain aspects of the property were not considered in the development of the established authorized limits for that property; and

   (2) As a result of these certain aspects, the established limits either do not provide adequate protection or are unnecessarily restrictive and costly.

b. Exceptions to the authorized limits defined for a property may be applied to any portion of the property when it is established that the authorized limits cannot reasonably be achieved and that restrictions on use of the property are necessary. It shall be demonstrated that the exception is justified and that the restrictions will protect members of the public within the basic dose limits of this Order and will comply with the requirements for control of residual radioactive material as set forth in paragraph IV.6.

c. Justification for Supplemental Limits and Exceptions. The need for supplemental limits and exceptions shall be documented by the Operations Office on a case-by-case basis using specific property data. Every reasonable effort should be made to minimize the use of supplemental limits and exceptions. Examples of specific situations that warrant DOE use of supplemental standards and exceptions are

   (1) Where remedial action would pose a clear and present risk of injury to workers or members of the public, notwithstanding reasonable measures to avoid or reduce risk.

(2) Where remedial action, even after all reasonable mitigative measures have been taken, would produce environmental harm that is clearly excessive compared to the health benefits to persons living on or near affected properties, now or in the future. A clear excess of environmental harm is harm that is long-term, manifest, and grossly disproportionate to health benefits that may reasonably be anticipated.

(3) Where it is determined that the scenarios or assumptions used to establish the authorized limits do not apply to the property or portion of the property identified, or where more appropriate scenarios or assumptions indicate that other limits are applicable or appropriate for protection of the public and the environment.

(4) Where the cost of remedial action for contaminated soil is unreasonably high relative to long-term benefits and where the residual material does not pose a clear present or future risk after taking necessary control measure. The likelihood that buildings will be erected or that people will spend long periods of time at such a property should be considered in evaluating this risk. Remedial action will generally not be necessary where only minor quantities of residual radioactive material are involved or where residual radioactive material occurs in an inaccessible location at which specific property factors limit its hazard and from which it is difficult or costly to remove. Examples include residual radioactive material under hard-surfaced public roads and sidewalks, around public sewer lines, or in fence-post foundations. A specific property analysis shall be provided to establish that the residual radioactive material would not cause an individual to receive a radiation dose in excess of the basic dose limits stated in paragraph IV.3, and a statement specifying the level of residual radioactive material shall be provided to the appropriate State and/or local agencies for appropriate action, e.g., for inclusion in local land records.

(5) Where there is no feasible remedial action.

8. SOURCES.

a. Basic Dose Limits. Dosimetry model and dose limits are defined in Chapter II of this Order.

b. Generic Guidelines for Residual Radioactive Material. Residual concentrations of radium and thorium in soil are defined in 40 CFR Part 192. Airborne radon decay products are also defined in 40 CFR Part 192, as are guidelines for external gamma radiation. The surface contamination definition is adapted from NRC (1982).

c. Control of Radioactive Wastes and Residues. Interim storage is guided by this Order and DOE 5820.2A. Long-term management is guided by this Order, 40 CFR Part 192, and DOE 5820.2A.

APPENDIX B

HAZARD ASSESSMENT FOR RESIDUAL CONTAMINATION AT THE ASSOCIATE AIRCRAFT SITE

Bechtel

Oak Ridge Corporate Center
151 Lafayette Drive
P.O. Box 350
Oak Ridge, Tennessee 37831-0350

Facsimile: (615) 220-2100

Job No. 14501, FUSRAP Project
DOE Contract No. DE-AC05-91OR21949
Code: 7340/WBS: 135

MAY 08 1995

U.S. Department of Energy
Oak Ridge Field Office
P.O. Box 2001
Oak Ridge, Tennessee 37831-8723

Attention: David G. Adler, Site Manager
Former Sites Restoration Division

Subject: Hazard Assessment for Residual Contamination at the Former Associate Aircraft Site (AAS)

Dear Mr. Adler:

Based on sample results obtained at AAS, uranium-238 concentrations above the site specific criteria (35 pCi/g) were found in a small sub-slab area in Section 1 of the former AAS building. The sample results of the location indicated radioactive contamination at a maximum concentration of 134 pCi/g. This is well below the derived guidelines for this site and equates to a dose of 4.154 mrem/yr for current and likely future use of the site. The vertical and areal extent of contamination was established for the location by additional sampling.

The enclosed Hazard Assessment (HA) was prepared under my direction or supervision in accordance with a system designed to ensure that the information submitted was properly gathered and evaluated. To the best of my knowledge and belief, they are true, accurate, and complete.

Based on this HA and the additional cost that would be entailed (≈$260,000), no additional characterization or remediation is planned for this isolated area of contaminated soil in Section 1. Mike Murray (ORNL) has reviewed the HA and has given IVC concurrence.

Please forward the enclosed submittal letter to A. Williams for concurrence.

It is requested that DOE-HQ provide approval of this Hazard Assessment by May 12, prior to completion of work at the Associate Aircraft site. If you have any questions, contact me at (615) 576-1710.

Sincerely,

Janice S. Allison
for

G. L. Palau
Project Manager - FUSRAP

BWJ:kt:HAZMEMO

Concurrence: B. Johnson @ BWJ
J. Wood JW
M. Kaye JM

ACTION REQ'D ☑ YES ☐ NO DUE DATE 5/06

RESPONSE TO CHRON NO. _____

☐ FFA ☐ Permit ☐ Milestone ☐ Ork ☐ CCN ☐ CAR ☐ Mid-Yr ☐ Yr-End ☐ Periodic Rpt

United States Government | Department of Energy

memorandum

Oak Ridge Operations Office

DATE: May 8, 1995

REPLY TO
ATTN OF: EW-93:Adler

SUBJECT: HAZARD ASSESSMENT FOR RESIDUAL CONTAMINATION AT THE FORMER ASSOCIATE AIRCRAFT SITE (AAS)

TO: Dr. W. A. Williams, Trevion II Building, Department of Energy, Washington, D.C. 20585-0002, EM-421

Uranium-238 concentrations above the site specific criteria (35 pCi/g) were found in the soil in a small sub-slab area of the former AAS building. The sample results of the location indicated a maximum concentration of 134 pCi/g. This is well below the derived guidelines for the site and equates to a dose of 4.154 mrem/yr for current and likely future use of the site.

Based on this HA and the additional cost that would be entailed (=$260,000), no additional characterization or remediation is planned for this isolated area of contaminated soil in Section 1. Mike Murray Oak Ridge National Laboratory has reviewed the HA and has given IVC concurrence.

Please review the enclosed Hazard Assessment and provide your approval by May 12, 1995. The remediation of the site is in the final stages is currently scheduled for May 15, 1995.

David G. Adler, Site Manager
Former Sites Restoration Division

Enclosure

ASSOCIATE AIRCRAFT SITE HAZARD ASSESSMENT FOR IDENTIFIED SOIL CONTAMINATION

1.0 PURPOSE

To determine the hazard associated with the localized sub-slab contamination found at the Associate Aircraft Site (AAS) in Fairfield, Ohio under a portion of the former AAS building (see figure 1). This assessment leads to the conclusion that the potential dose from the residual soil contamination is well below the current or likely use guideline, as proposed in 10 CFR 834.

2.0 INITIAL DERIVATION OF CLEANUP GUIDELINES

The Environmental Assessment Division of Argonne National Laboratory published *Derivation of Guidelines for Uranium Residual Radioactive Material in Soil at the Former Associate Aircraft Tool and Manufacturing Company Site, Fairfield, Ohio* in January 1995 (Reference 1). This work was sponsored and approved by the U.S. DOE, Office of Environmental Restoration.

The Associate Aircraft site has been identified for remedial action under the U.S. DOE's Formerly Utilized Sites Remedial Action Program (FUSRAP). Uranium guidelines were derived on the basis of the requirement that following remedial action, the 50-year committed effective dose equivalent to a hypothetical individual living or working in the immediate vicinity of the site should not exceed (1) 30 mrem/yr for the current-use and likely future-use scenarios or (2) 100 mrem/yr for less likely future-use scenarios (Yu et al. 1993).

The DOE residual radioactive material guideline computer code, RESRAD (version 5.41), which implements the methodology described in the DOE manual for establishing residual radioactive material guidelines, was used in the evaluation.

Three scenarios were considered in which it was assumed that the site would be used without radiological restrictions for a period of 1,000 years following remedial action. The three scenarios varied with regard to the type of site use, time spent at the site by the exposed individual, and sources of food consumed. The evaluation indicated that the EPA dose limit of 30 mrem/yr would not be exceeded for uranium (including U-234, U-235, and U-238) within 1,000 years provided that the soil concentration of total uranium at the site did not exceed 970 pCi/g for scenario 1 (industrial worker: current use scenario) or 280 pCi/g for scenario 2 (resident: municipal water supply, a likely future-use scenario). The DOE dose limit of 100 mrem/yr (DOE Order 5400.5) would not be exceeded at the site if the uranium concentration of the soil did not exceed 790 pCi/g for scenario 3 (subsistence farmer: on-site well water, a plausible but unlikely future-use scenario).

The uranium guidelines derived in the analysis applied to the total activity concentration of uranium isotopes (i.e., U-238, U-234, and U-235 present in their natural activity concentration of 1:1:0.046). In setting the actual uranium guidelines to be used at the Associate Aircraft site, DOE applied the as-low-as-reasonably-achievable (ALARA) policy to the decision-making process. After these considerations the actual uranium guideline used for residual radioactivity in soil was 35 pCi/g (1/8th of the most conservative derived guideline).

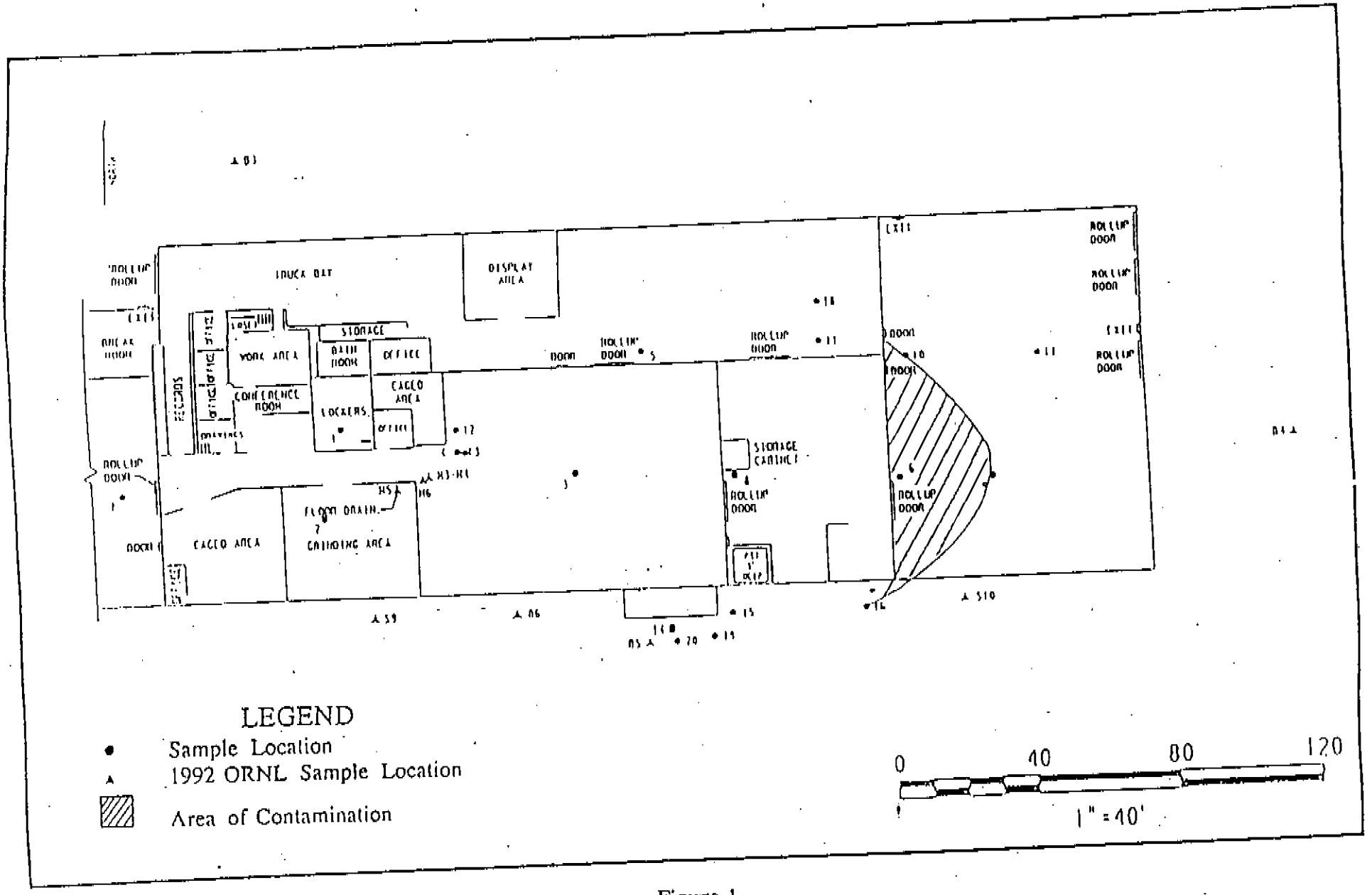


Figure 1
Former Associate Aircraft Site

3.0 HAZARD DETERMINATION FOR RESIDUAL SOIL CONTAMINATION AT AAS

In December 1994 and February 1995, 111 samples were collected from 15 locations inside the former AAS building, and 34 samples were collected from 13 locations outside the building. These locations were selected to further delineate boundaries (both vertical and horizontal) of contamination identified in the ORNL report. Figure 1 shows interior and exterior sampling locations.

Based on the results obtained, uranium-238 concentrations above the site specific criteria (35pCi/g) were found at locations 1, 4 and 6. Uranium-238 concentrations from the sampling locations in these areas are presented in Table 2. The radioactive contamination detected at locations 4 and 6 were delineated in a second phase of sampling by placement of sample locations 10, 9 and 16 for location 6, and additional sample locations 12 and 13 for location 4. Vertical and areal extent of contamination has thereby been established for these locations. The areas around location 1 and 4 were adjacent to a radioactively contaminated expansion joint and have since been remediated. Therefore this hazard assessment applies to the area in the proximity location 6.

The sample results of location 6 indicate radioactive contamination at a maximum concentration of 134 pCi/g. Table 1 summarizes the results of the sampling at location 6, 9, 10, and 16.

Table 1 - Sampling Results

Borehole	Depth (ft)	Field Counts (cpm)*	U-238 (pCi/g)**
6	0 - 1	40	< 2.3
	1 - 2	40	< 2.4
	3 - 4	1400	134
	4 - 5	60	5.8
	5 - 6	50	< 5.0
	6 - 7	50	< 1.9
	7 - 8	50	< 2.5
9	0 - 1	45	< 1.7
	1 - 2	45	< 1.3
	2 - 3	50	< 1.5
	3 - 4	50	< 1.3
	4 - 5	50	< 2.6
	5 - 6	45	< 3.8
	6 - 7	45	< 2.9
	7 - 8	45	< 1.9
	8 - 9	45	< 2.7
	9 - 10	50	< 4.4
	10 - 11	50	< 1.7
	11 - 12	45	< 2.2
10	0 - 1	42	.44
	1 - 2	42	< 1.4
	3 - 4	44	< 2.0
	4 - 5	55	.63
	5 - 6	52	1.8
	6 - 7	52	.40
	7 - 8	70	.47
	8 - 9	70	< 1.5
	9 - 11	54	< 1.4
16	0 - 1	58	.84
	1 - 2	41	.60
	2 - 3	55	< 1.3
	3 - 4	50	< 1.2

* Measured with HP 210 or HP 260 field radiation detection instrument

** Measured with Gamma Spectroscopy radiation detection instrument

3.1 CALCULATIONS

Using the derived maximum dose/source ratios (see Attachment A), calculations were performed for all three scenarios. Based on the calculations, utilizing RESRAD, it has been determined that this material represents a minimal hazard. The results of the calculations are shown in Table 2 below.

Table 2
Maximum Annual Dose From Residual Radioactive Contamination at the Former Associate Aircraft Site

Scenario #	Dose/Source Ratio x Soil Activity Conc= (mrem/yr)/(pCi/g) (pCi/g)				Dose (mrem/yr)
1[a]	3.1×10^{-2}	x	134	=	4.154
2[b]	1.1×10^{-1}	x	134	=	14.74
3[c]	1.3×10^{-1}	x	134	=	17.42

a-Industrial worker: no consumption of water or foods obtained on the site.
b-Resident: water used for drinking, household purposes, and irrigation was assumed to be from uncontaminated municipal sources.
c-Subsistence farmer-water used for drinking, household purposes, livestock watering, and irrigation was assumed to be from an on-site well.

3.2 SUMMARY OF RESULTS

Scenario 1 - The results of the RESRAD calculations determined that in scenario 1 an industrial worker would receive an annual exposure of 4.154 mrem/yr due to the residual contamination on the site.

Scenario 2 - The results of the RESRAD calculations determined that in scenario 2 a resident would receive an annual exposure of 14.74 mrem/yr due to the residual contamination on the site.

Scenario 3 - The results of the RESRAD calculations determined that in scenario 3 a subsistence farmer would receive an annual exposure of 17.42 mrem/yr due to the residual contamination on the site.

All of the calculated values are below the 30 mrem/yr for current or likely land use, as proposed in 10 CFR 834. Furthermore, the calculations only allowed for a shielding factor of 30% for the attenuation of external gamma radiation in scenario 1, in reality the shielding provided would provide much greater than 30% shielding. In scenarios 2 and 3, it is likely that large amounts of the contaminated soil would be removed in preparing the site for residential or farming use. The initial dose/source ratios were determined on a large homogeneously contaminated area. For a small, isolated area of contamination, such as the area in question (see figure 1), the annual dose would be even less due to the smaller amount of contact possible (Yu et al. 1993). Therefore, the calculated annual doses are very conservative.

4.0 CONCLUSION

The calculations performed for this assessment lead to the conclusion that the potential dose from residual radioactive contamination for in all three scenarios is well below the 30 mrem/yr current or likely land use guideline, as proposed in 10 CFR 834. All scenarios use conservative assumptions and address all credible pathways. Furthermore, scenario 1 is most likely at this site, consideration of scenarios 2 and 3 provide additional evidence of the minimal hazard.

Results of these calculations show that supplemental limits are warranted for the area of location 6. Leaving the residual contamination in place does not pose a potential present or future exposure risk, and the cost ($\approx$ $260,000) and time involved in remediation and restoration of this area is high relative to the long-term benefits that would result.

5.0 REFERENCES

1. Yu, C., et al., 1995, *Derivation of Guidelines for Uranium Residual Radioactive Material in Soil at the Former Associate Aircraft Tool and Manufacturing Company Site, Fairfield, Ohio,* ANL/EAD/LD-2, Argonne National Laboratory, Argonne, Ill., Jan.

2. Yu, C., et al., 1993, *Manual for Implementing Residual Radioactive Material Guidelines Using RESRAD; Version 5.0,* ANL/EAD/LD-2, Argonne National Laboratory, Argonne, Ill., Sept.

3. Spieker, A.M., 1965, *Hydrogeologic Aspects of an Analog Model Study of the Fairfield-New Baltimore Area, Ohio,* Doctoral Thesis, Stanford University, Stanford, Calif.

4. Orlandini, K.A., 1994, personal communication from Orlandini (Environmental Research Division) to C. Yu (Environmental Assessment Division), Argonne National Laboratory, Argonne, Ill., Dec. 19.

ATTACHMENT A

DERIVATION OF TOTAL DOSE/SOURCE CONCENTRATION RATIOS FROM

Derivation of Guidelines for Uranium Residual Radioactive Material in Soil at the Former Associate Aircraft Tool and Manufacturing Company Site, Fairfield, Ohio

1.0 Scenario Definitions

Three potential exposure scenarios were considered for the assessment of residual radioactivity guidelines for the soil. For each scenario, it was assumed that at some time within 1,000 years, the site would be released for use without radiological restrictions following remedial action. Potential radiation doses from nine exposure pathways were considered. The pathways are listed in Table A-1.

Table A-1

Summary of Exposure Pathways for Scenarios 1,2, and 3
at the Former Associate Aircraft Site

Pathway	Scenario 1[a]	Scenario 2[b]	Scenario 3[c]
External Exposure	Yes	Yes	Yes
Inhalation	Yes	Yes	Yes
Radon	Yes	Yes	Yes
Ingestion/plants	No	Yes	Yes
Ingestion/meat	No	No	Yes
Ingestion/milk	No	No	Yes
Ingestion/fish	No	No	Yes
Ingestion/soil	Yes	Yes	Yes
Ingestion/water	No	No	Yes

a-Industrial worker: no consumption of water or foods obtained on the site.
b-Resident: water used for drinking, household purposes, and irrigation was assumed to be from uncontaminated municipal sources.
c-Subsistence farmer-water used for drinking, household purposes, livestock watering, and irrigation was assumed to be from an on-site well.

The RESRAD computer code (YU et al. 1993) was used to calculate the potential radiation doses for the hypothetical future industrial worker (scenario 1) and the resident and subsistence farmer (scenarios 2 and 3 respectively) on the basis of the following assumptions:

- During one year, the industrial worker spends 2,000 hours (23%) indoors at the site, 250 hours (3%) outdoors at the site, and 6,510 hours (74%) away from the site. During one year, the resident and subsistence farmer spend 4,380 hours (50%) indoors, 2,190 hours (25%) outdoors, and 2,190 hours (25%) away form the site (Yu et al. 1993).

- The walls, floor, and foundation of the building reduce external exposure by 30%; the indoor dust level is 40% of the outdoor dust level.

- The airborne dust loading is 0.1 mg/m ^{3}.

- The depth of the house or building foundation is 1 m below ground surface, with an effective radon diffusion coefficient of 2×10^{-4} m^2/s.

- The size of the decontaminated areas is sufficiently large that 10% and 50% of the plant food diet consumed by the resident and farmer for scenarios 2 and 3, respectively, is grown in a garden in the decontaminated area. The industrial worker does not consume these plant foods.

- The size of the decontaminated area is large enough to produce 50% of the forage used to feed livestock for meat and milk consumed by the subsistence farmer i scenario 3. The resident and industrial worker does not consume these animal products.

- For scenario 3, 50% of the fish and other aquatic food consumed by the subsistence farmer is obtained from an on-site pond.

- The current supply of water for the industrial building is from uncontaminated municipal sources.

- The soil is sand and gravel (Spieker 1965) and typical values for sandy soils tabulated in Yu et al. (1993) were used for the density, total and effective porosities, soil "b" parameter, and hydraulic conductivity in the contaminated, unsaturated, and saturated zones.

- The uranium distribution coefficient was measured at 100 cm^3/g for soil (Orlandini 1994); this value is used for all uranium isotopes in the various zones

- A distance of 3.8 m to the water table was assumed on the basis of the average water table in area wells.

- After remedial action, no cover material is placed over the decontaminated area.

- No erosion of the contaminated material occurs.

2.0 Dose/Source Concentration Ratios

To develop residual radioactivity guidelines for soil at the former Associate Aircraft Site, the RESRAD computer code, version 5.41 (Yu et al. 1993), was used to calculate the dose/source concentration ratio $DSR_{ip}(t)$ for uranium isotope i and pathway p at time t after remedial action. The time frame considered in this analysis was 1,000 years. Radioactive decay and ingrowth were considered in deriving the dose/source concentration ratios. The various parameters used in the RESRAD code for this analysis are listed in the appendix of Reference 1. For all three scenarios, the maximum dose/source concentration ratios occur at time zero (immediately after remedial action).

The summation of $DSR_{ip}(t)$ for all pathways p is the $DSR_i(t)$ for the ith isotope; that is,

$$DSR_i(t) = \Sigma_p DSR_{ip}(t).$$

The total dose/source concentration ratio for total uranium can be calculated as

$$DSR(t) = \Sigma_i W_i DSR_i(t),$$

where W_i is the existing activity concentration fraction in soil at the site for uranium-234, uranium-235, and uranium-238.

For this analysis, W_i is assumed to represent the natural activity concentration ratios of 1/2.046, 1/2.046, and 0.046/2.046 for uranium-238, uranium-234, and uranium-235, respectively. The total dose/source concentration ratios for single radionuclides and total uranium are provided in Table A-2. These ratios were used to determine the allowable residual radioactivity for uranium in soil at the former Associate Aircraft site. These ratios will also be used to determine the level of hazard that will remain on-site at the given concentration of residual soil contamination.

Table A-2

Total Dose/Source Concentration Ratios for Uranium
at the Former Associate Aircraft Site

	Maximum Dose/Source Concentration Ratio (mrem/yr)/(pCi/g)		
Radionuclide	Scenario 1[a]	Scenario 2[b]	Scenario 3[c]
Uranium-234	1.6×10^{-2}	5.9×10^{-2}	8.0×10^{-2}
Uranium-235	1.9×10^{-1}	6.1×10^{-1}	6.3×10^{-1}
Uranium-238	3.9×10^{-2}	1.3×10^{-1}	1.5×10^{-1}
Total uranium	3.1×10^{-2}	1.1×10^{-1}	1.3×10^{-1}

a-Industrial worker: no consumption of water or foods obtained on the site.
b-Resident: water used for drinking, household purposes, and irrigation was assumed to be from uncontaminated municipal sources.
c-Subsistence farmer-water used for drinking, household purposes, livestock watering, and irrigation was assumed to be from an on-site well.

Because the maximum dose occurs at time zero in all three scenarios, uncertainties in parameters that affect the leaching of radionuclides from the contaminated zone and their transport through unsaturated and saturated strata do not affect results. Breakthrough time (the time it takes the uranium to reach the water table) was estimated to occur in 600 years after remediation (Yu et al. 1995), however, the dose contribution from water-dependent pathways in scenario 3 is smaller than the contribution of the water-independent pathways at the time of peak dose. Changing the depth of the water table would only affect the breakthrough time, it would not significantly affect the magnitude of the dose contributed by water-dependent pathways.

The RESRAD default values were used in the calculations if no site-specific data were available. These default values are based on national average or reasonable maximum values.

United States Government

memorandum

DATE June 05, 1995

REPLY TO ATTN OF EM-421 (W. A. Williams, 301-903-8149)

SUBJECT Hazard Assessment for Radioactive Contamination at the Associate Aircraft Site, Fairfield, Ohio

TO L. Price, OR

This memorandum is to provide comments and approval of the Associate Aircraft Site Hazard Assessment for Identified Soil Contamination.

The hazard assessment was prepared and supplemental limits were requested, based on a single soil sample with 134 picoCuries per gram of uranium. This sample was obtained from underneath the building slab in an area that was a loading dock for the facility during Atomic Energy Commission operations during the 1950s. The area is not readily accessible because of industrial equipment located over the soil contamination area. The estimated cost for removing the equipment and removing the contaminated soil is $260,000. The cost of removing the uranium exceeds any potential benefit.

At the request of my staff, some additional data was obtained concerning the extent of the residual uranium. This data was furnished by facsimile on May 31, 1995, and confirms the limited extent of the residual uranium.

We approve the Hazard Assessment and the use of supplemental limits for the inaccessible soil contamination at the site. Dose calculations, using the RESidual RADioactivity code, show the potential exposures to be well within the dose limits specified within the Department of Energy Order 5400.5, Chapter IV.

If you have any questions regarding this, please call me at 301-903-2531.

James W. Wagoner II
Director
Off-Site/Savannah River Program Division
Office of Eastern Area Programs
Office of Environmental Restoration

cc:
M. Murray, ORNL
J. Wood, BNI

Printed on recycled paper

EXHIBIT II

DOCUMENTS SUPPORTING THE CERTIFICATION OF REMEDIAL ACTION PERFORMED AT THE ASSOCIATE AIRCRAFT SITE IN FAIRFIELD, OHIO, 1994 - 1995

1.0 CERTIFICATION PROCESS

The purpose of this certification document is to provide a consolidated and permanent record of the DOE activities leading to the remediation and release of the Associate Aircraft site. A summary of these activities was provided in Exhibit I. Exhibit II contains or cites the letters, memos, reports, and other documents that encompass the entire remedial action process from the initial survey and designation of the site under FUSRAP to certification of the property for release without radiological restrictions.

2.0 SUPPORTING DOCUMENTATION

Each page number begins with the designator "II-" to distinguish the numbering systems used in the supporting documentation that constitutes Exhibit II. These page numbers will be listed in the table of contents at the beginning of this docket and in Sections 2.1 through 2.11. Lengthy documents are incorporated by reference only and will be designated as such with the abbreviation "Ref."; the actual documents will be provided as attachments to the certification docket at the time of publication.

The number following the term "Ref." corresponds to the number in the reference list at the end of Exhibit I.

2.1 DECONTAMINATION OR STABILIZATION CRITERIA

The following documents contain the guidelines that determine the need for remedial action. The Associate Aircraft site has been decontaminated to comply with these guidelines. The first document listed is included as Appendix A of Exhibit I.

DOE Order 5400.5, Chapter IV, "Residual Radioactive Material."	App.I-A
DOE, *Description of the Formerly Utilized Sites Remedial Action Program*, ORO-777, Oak Ridge, TN, September 1980.	Ref. 2
Memorandum from J. Wagoner to L. Price, "Uranium Guidelines for the Associate Aircraft Site, Fairfield, Ohio." Attachment: *Derivation of Guidelines for Uranium Residual Radioactive Material in Soil at the Former Associate Aircraft Tool and Manufacturing Company Site, Fairfield, Ohio* (Argonne National Laboratory, 1995) BNI CCN 126469, February 10, 1995.	Ref. 4
DOE, *Design Criteria for Formerly Utilized Sites Remedial Action Program (FUSRAP) and Surplus Facilities Management Program (SFMP)*, 14501-00-DC-01, Rev. 2, Oak Ridge, TN, March 1986.	Ref. 10

2.2 DESIGNATION OR AUTHORIZATION DOCUMENTATION

The following documentation designated or authorized the remedial action at the Associate Aircraft site.

Memorandum from J. W. Wagoner (DOE-HQ) to L. Price (DOE-FSRD), "Authorization for Remedial Action at the Former Associate Aircraft Site in Fairfield, Ohio," BNI CCN 103598, April 15, 1993. Ref. 11

Letter from W. A. Williams to J. Besl, "Notification of Designation of the Former Associate Aircraft Site," BNI CCN 103748, May 3, 1993. II-5

103748

Department of Energy
Washington, DC 20585

93 MAY -6 PM 1:36

MAY 03 1993

Mr. James Besl
President
Force Control Industries
3660 Dixie Highway
Fairfield, Ohio 45014

Dear Mr. Besl:

This is to notify you that the U.S. Department of Energy (DOE) has designated the former Associate Aircraft Tool and Manufacturing Company site in Fairfield, Ohio, for remedial action as a part of the Formerly Utilized Sites Remedial Action Program. Remedial activities are managed by the DOE Oak Ridge Field Office, and Mr. Dave Adler (615-576-9634) will be the Site Manager. As a result of the designation decision, Mr. Adler will be the appropriate point of contact in the future.

If you have any questions, please call me at 301-903-8149.

Sincerely,

W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

cc:
D. Adler, OR

2.3 RADIOLOGICAL AND CHEMICAL CHARACTERIZATION REPORTS

The pre-remedial status of the Associate Aircraft site is described in the following documents.

Oak Ridge National Laboratory (ORNL), *Results of the Radiological Survey at the Former Associate Aircraft Tool and Manufacturing Company Site, Fairfield, Ohio,* BNI CCN 103272, March 1993.	Ref. 3
Memorandum from M. Keller to G. Drexel, "AAS - Determination of Additional Contaminated Areas," BNI CCN 128071, April 3, 1995.	II-7

128071 ~~12?662~~

Bechtel

Interoffice Memorandum

To G. Drexel/ M. Poligone

File No. 7315/124

Subject Determination of Additional Contaminated Areas at AAS

Date March 17, 1994

From M. Keller/J. Wood

Of FUSRAP

Copies to J. Allison
G. Palau
K. Thompson
A. John

At Oak Ridge Ext. 6-5173

PURPOSE

The purpose of this memorandum is to provide results from characterization activities at the Former Associated Aircraft Site (AAS) in Fairfield, Ohio. Additional areas of contamination requiring remediation were identified during these activities. Areas that are currently known to exhibit elevated readings, and were not in the original scope of work are shown in Figure 3. To summarize, the areas added are located in the following areas;

- North of Zone V in the bathroom area (north of the locker room) and the office (located north of the caged area)
- Zone VI, section 5, five areas within this zone have been identified based on survey of approximately 10 % of the area
- East of Zones II and IV in the storage cabinet area (this area was referred to as section 2 in the ORNL figure).

No areas of exterior contamination, in addition to those identified in the ORNL report, have been discovered to date. Results are not yet available for samples collected the week of February 27, 1995, south of Zone II, where the buried pipe exits the building.The additional results contained in this memo are provided to further delineate areas of contamination previously identified in the Oak Ridge National Laboratory (ORNL) characterization and designation report (CCN 103598, published March 1993). Areas determined to be in excess of FUSRAP guidelines were designated for remedial action (RA) based on this report, and are outlined in the current remedial action Work Instruction (WI 94-045) for AAS. The results presented in this memorandum were obtained during execution of the scope of work governed by this WI and during subsequent ET characterization

activities. This information is intended to provide guidance to the engineering and construction teams in a timely manner, in order to ensure the successful completion of remedial action activities.

BACKGROUND

In December 1994 and February 1995, 111 samples were collected from 15 locations from inside the former AAS building , and 34 samples were collected from 12 locations outside the building. These locations were selected to further delineate boundaries (both vertical and horizontal) of contamination identified in the ORNL report. During the remedial action of AAS, an incremental (phased) approach has been followed, where initially a minimum number of samples were collected based on available data, then followed by additional samples as directed by analytical results. This approach allows the most accurate information, in regard to contamination boundary delineation, in the most time efficient manner. This incremented approach has also been used to investigate the extent of contamination discovered during the remedial action that were previously unknown based on the ORNL report. For example, when a contaminated pipe was determined to exit the building at the southern wall of Zone II, it became necessary to determine to what extent outside soils were potentially contaminated. Therefore, locations for soil sampling were selected based on where the pipe was known to exit, in addition to the single sampling location from the ORNL study, resulting in a more thorough characterization of the area.

EXTERIOR AREAS

Figure 1 shows exterior sampling locations adjacent to the front offices at AAS. Figure 2 shows sampling locations from inside the building as well as sample locations from outside the building near the pipe exit. Uranium-238 concentrations from discrete sampling locations in these areas are presented in Tables 1 and 2 respectively. It should be noted that samples collected during the February 1995 sampling effort have not yet been analyzed. These samples are designated with "TBA". Upon receipt of these sample results from the laboratory, the attached data tables will be completed. Further, final status of the pipe (i.e. where the end is located) has yet to be determined. This determination will dictate if trenching and additional sampling will be required.

INTERIOR AREAS (SUB-SLAB SOIL)

Based on the results obtained from the first phase of additional sampling, uranium-238 concentrations above criteria were found at locations 1, 4 and 6. The radioactive contamination detected at locations 4 and 6 were delineated in a second phase of sampling by

placement of boreholes 10, 17 and 16 for location 6, and by placement of boreholes 12 and 13 for location 4. Vertical and areal extent of contamination has thereby been established for these locations. The elevated uranium concentration found at location 1 was from expansion joint material and from soil directly beneath the expansion joint. This material has been scheduled for removal as part of the original scope of work. None of the other additional sampling locations had uranium-238 concentrations above the site specific cleanup criteria of 17.5 Pci/g. Elevated results from area 4 are considered a data anomaly, based on confirmatory results from samples at locations 12 and 13.

FLOORS

Several areas in addition to those identified as contaminated in the ORNL designation report, were surveyed for direct and transferrable contamination in Zone V inside the building, These surveys were conducted the week of December 12, 1994 (see Attachment 1). Based on these surveys, four additional areas were found to be contaminated above the DOE criteria. They include; the bathroom and office north of the locker room in Zone V, section 2 of the building, and on the expansion joint and floor of Zone V. Areas surveyed can be located on Figure 2.

Survey results obtained in the bathroom ranged from background to 86,000 disintegrations per minute (dpm) per 100 cm^2. Areas above guidelines were found on the floor, horizontal surfaces, drains, and the lower twelve inches of the wall.

Survey results obtained in the office ranged from background to 29,000 dpm/100 cm^2. Areas above guidelines were found at several locations on the floor.

Survey results obtained in section 2, east of Zone II ranged from background to 9,200 dpm/100 cm^2 Areas above guidlines included old yellow paint on the floor. Only about 70% of the floor area and the expansion joint could be surveyed. Of the total surveyed, approximately half of the areas were above guidelines.

Survey results obtained from section 5 ranged from background to 7000 dpm/100 cm^2. Areas above guidelines were found at ten locations from 40 feet of expansion joint surveyed. There were also two isolated and elevated areas on the floor. It should be noted that in Zone VI, machinery placement prohibited a thorough survey of the entire floor. Therefore, less than 10 % of the floor in this Zone has been surveyed.

CONCLUSION

As noted, not all samples collected have been analyzed, and based on the selected incremental delineation approach, further sampling may become necessary. Based on the results currently available, the identified areas, shown in Figure 3, are the only ones known to be additions to the original scope of remedial action activities at AAS. This could also change due to disposition of the pipe status exiting the building in Zone II. At the time this memo was written, it was discovered that the pipe made an unexpected turn before traveling parallel to the building. The total length of the pipe is currently being determined. Upon this determination, trenching and subsequent characterization of the soils along the pipe trench could be required. In regard to the survey data currently available, it is recommended that additional surveys take place in Zone VI, as only 10 % of this Zone was surveyed. This is due to machinery placement currently preventing access to the entire floor. These additional surveys should be performed at the earliest convenient time, and in conjunction with other remedial action tasks where practical.

Table 1: Associate Aircraft Characterization Results for Exterior Locations

Borehole	Sample ID	Depth (Feet)	Field Radioactivity (cpm)	Uranium–238 (pCi/g)
	124–EXTSL–002 A	0 – 0.5	8,700 +++	< 1.6
	124–EXTSL–003 A	0 – 0.5	10,100 +++	< 1.9
	124–EXTSL–004 A	0 – 0.5	10,000 +++	< 2.9
	124–EXTSL–005 AB	0 – 1	11,000 ++	< 1.5
	124–EXTSL–006 AA	0 – 0.5	8,000 ++	< 1.7
	124–EXTSL–007 BB	0.5 – 1	7,000 ++	< 1.5
	124–EXTSL–008 AB	0 – 1	10,000 ++	< 1.6
	124–EXTSL–009 AB	0 – 1	14,000 ++	1.4
	124–EXTSL–009 CD	1 – 2		< 1.6
	124–EXTSL–009 EF	2 – 3		< 1.7
14	124–EXTSL–014 AB	0 – 1	50 +	< 1.6
	124–EXTSL–014 CD	1 – 2	52 +	< 1.8
	124–EXTSL–014 EF	2 – 3	50 +	< 2.2
15	124–EXTSL–015 AB	0 – 1	62 +	< 1.7
	124–EXTSL–015 CD	1 – 2	43 +	< 1.6
	124–EXTSL–015 EF	2 – 3	52 +	< 1.2
	124–EXTSL–015 GH	3 – 4	56 +	< 1.6
16	124–EXTSL–016 AB	0 – 1	58 +	0.84
	124–EXTSL–016 CD	1 – 2	41 +	.60
	124–EXTSL–016 EF	2 – 3	55 +	<1.3
	124–EXTSL–016 GH	3 – 4	50 +	<1.2
19	124–EXTSL–019 AD	0 – 2	52 +	<1.5
	124–EXTSL–019 EH	2 – 4	54 +	<1.1
	124–EXTSL–019 IJ	4 – 5	48 +	<1.7
	124–EXTSL–019 KN	5 – 7	48 +	<1.1
	124–EXTSL–019 OR	7 – 9	52 +	<1.2
	124–EXTSL–019 SV	9 – 11	42 +	<1.1
20	124–EXTSL–020 AD	0 – 2	54 +	.29
	124–EXTSL–020 EH	2 – 4	54 +	<.99
	124–EXTSL–020 IL	4 – 6	54 +	<1.0
	124–EXTSL–020 MN	6 – 7	54 +	<1.7
	124–EXTSL–020 OP	7 – 8	54 +	<1.7
	124–EXTSL–020 QR	8 – 9	54 +	<1.2
	124–EXTSL–020 ST	9 – 10	54 +	<1.6

\+ field radiation detection instrument = HP210 or HP260
++ field radiation detection instrument = SPA–3
+++ field radiation detection instrument = FIDLER

Table 2: Associate Aircraft Characterization Results for Interior Locations

Borehole	Sample ID	Depth (Feet)	Field + Radioactivity (cpm)	Uranium-238 * (pCi/g)
	124-EXPJT-001 A	0 – 0.5	4100	20,090
	124-EXPJT-001 B	0.5 – 1	1100	3,335
1	124-INTSL-001 A	0 – 0.5	not recorded	360
	124-INTSL-001 B	0.5 – 1	not recorded	33.5
	124-INTSL-001 C	1 – 1.5	not recorded	9.9
	124-INTSL-001 D	1.5 – 2	not recorded	9.9
2	124-INTSL-002 AB	0 – 1	50	14.1 (7.8)
	124-INTSL-002 CD	1 – 2	50	< 2.8
	124-INTSL-002 EF	2 – 3	60	< 3.3
	124-INTSL-002 GH	3 – 4	60	< 3.8
	124-INTSL-002 IJ	4 – 5	50	< 2.5
	124-INTSL-002 KL	5 – 6	50	<2.6
3	124-INTSL-003 AB	0 – 1	45	< 2.5
	124-INTSL-003 CD	1 – 2	45	< 4.7
4	124-INTSL-004 AB	0 – 1	44	916.6 (1385)
	124-INTSL-004 CD	1 – 2	44	< 6.9
	124-INTSL-004 EF	2 – 3	50	< 2.7
	124-INTSL-004 GH	3 – 4	50	< 2.2
	124-INTSL-004 IJ	4 – 5	60	< 1.9
	124-INTSL-004 KL	5 – 6	55	< 1.5
5	124-INTSL-005 AB	0 – 1	45	< 1.2
	124-INTSL-005 CD	1 – 2	45	< 1.2
	124-INTSL-005 EF	2 – 3	45	< 2.6
	124-INTSL-005 GH	3 – 4	70	< 2.8
6	124-INTSL-006 AB	0 – 1	40	< 2.3
	124-INTSL-006 CD	1 – 2	40	< 2.4
	124-INTSL-006 EF	2 – 3	No sample	No sample
	124-INTSL-006 GH	3 – 4	1400	134 (72.5)
	124-INTSL-006 IJ	4 – 5	60	5.8 (5.4)
	124-INTSL-006 KL	5 – 6	50	< 5.0
	124-INTSL-006 MN	6 – 7	50	< 1.9
	124-INTSL-006 OP	7 – 8	50	< 2.5
7	124-INTSL-007 AB	0 – 1	45	< 2.2
	124-INTSL-007 CD	1 – 2	50	< 2.9
	124-INTSL-007 EF	2 – 3	50	< 1.8
	124-INTSL-007 GH	3 – 4	50	< 1.7
	124-INTSL-007 IJ	4 – 5	35	< 2.8
	124-INTSL-007 KL	5 – 6	35	< 3.1
	124-INTSL-007 MN	6 – 7	40	< 2.9
	124-INTSL-007 OP	7 – 8	40	< 6.1
	124-INTSL-007 QR	8 – 9	40	< 3.4
	124-INTSL-007 ST	9 – 10	40	< 3.3

Borehole	Sample ID	Depth (Feet)	Field + Radioactivity (cpm)	Uranium-238 * (pCi/g)
8	124-INTSL-008 AB	0 - 1	50	< 2.9
	124-INTSL-008 CD	1 - 2	50	< 1.7
	124-INTSL-008 EF	2 - 3	50	< 3.0
	124-INTSL-008 GH	3 - 4	50	< 1.5
	124-INTSL-008 IJ	4 - 5	40	< 2.3
	124-INTSL-008 KL	5 - 6	40	< 0.9
	124-INTSL-008 MN	6 - 7	50	< 1.6
	124-INTSL-008 OP	7 - 8	50	< 2.1
	124-INTSL-008 QR	8 - 9	50	2.5
	124-INTSL-008 ST	9 - 10	50	< 1.7
9	124-INTSL-009 AB	0 - 1	45	< 1.7
	124-INTSL-009 CD	1 - 2	45	< 1.3
	124-INTSL-009 EF	2 - 3	50	< 1.5
	124-INTSL-009 GH	3 - 4	50	< 1.3
	124-INTSL-009 IJ	4 - 5	50	< 2.6
	124-INTSL-009 KL	5 - 6	45	< 3.8
	124-INTSL-009 MN	6 - 7	45	< 2.9
	124-INTSL-009 OP	7 - 8	45	< 1.9
	124-INTSL-009 QR	8 - 9	45	< 2.7
	124-INTSL-009 ST	9 - 10	50	< 4.4
	124-INTSL-009 UV	10 - 11	50	< 1.7
	124-INTSL-009 WX	11 - 12	45	< 2.2
10	124-INTSL-010 AB	0 - 1	42	.44
	124-INTSL-010 CD	1 - 2	42	<1.4
	124-INTSL-010 EF	2 - 3	No sample	No sample
	124-INTSL-010 GH	3 - 4	44	<2.0
	124-INTSL-010 IJ	4 - 5	55	.63
	124-INTSL-010 KL	5 - 6	52	1.8
	124-INTSL-010 MN	6 - 7	52	0.4
	124-INTSL-010 OP	7 - 8	70	.47
	124-INTSL-010 QR	8 - 9	70	<1.5
	124-INTSL-010 SV	9 - 11	54	<1.4
11	124-INTSL-011 AB	0 - 1	50	<1.8
	124-INTSL-011 CD	1 - 2	50	<1.3
	124-INTSL-011 EF	2 - 3	40	.43
	124-INTSL-011 GH	3 - 4	40	<2.1
	124-INTSL-011 IJ	4 - 5	40	<1.6
	124-INTSL-011 KL	5 - 6	50	<1.7
	124-INTSL-011 MN	6 - 7	50	.75
	124-INTSL-011 OP	7 - 8	50	<1.5
	124-INTSL-011 QR	8 - 9	50	.57
	124-INTSL-011 ST	9 - 10	50	.84
	124-INTSL-011 UX	10 - 12	60	<1.4
12	124-INTSL-012 AB	0 - 1	62	< 1.7
	124-INTSL-012 CD	1 - 2	54	< 1.2

Borehole	Sample ID	Depth (Feet)	Field + Radioactivity (cpm)	Uranium-238 * (pCi/g)
13	124-INTSL-013 AB	0 - 1	60	< 0.8
	124-INTSL-013 CD	1 - 2	70	< 1.2
	124-DRAIN ***	NA	44	< 1.8
17	124-INTSL-017 GJ	3 - 5	44 +	ARCHIVED
	124-INTSL-017 KL	5 - 6	44 +	ARCHIVED
	124-INTSL-017 MN	6 - 7	44 +	ARCHIVED
	124-INTSL-017 OR	7 - 9	60 +	ARCHIVED
	124-INTSL-017 ST	9 - 10	46 +	ARCHIVED
	124-INTSL-017 UV	10 - 11	46 +	ARCHIVED
	124-INTSL-017 WZ	11 - 13	46 +	ARCHIVED
18	124-INTSL-018 AB	0 - 1	50 +	ARCHIVED
	124-INTSL-018 CD	1 - 2	40 +	ARCHIVED
	124-INTSL-018 EF	2 - 3	40 +	ARCHIVED
	124-INTSL-018 GI	3 - 4.5	No sample	No sample
	124-INTSL-018 JK	4.5 - 5.5	50 +	ARCHIVED
	124-INTSL-018 LM	5.5 - 6.5	40 +	ARCHIVED
	124-INTSL-018 NQ	6.5 - 8.5	40 +	ARCHIVED
	124-INTSL-018 RT	8.5 - 10	No sample	No sample
	124-INTSL-018 UX	10 - 12	50 +	ARCHIVED
	124-INTSL-018 YZ	12 - 13	50 +	ARCHIVED
	124-INTSL-018 AABB	13 - 14	50 +	ARCHIVED

* results by gamma spec (results by alpha spec)

*** eastern floor drain in section 3

\+ field radiation detection instrument = HP210 or HP260

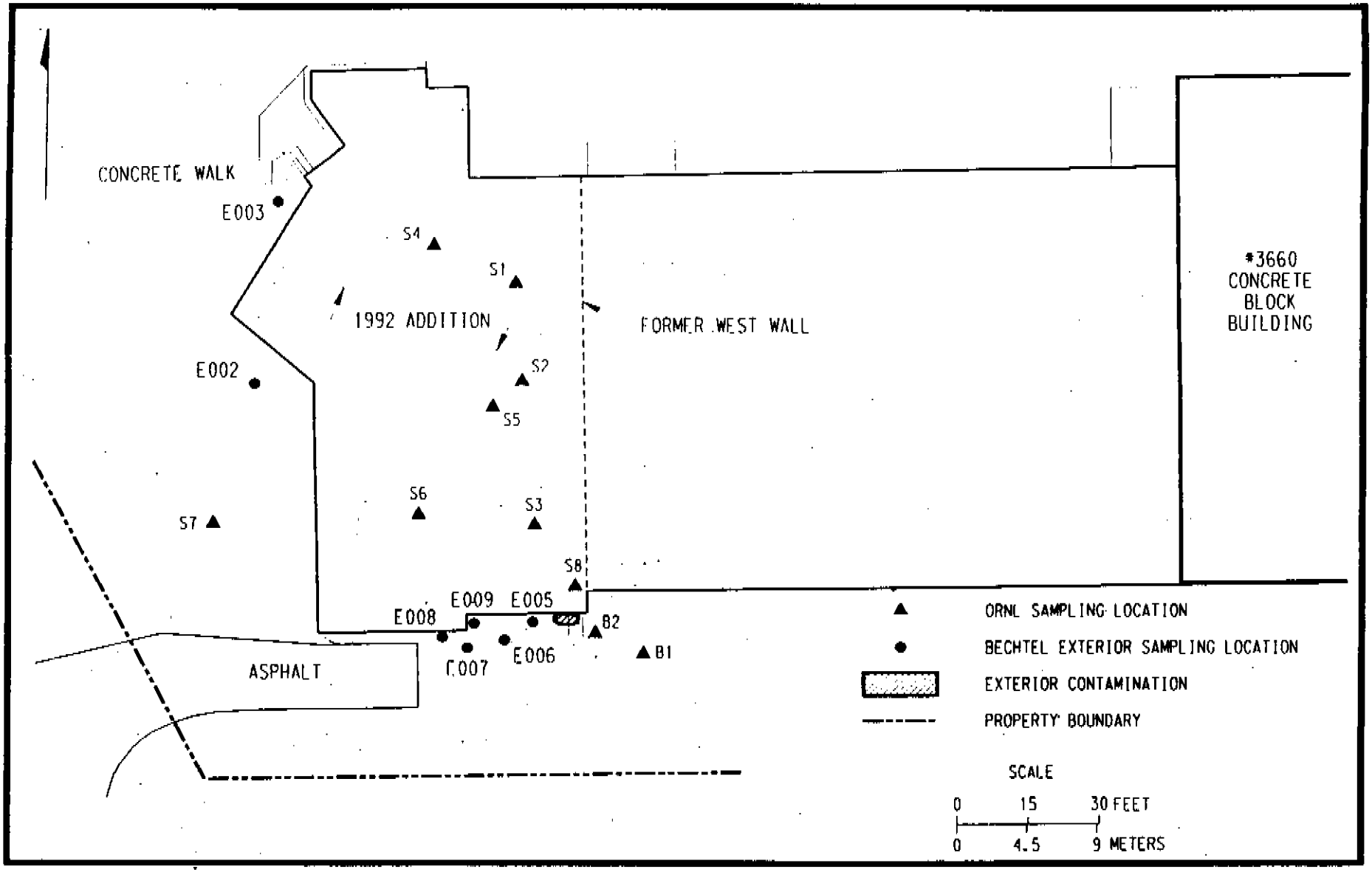
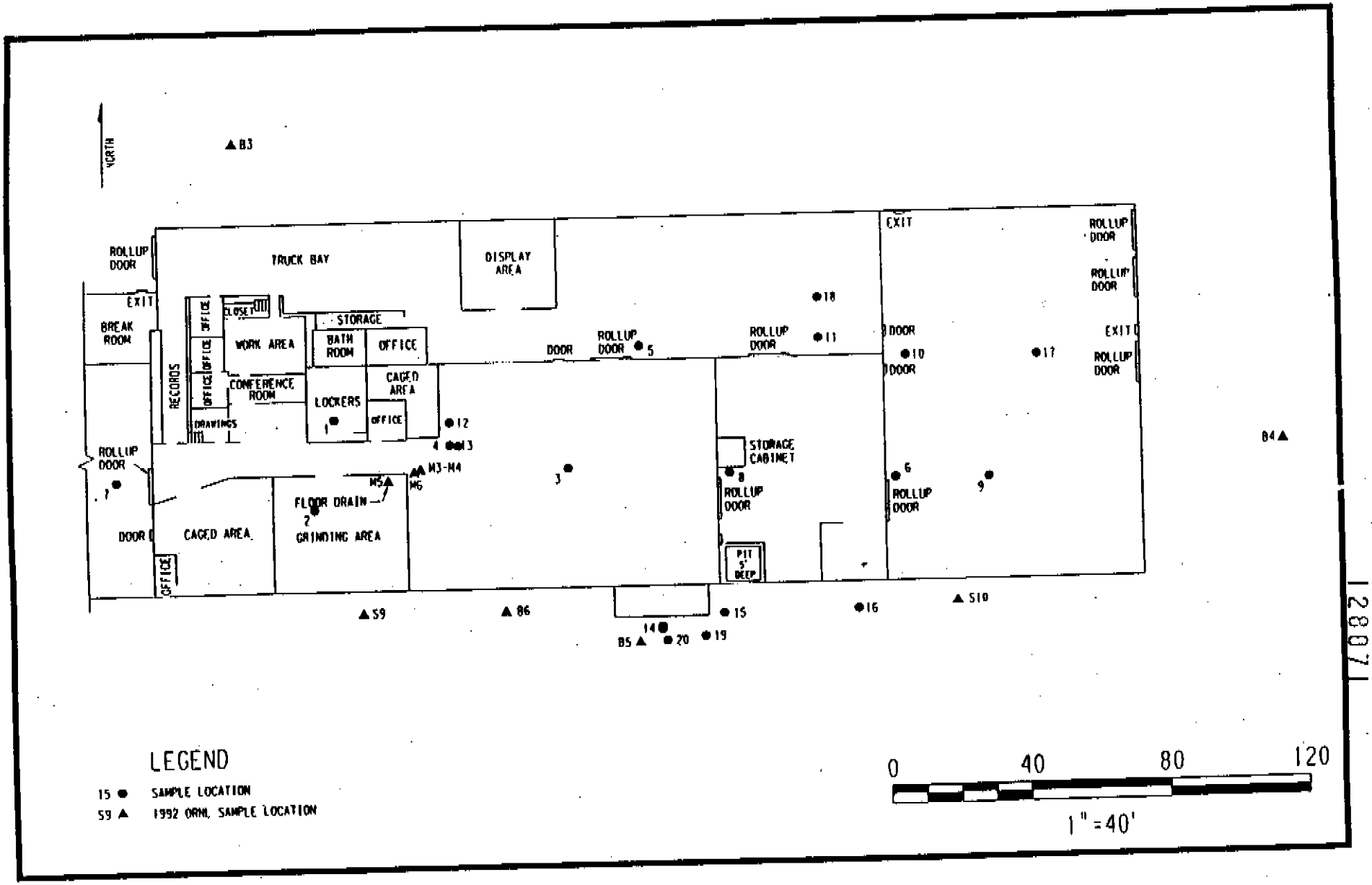
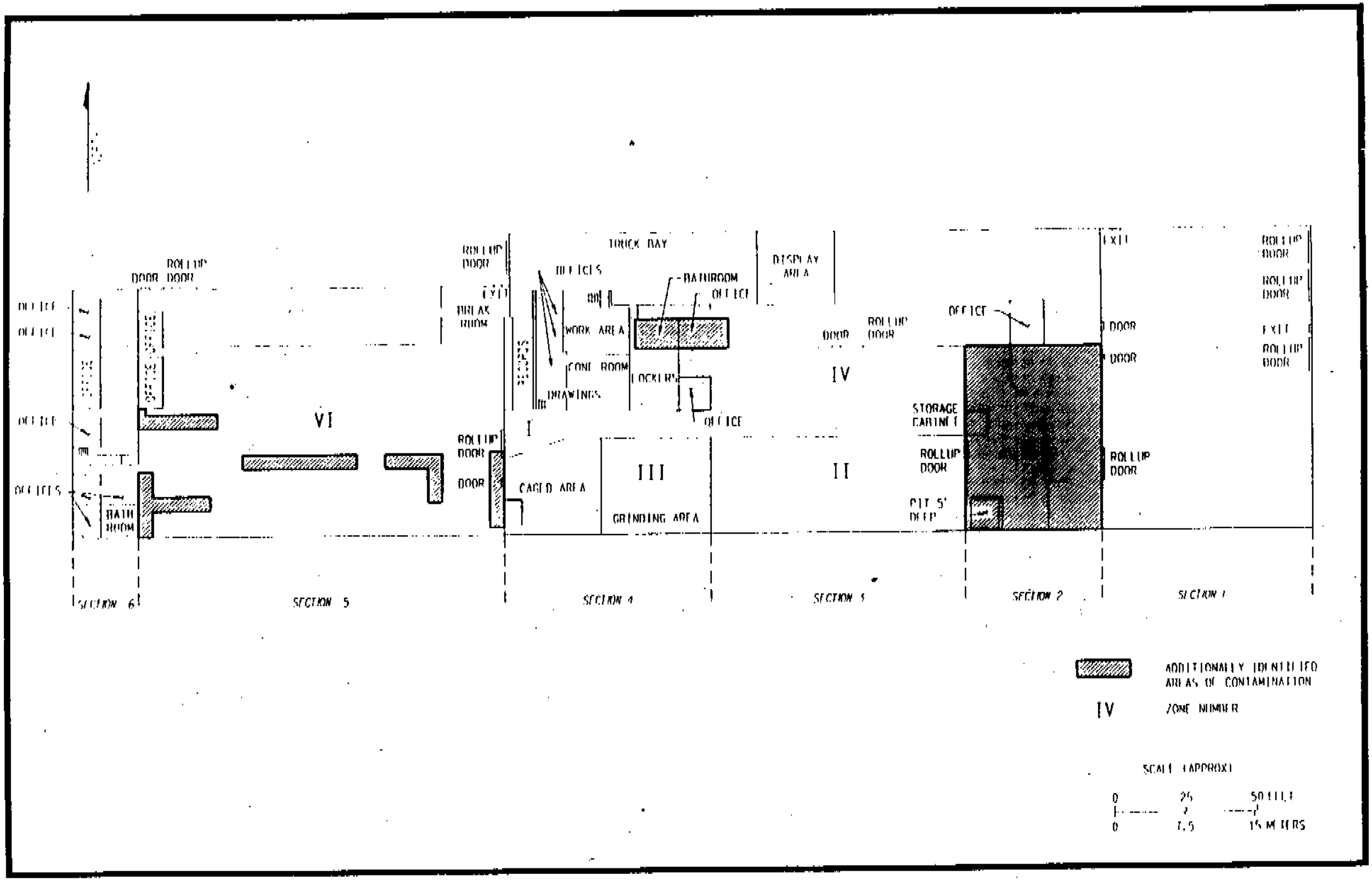


Figure 1
Characterization Sampling Locations
at the Former Associate Aircraft Site



R23F002.DGN

Figure 2
Characterization Sampling Locations
at the Former Associate Aircraft Site



124 R73F003.DGN

Figure 3
Additionally Indentified Areas of Contamination at the Former Associated Aircraft Site

120071

From: Angie John (AKJOHN@AM@ORN6) 128071
Date: 12/19/94 4:55:33 pm
To: See Recipient List
Cc: See Recipient List
Subj: Continuing Fairfield Characterization Update...

==========

Hello all...

Another not-so-short report on the status of the characterization of Fairfield. Just in case you don't have your handy-dandy ORNL designation report immediately accessible, I'll define my terms for this note. Section 1 is the brand new bay at the rear of the Force Control building. Section 2 is the next section west of Section 1 and is an old AA loading dock. Sections 3 (big open work area) and 4 (grinding room, caged areas, small tiled office, etc.) are the main sections used for MED/AEC work and are the sections on which the RA is focused. Section 5 is the next section west of section 4.

****

*Last week we conducted direct surveys of the expansion joints in Sections 2 and 5. In the ORNL report, Section 5 was identified as having two hot segments of expansion joint. We confirmed the presence of those spots and did not locate any new ones. In section 2 (the former loading dock to the rear of the building) we identified several hot areas of expansion joint. The ORNL report did not identify contamination in this section. Although our surveys identified only three locations in the expansion joint, it is highly probable that all of the expansion joint material contains elevated concentrations of uranium (I estimate that there are 210 linear feet of exp. jt. in this section). Much of the joint is covered by a strong epoxy material that expertly shields radiation... when we chipped some of it off of an apparently uncontaminated expansion joint, we discovered that in reality the expansion joint was contaminated. I suggest that this section should be scheduled for RA as well.

*Analytical results for the floor tiles have been received, and the verdict is: the tiles contain 20 - 30% chrysotile asbestiform minerals. The cutoff is 1%, according to H&S, which means we DO have asbestos to contend with... these tiles came from the little office adjacent to the caged area and from the rest room in section 5. We went ahead and sampled the restroom (tiles) since it was immediately adjacent to one of the little spots we were remediating in section 5.

*I rechecked the calculation of the concentration of lead in the paint on the walls: the original number is correct. The lead concentration is 265.5 mg/L when 100% leachability is assumed. The RCRA cutoff is 5 mg/L.

*Subslab sampling (field screening results) indicated that the lateral migration of contamination is minimal. Sampling locations only 5" from the expansion joint in Sections 3 and 4 came out clean. However, direct survey readings taken of soils immediately below the expansion joint and readings taken from the underside of the expansion joint were elevated. Based on this information, the width of concrete being removed adjacent to the expansion joint during RA will expose an area that is more than adequate to remove any contaminated subslab soils. Contaminated subslab soil was therefore found directly below expansion joints in Sections 3 and 4.

*In addition, subslab contamination was identified approximately 4' beneath section 1, immediately adjacent to the edge of section 2 (loading dock) lending further credence to the 'sweeping scenario.' To roughly bound this contamination laterally, we bored another hole approximately 40' further out from the edge of the former loading dock. This borehole was 12' deep and exhibited background beta-gamma measurements.

*A borehole placed to the north of the north facing roll-up door in Section 3 (in the truck bay/mail room area) also appeard to exhibit slightly elevated readings at about 4' below the slab. We struck refusal at 4'... in the form of what felt like an asphalt slab (we were hand augering at this location). We await sample results at the end of the week.

*Exterior soil sampling was also conducted in the area at the southwest corner of the building (in the immediate vicinity of the heat pumps). We collected one set of samples to determine depth and collected several additional samples in the surrounding area to bound the lateral extent of contamination. Samples 6 - 10' from the area identified previously as being contaminated came out clean (field gamma spec preliminary results). Preliminary results also indicate that the depth of contamination in this area is less than 1'. When final results are available, I can draw up a figure to define boundaries.

If you have any questions, let me know!

Angie

==========

Recipient List:

TO:Gerald Palau (GLPALAU@AM@ORN6)
TO:Janice Allison (jsalliso@AM@ORN6)
TO:Joseph Wood (jgwood@AM@ORN6)
TO:Mike Poligone (mdpoligo@AM@ORN6)
TO:Sam Shah (SRSHAH@AM@ORN6)
TO:Narendran Ramachandran (NXRAMACH@AM@ORN6)
TO:Tammy Bunch (tltaylor@AM@ORN6)
TO:William Lenczuk (WLENCZUK@AM@ORN6)
TO:Gil Drexel (gddrexel@AM@ORN6)
TO:Clyde Thompson (ckthomps@AM@ORN6)
TO:MEGRAY (megray@AM@ORN6)
TO:Andrew Lacey (ANLACEY@AM@ORN6)
TO:Jeffrey Braun (JGBRAUN@AM@ORN6)

CC:Greg Borden (GJBORDEN@AM@ORN6)
CC:Matthew Bird (MABIRD@AM@ORN6)
CC:Peggy Moore (pamoore@AM@ORN6)
CC:Marty Keller (MRKELLER@AM@ORN6)
CC:Virden Spicer (VGSPICER@AM@ORN6)
CC:William Cosey (WVCOSEY@AM@ORN6)
CC:Karen Bence (kebence@AM@ORN6)
CC:SGTHIEME (sgthieme@AM@ORN6)
CC:SGTHIEME (sgthieme@AM@ORN6)

(Attachment 1, 2/2)

2.4 ENVIRONMENTAL COMPLIANCE DOCUMENTATION

Documents listed in this section fulfill the NEPA documentation requirements for the former Associate Aircraft Tool and Manufacturing Company site.

Memorandum from J. La Grone to T. P. Grumbly, "Categorical Exclusion (CX) Determination - Associate Aircraft Site Removal Action," BNI CCN 123194, November 17, 1994.	II-21
Memorandum from D. Sexton to Distribution, "EIN: Ohio Hazardous Waste Regulations," BNI CCN 125008, January 10, 1995.	Ref. 15
Memorandum from L. C. Marz to J. A. Turi, "Exemption from DOE Order 5820.2A for Radioactive Waste from FUSRAP," BNI CCN 125570, January 19, 1995.	II-26

United States Government **Department of Energy**

Oak Ridge Operations

memorandum

DATE: November 17, 1994

REPLY TO ATTN OF: EW-93:Hartman

SUBJECT: **CX DETERMINATION - REMOVAL ACTION AT THE ASSOCIATE AIRCRAFT SITE**

TO: Thomas P. Grumbly, Assistant Secretary for Environmental Management, EM-1

Attached is a categorical exclusion (CX) determination describing the proposed removal and disposal of radioactively contaminated materials at the Associate Aircraft site, Fairfield, Ohio. I have determined that this action conforms to an existing National Environmental Policy Act (NEPA) Subpart D CX and may be categorically excluded from further NEPA review and documentation.

This memorandum is a routine notification of a CX determination. The authority for this determination was delegated to the Oak Ridge Operations (ORO) Manager by the Assistant Secretary for Environmental Restoration and Waste Management on December 10, 1991.

If you have any questions concerning NEPA compliance issues, please contact Patricia W. Phillips, ORO NEPA Compliance Officer, at (615) 576-4200.

Joe La Grone
Manager

Attachment

cc w/attachment:
D. G. Adler, EW-93, ORO
S. C. Golian, EM-22, TREV II
L. E. Harris, EM-431, TREV II
G. S. Hartman, EW-93, ORO
N. Hendrix, EW-91, ORO
G. L. Palau, BNI
P. W. Phillips, SE-311, ORO
J. Russell, EM-421, BAH, TREV II
R. S. Scott, EM-20, FORS
W. M. Seay, EW-93, ORO
J. D. Waddell, SAIC
J. W. Wagoner II, EM-421, QO

CATEGORICAL EXCLUSION (CX) FOR REMOVAL ACTION AT THE ASSOCIATE AIRCRAFT SITE

PROPOSED ACTION: Removal of radioactively contaminated materials at the Associate Aircraft site.

LOCATION: Associate Aircraft site, Fairfield, Ohio [FUSRAP site].
The former Associate Aircraft facility is located at 3660 Dixie Highway, Fairfield, Ohio, and is part of DOE's Formerly Utilized Sites Remedial Action Program (FUSRAP). From February to September 1956 Associate Aircraft Tool and Manufacturing Company performed work for National Lead of Ohio (NLO), a prime contractor for the U.S. Atomic Energy Commission (AEC). The machine shop at the Associate Aircraft site produced hollow uranium slugs. Operations included hollow drilling, reaming, and turning uranium slugs to a final outside diameter.

DESCRIPTION OF PROPOSED ACTION: The proposed action is to safely remove, transport, and dispose of radioactively contaminated materials at the Associate Aircraft site, thereby eliminating potential exposure of workers and the public to contamination exceeding applicable cleanup guidelines. Proposed site activities include, but are not limited to, the following: Excavation of concrete floor areas and subsurface soils; excavation of parking lot materials; decontamination of structural surfaces in the portion of the building used for AEC contract work; decontamination of drains and associated drain-lines; temporary onsite storage of wastes; packaging, transportation, and disposal of materials at existing appropriately licensed disposal facilities; and disposal of waste/debris below DOE contamination/radiological release guidelines in a commercial disposal facility. In the event that disposal delays require temporary staging and/or storage of contaminated wastes, storage would be conducted in accordance with all applicable regulations.

The proposed removal action would be conducted under DOE authorities pursuant to the Atomic Energy Act (AEA), would be consistent with the final remedial action for the site, and meets the eligibility criteria for conditions that are integral elements of actions eligible for categorical exclusion as stated in 10 CFR 1021:

1. The proposed action would not threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, including requirements of DOE orders. All activities would be managed by FUSRAP.

2. The proposed action would not require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators

**CATEGORICAL EXCLUSION (CX) FOR
REMOVAL ACTION AT THE
ASSOCIATE AIRCRAFT SITE (cont.)**

and facilities for treating wastewater, surface water, and groundwater). Wastes generated during the proposed action would be collected, analyzed to determine waste characteristics, and segregated as they are generated into nonhazardous, RCRA-only, mixed, and radioactive-only categories. If hazardous wastes are determined to be commingled with radioactive waste, removal and temporary storage would be done in accordance with applicable requirements; the mixed waste would then be disposed of at an existing facility designed to accept these wastes. Wastes would be transported offsite in accordance with applicable transportation and disposal requirements and disposed of at existing facilities or stored temporarily onsite in accordance with applicable requirements pending evaluation of final disposal options. If temporary storage is required, wastes generated from these activities would be managed in accordance with regulations applicable to the types of wastes being managed.

3. The proposed action would not disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases. The removal action would be conducted in an environmentally responsible manner to ensure site-specific control of environmental contamination.

4. The proposed action would not adversely affect any environmentally sensitive resources defined in the Federal Register Notice referenced below, including archaeological or historical sites; potential habitats of threatened or endangered species; floodplains; wetlands; areas having a special designation such as Federally- and state-designated wilderness areas, national parks, national natural landmarks, wild and scenic rivers, state and Federal wildlife refuges, and marine sanctuaries; prime agricultural lands; special sources of water such as sole-source aquifers; and tundra, coral reefs, or rain forests. The proposed action would occur in a previously disturbed/developed area.

There are no extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal, and the proposal is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211.

The estimated cost for this action is less than $2 million and would take less than 12 months to complete.

CATEGORICAL EXCLUSION (CX) FOR REMOVAL ACTION AT THE ASSOCIATE AIRCRAFT SITE (cont.)

CX TO BE APPLIED: From the DOE NEPA Implementing Procedures, 10 CFR 1021, Subpart D, Appendix B, under actions that "Normally Do Not Require EAs or EISs," "B6.1 Removal actions under CERCLA (including those taken as final response actions and those taken before remedial action) and removal-type actions similar in scope under RCRA and other authorities (including those taken as partial closure actions and those taken before corrective action), including treatment (e.g., incineration), recovery, storage, or disposal of wastes at existing facilities currently handling the type of waste involved in the removal action...."

I have concluded that the proposed action meets the requirements for the CX referenced above. Therefore, I recommend that the proposed action be categorically excluded from further NEPA review and documentation.

Patricia W. Phillips 10-3-94

Patricia W. Phillips, ORO NEPA Compliance Officer Date

Based on my review and the recommendation of the ORO NEPA Compliance Officer, I recommend that the proposed action be categorically excluded from further NEPA review and documentation.

11/10/94

Bryan D. Walker, Acting Assistant Manager for Environmental Restoration and Waste Management, ORO Date

Based on the recommendations of the ORO NEPA Compliance Officer and the Assistant Manager for Environmental Restoration and Waste Management, I determine that the proposed action is categorically excluded from further NEPA review and documentation.

11/15/94

Joe La Grone, Manager, DOE Oak Ridge Operations Office Date

DOE F 1325.8
(4/93)

123194 94-089

United States Government **Department of Energy**

Oak Ridge Operations

memorandum

DATE: November 17, 1994

REPLY TO ATTN OF: EW-93:Hartman

SUBJECT: **CX DETERMINATION - REMOVAL ACTION AT THE ASSOCIATE AIRCRAFT SITE**

TO: Thomas P. Grumbly, Assistant Secretary for Environmental Management, EM-1

Attached is a categorical exclusion (CX) determination describing the proposed removal and disposal of radioactively contaminated materials at the Associate Aircraft site, Fairfield, Ohio. I have determined that this action conforms to an existing National Environmental Policy Act (NEPA) Subpart D CX and may be categorically excluded from further NEPA review and documentation.

This memorandum is a routine notification of a CX determination. The authority for this determination was delegated to the Oak Ridge Operations (ORO) Manager by the Assistant Secretary for Environmental Restoration and Waste Management on December 10, 1991.

If you have any questions concerning NEPA compliance issues, please contact Patricia W. Phillips, ORO NEPA Compliance Officer, at (615) 576-4200.

Joe La Grone
Manager

Attachment

cc w/attachment:
D. G. Adler, EW-93, ORO
S. C. Golian, EM-22, TREV II
L. E. Harris, EM-431, TREV II
G. S. Hartman, EW-93, ORO
N. Hendrix, EW-91, ORO
G. L. Palau, BNI
P. W. Phillips, SE-311, ORO
J. Russell, EM-421, BAH, TREV II
R. S. Scott, EM-20, FORS
W. M. Seay, EW-93, ORO
J. D. Waddell, SAIC
J. W. Wagoner II, EM-421, QO

CONCURRENCE

RTG SYMBOL	INITIALS/SIG.	DATE
EW-93	Hartman	9/16/
EW-93	Price	9/16/
SE-311	Phillips	10
CC-10	Carnes	11/6/
EW-90	Adams	11/14
M-3	Polehn	11/14/
M-2	Smithw	11/14
M-1	La Grone	11-14-

DOE F 1325.10
(7-79)

OFFICIAL FILE COPY

DOE F 1325.8
(8/89)

125570

United States Government

Department of Energy

Oak Ridge Operations Office

memorandum

DATE: January 19, 1995

REPLY TO ATTN OF: EW-93:Marz

SUBJECT: USE OF EXEMPTION FROM DEPARTMENT OF ENERGY ORDER 5820.2A FOR RADIOACTIVE WASTE FROM FUSRAP

TO: James A. Turi, Director, Office of Program Support, Office of the Deputy Assistant Secretary Waste Management, EM-33, TREV II

This memorandum serves to notify EM-33 of the Formerly Utilized Sites Remedial Action Program's (FUSRAP) inter* to dispose of radioactive waste at a commercial disposal facility.

In compliance with the authorization (T. P. Grumbly to Managers DOE Operations Offices dated 10/12/93), the following information is being provided prior to commencement of the Associate Aircraft, Fairfield, Ohio, waste stream 2027-01.

Waste type:

Soil, vacuum blast material, and concrete.

Total volume:

650 cubic yards.

Destination:

Envirocare of Utah, Clive, Utah

Type of environmental documentation:

FUSRAP Modified Observational Approach, NHPA Determination, and NEPA CX

Status of environmental documentation:

Final, Approved Documents

Procurement or contract documents in place:

U.S. Army Corps of Engineers DACW-41-93-D-9001; as a part of this subcontract all permits and licenses have been reviewed, and found to be acceptable. Three days prior to shipment, the State of Utah will be contacted and the status of the facility's RCRA permit will be confirmed.

Date of last audit:

August 16-19, 1993, by USDOE [Jane Powell (615) 576-7807]. There were 11 findings and 17 concerns.

If you have any questions, please contact me at (615) 576-9636.

Loren C. Marz, Environmental Engineer
Former Sites Restoration Division

cc: James W. Wagoner II, EM-421, QQ

2.5 REAL ESTATE INSTRUMENTS

Fully executed real estate licenses were obtained from the property owner before the remedial action began.

Letter from M. L. Besl to K. Kates, "Real Estate License for AAS," BNI CCN 123072, November 10, 1994. II-29

FORCE CONTROL INDUSTRIES, INC.
3660 Dixie Hwy., Zip 45014
P.O. Box 18366 Zip 45018
Fairfield, Ohio
Phone (513) 868-0900
FAX (513) 868-2105

1100 Overcast Suite F
Troy, Michigan 48083
Phone (810) 524-0125
FAX (810) 524-1258

Oil Shear Clutch & Brake Systems

123072

November 10, 1994

U. S. Department of Energy
Oak Ridge Operations Office
Attn: AD-424, Katy Kates
P.O. Box 2001
Oak Ridge, TN 37831

Dear Ms. Kates,

In furtherance of the August 24, 1994 letter from Doug Shook, his subsequent conversation with our legal counsel, Timothy A. Garry, follow-up with Steve Priest, and your letter of November 4, 1994, the modifications you have proposed to the real estate license are acceptable to us. As you suggested, we have made the changes to the real estate license heretofore submitted to us, and we have enclosed three copies of the executed license. Please return a fully executed copy to us signed on behalf of the U. S. Department of Energy.

We appreciate Mr. Shook's assistance and cooperation in this matter. I am forwarding a copy of this letter along with a copy of the license signed for the partners.

If you have any questions please feel free to contact me.

Sincerely,
Force Control Industries, Inc.

Michael L. Besl

123072

REAL ESTATE LICENSE NO.
REORDOER-7-

DEPARTMENT OF ENERGY

LICENSE

PROJECT: ASSOCIATE AIRCRAFT TOOL AND MANUFACTURING, INC., FAIRFIELD, OHIO
PURPOSE: REMEDIAL ACTION OF SITE

THIS LICENSE, between Lester J. Besl and James L. Besl Partnership, known as the "Grantor" and the U.S. Department of Energy, known as the "Grantee", is subject to the following terms and conditions.

1. Rights Granted - The Grantor grants to the Grantee, its agents, employees, or representatives permission to use the premises or facilities, together with ingress and egress, for the purpose of performing remedial action to remove contaminated material

at the location shown depicted on Exhibit(s) "A" attached to this instrument and more specifically identified in whole or in part as Parcel No. 40 filed in Deed Book 1625, Page 139 in the records of Butler County, Ohio.

2. Term/Termination Rights - This License is valid upon execution by the Grantee and will be effective on the date of execution by the Grantor of this instrument and shall continue in effect for a period of two (2) years unless terminated by either of the parties on not less than thirty (30) days prior written notice given to the other; provided, however, that the Grantor may not terminate this License without the Grantee's approval, which approval may not be unreasonably withheld.

3. Consideration - Upon execution of this License by the Grantee, the Grantee shall initiate action to pay to the Grantor the sum of $ and complete payment for the rights granted within this License.

4. Authority to License - The Grantor represents and warrants that it is the owner of the property and has full right, power, and authority to enter into this License and grant the rights set out in this License.

5. Grantor Responsibility - The Grantor responsibility is set out within the terms and conditions of the rights granted under this License. The Grantor makes no representation as to the suitability or fitness of the premises for the intended purpose.

DOE-RE FORM 20-GN (01-20-93)

123072

REAL ESTATE LICENSE NO.
REORDOER-7-

DEPARTMENT OF ENERGY

LICENSE

PROJECT: ASSOCIATE AIRCRAFT TOOL AND MANUFACTURING, INC., FAIRFIELD, OHIO
PURPOSE: REMEDIAL ACTION OF SITE

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1. Rights Granted - The Grantor grants to the Grantee, its agents, employees, or representatives permission to use the premises or facilities, together with ingress and egress, for the purpose of performing remedial action to remove contaminated material

at the location shown depicted on Exhibit(s) "A" attached to this instrument and more specifically identified in whole or in part as Parcel No. (s) 40 filed in Deed/~~xxx~~ Book 1625, Page 139 in the records of Butler County, Ohio.

2. Term/Termination Rights - This License is valid upon execution by the Grantee and will be effective on the date of execution by the Grantor of this instrument and shall continue in effect for a period of ~~xxxx~~ two (2) years unless terminated by either of the parties on not less than thirty (30) days prior written notice given to the other; provided, however, that the Grantor may not terminate this License without the Grantee's approval, which approval may not be unreasonably withheld.

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4. Authority to License - The Grantor represents and warrants that it is the owner of the property and has full right, power, and authority to enter into this License and grant the rights set out in this License.

5. Grantor Responsibility - The Grantor responsibility is set out within the terms and conditions of the rights granted under this License. The Grantor makes no representation as to the suitability or fitness of the premises for the intended purpose.

DOE-RE FORM 20-GN (01-20-93)

123072

6. Grantee Responsibility - The Grantee, its agents, employees, or representatives will be responsible for property damage or injury or death to persons caused by the sole and direct negligence of their respective employees in performing on the Grantor's premises the activities and restoration which are the subject of this License. Grantee shall obtain all necessary permits, licenses, and approvals in connection with the activities to be conducted by the Grantee on the premises. During the performance of the activities specified in this License, the Grantee shall not unreasonably interfere with the use and enjoyment of the premises by the Grantor, and shall use its best efforts to minimize disruption of operations.

7. Access - During the term of this License, the Grantee, its agents, employees, or representatives shall have the right of access to and egress from the premises as needed and shall have the right to bring necessary equipment upon the premises in connection with the performance of the Grantee's activities as set out in Condition 1.

8. Title to Equipment, Fixtures - Title to all equipment, fixtures, appurtenances, and other improvements furnished and installed in connection with the Grantee's activities under this License shall remain with the Grantee.

9. Restoration - Upon termination of this License, the Grantee shall remove all its equipment, fixtures, appurtenances, and other improvements furnished and installed on the premises in connection with the Grantee's activities under this License. The Grantee shall restore the premises, when such restoration is required in connection with the Grantee's activities, to the extent reasonably practical, to the condition existing at the time of initiation of the Grantee's activities. With the consent of the Grantor, the Grantee may abandon Grantee-owned equipment, fixtures, appurtenances, and other improvements in place in lieu of restoration when it is in the best interests of the Grantee.

10. Successors in Interest - This License and the parties' commitments within, shall be binding on both parties, their successors, and assigns.

11. Funding - Obligations of the Grantee under this License shall be subject to the availability of funds appropriated by the Congress which the Grantee may legally spend for such purposes and nothing in this License implies that Congress will appropriate funds to perform this License.

The above terms and conditions are acknowledged and agreed upon as indicated by the signatures affixed below:

GRANTOR: Lester J. Besl and James L. Besl Partnership	GRANTEE: U.S. Department of Energy
By: [signature]	By: Richard P. Nicholson
Title: [illegible]	Title: Realty Officer
Date: 1-11-04	Date:

DOE-RE FORM 20-GN (01-20-93)

2.6 POST-REMEDIAL ACTION REPORT

The following documents describe the extent of the remedial action and the successful decontamination of the Associate Aircraft Tool and Manufacturing Company.

BNI, *Post-Remedial Action Report for the Associate Aircraft Site, Fairfield, Ohio*, DOE/OR/21949-343, July, 1996. Ref. 18

2.7 INTERIM VERIFICATION LETTERS TO PROPERTY OWNERS AND VERIFICATION STATEMENTS AND REPORTS

This section contains the documents related to the successful decontamination of the subject property.

Department of Energy
Washington, DC 20585

APR 15 1993

1993 APR 19 PM 1:53

Mr. James L. Besl
President
Force Control Industries
3660 Dixie Highway
Fairfield, Ohio 45014

Dear Mr. Besl:

With your consent, the U.S. Department of Energy (DOE) conducted a radiological survey at the Former Associate Aircraft Tool and Manufacturing Company site in Fairfield, Ohio. DOE has received the survey report from its survey contractor, Oak Ridge National Laboratory (ORNL). Two copies of the report are enclosed for your information and use.

The report concludes that uranium is present in the facility in excess of the DOE guidelines for residual radioactive material. This conclusion is based on direct radiation measurements (shown graphically on Figures 8, 9, 14, and Table 5 on pages 8, 9, 22, and 29, respectively) and on analysis of soil samples, dust samples, and scrapings from the floor seams (reported in Tables 3, 4, and 5, on pages 27, 28, and 29, respectively).

In a letter report previously provided to you, ORNL stated: "Under present use conditions, we do not believe there is any significant health risk from the uranium contamination." DOE continues to agree with this assessment. The only significant health concern would be a change in the use of the building which could result in the inhalation or ingestion of radioactivity by building occupants. For this reason, DOE recommends against construction or renovation activities in areas where residual uranium is present.

Due to the elevated radioactivity present within the building, the facility will be considered for inclusion in DOE's Formerly Utilized Sites Remedial Action Program. If I can provide further information or be of any assistance, please call me at 301-903-8149.

Sincerely,

W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

Enclosure

cc:
D. Adler, OR
M. Murray, ORNL

Department of Energy
Washington, DC 20585

93 MAY -6 PM 1:36

MAY 03 1993

Mr. James Besl
President
Force Control Industries
3660 Dixie Highway
Fairfield, Ohio 45014

Dear Mr. Besl:

This is to notify you that the U.S. Department of Energy (DOE) has designated the former Associate Aircraft Tool and Manufacturing Company site in Fairfield, Ohio, for remedial action as a part of the Formerly Utilized Sites Remedial Action Program. Remedial activities are managed by the DOE Oak Ridge Field Office, and Mr. Dave Adler (615-576-9634) will be the Site Manager. As a result of the designation decision, Mr. Adler will be the appropriate point of contact in the future.

If you have any questions, please call me at 301-903-8149.

Sincerely,

W. Alexander Williams, PhD
Designation and Certification Manager
Division of Off-Site Programs
Office of Eastern Area Programs
Office of Environmental Restoration

cc:
D. Adler, OR

Department of Energy
Washington, DC 20585

JUL 5 2 22 PM '94

JUN 2 8 1994

Mr. Michael Besl
Force Control Industries
3660 Dixie Highway
Fairfield, Ohio 45014

Dear Mr. Besl:

I have received the enclosed trip report from Oak Ridge National Laboratory, and I am forwarding it to you for your information and use.

Sincerely,

W. Alexander Williams, PhD
Designation and Certification Manager
Off-Site/Savannah River Program Division
Office of Eastern Area Programs
Office of Environmental Restoration

Enclosure

cc:
D. Adler, OR

OAK RIDGE NATIONAL LABORATORY
MANAGED BY MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE U.S. DEPARTMENT OF ENERGY

POST OFFICE BOX 2008
OAK RIDGE, TENNESSEE 37831

June 14, 1994

Dr. W. A. Williams
EM-421
Trevion II Building
Department of Energy
Washington, D. C. 20585

Dear Dr. Williams:

Trip Report: Radiological Survey of Former Associate Aircraft Tool and Manufacturing Company Site, Fairfield, Ohio (FOH001), May 31 and June 1, 1994

On May 31 and June 1, a radiological survey was conducted in the area surveyed during the March 7, 1994 survey in the referenced facility. This letter provides the results of that survey.

Survey methods consisted of a beta-gamma survey of the surface of the concrete as the floor covering material was being removed by a construction contractor to begin renovation of the former engineering offices located in Section Four of the building. This survey was requested by current owners, due to the elevated floor readings found previously in the vicinity.

The area labeled as Conference Room was thoroughly scanned using "pancake" G-M detectors. With the exception of four elevated spots, the remainder of the floor was less than 150 cpm gross, beta-gamma. One of the four spots was remediated to less than 150 cpm gross, beta-gamma. A point source in the northwest corner of the room was found reading approximately 460 cpm gross, which corresponds to approximately 2,100 dpm/100 cm^2. Another point source, which was approximately three feet from the northwest corner of the room, was found reading approximately 760 cpm gross, but was remediated to less than 300 cpm, which corresponds to approximately 1,300 dpm/100 cm^2. Both of these spots are less than the guideline of 5,000 dpm/100 cm^2 for average contamination as listed in Figure IV-1 of Department of Energy 5400.5. One planar area of contamination was found approximately three feet from the northwest corner of the room . The reading was approximately 400 cmp gross, which corresponds to approximately 11,000 dpm/100 cm^2. which is less than the guideline of 15,000 dpm/100 cm^2 for maximum contamination, as listed in Figure IV-1 of Department of Energy 5400.5.

A section of the flooring was removed in each of the two rooms labeled "office(s)". All readings were less than 80 cpm gross, beta-gamma.

A section of the flooring was removed in the room labeled "drawings". All readings were less than 120 cpm gross, beta-gamma.

The flooring was removed approximately two feet into the "Work Area," all readings were less than 150 cpm gross, beta-gamma. The remainder of the flooring in this room was not removed but was surveyed, since this room reportedly was added after the Atomic Energy Commission activities had ended.

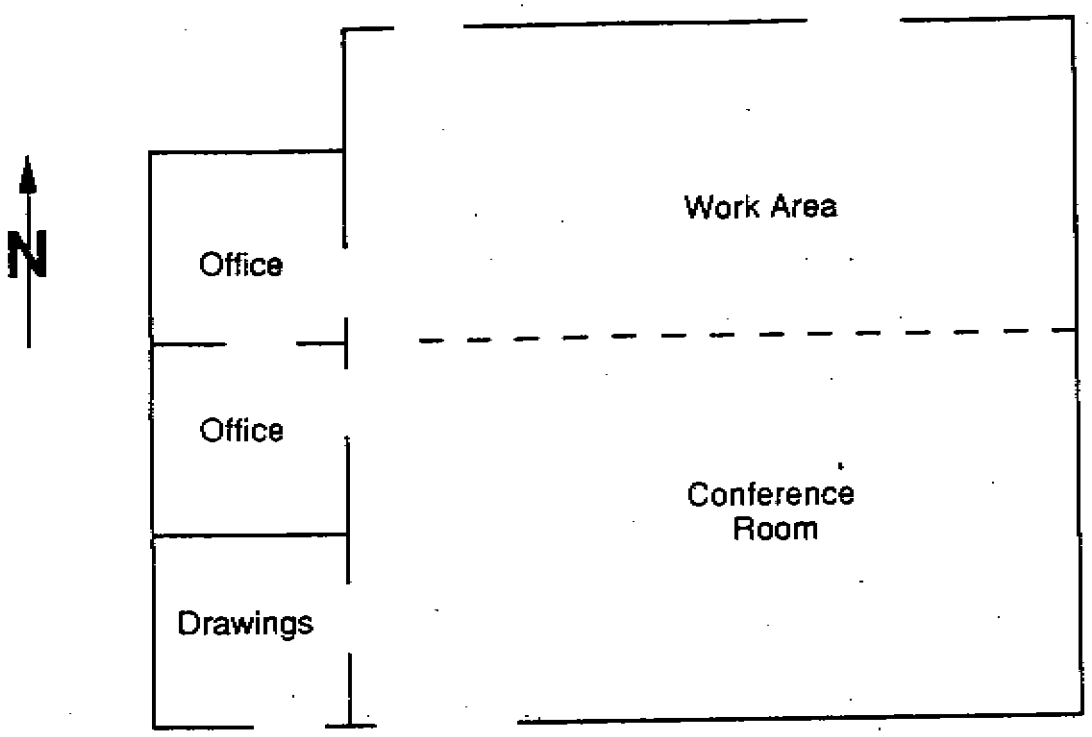
If there are any questions concerning this survey, please contact Kyle R. Kleinhans (615-574-1777) or Michael E. Murray (615-574-5838).

Sincerely,

Kyle R. Kleinhans
Measurement Applications
and Development Group

KRK:ec

c: W. D. Cottrell
R. D. Foley
M. E. Murray
File-RC



For reference, see Fig 12 from ORNL/RASA-93/2
NOTE: NOT TO SCALE

United States Government **Department of Energy**

memorandum

DATE: June 05, 1995

REPLY TO ATTN OF: EM-421 (W. A. Williams, 301-903-8149)

SUBJECT: Hazard Assessment for Radioactive Contamination at the Associate Aircraft Site, Fairfield, Ohio

TO: L. Price, OR

This memorandum is to provide comments and approval of the Associate Aircraft Site Hazard Assessment for Identified Soil Contamination.

The hazard assessment was prepared and supplemental limits were requested, based on a single soil sample with 134 picoCuries per gram of uranium. This sample was obtained from underneath the building slab in an area that was a loading dock for the facility during Atomic Energy Commission operations during the 1950s. The area is not readily accessible because of industrial equipment located over the soil contamination area. The estimated cost for removing the equipment and removing the contaminated soil is $260,000. The cost of removing the uranium exceeds any potential benefit.

At the request of my staff, some additional data was obtained concerning the extent of the residual uranium. This data was furnished by facsimile on May 31, 1995, and confirms the limited extent of the residual uranium.

We approve the Hazard Assessment and the use of supplemental limits for the inaccessible soil contamination at the site. Dose calculations, using the RESidual RADioactivity code, show the potential exposures to be well within the dose limits specified within the Department of Energy Order 5400.5, Chapter IV.

If you have any questions regarding this, please call me at 301-903-2531.

James W. Wagoner II

James W. Wagoner II
Director
Off-Site/Savannah River Program Division
Office of Eastern Area Programs
Office of Environmental Restoration

cc:
M. Murray, ORNL
J. Wood, BNI

Printed on recycled paper

2.8 STATE, COUNTY, AND LOCAL COMMENTS ON REMEDIAL ACTION

This section contains correspondence with the state, county, or local governments.

Department of Energy

Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831—8723

July 18, 1995

Mr. Graham Mitchell, Environmental Manager
Ohio Environmental Protection Agency
Southwest District Office
40 South Main Street
Dayton, Ohio 45402

Dear Mr. Mitchell:

HAZARD ASSESSMENT FOR RESIDUAL CONTAMINATION AT THE FORMER ASSOCIATE AIRCRAFT SITE (AAS)

Enclosed is a copy of the Hazard Assessment that was performed for the Former Associate Aircraft Site (AAS) in Fairfield, Ohio.

In summary, Uranium-238 concentrations above the site specific criteria (35 pCi/g) were found in the soil in a small sub-slab area of the former AAS building. The sample results from the location indicated a maximum concentration of 134 pCi/g. This is well below the derived guidelines for the site (280-970 pCi/g) and equates to a dose of 4.154 mrem/yr for current and likely future use of the site.

Based on this HA and the additional cost of remediation (approximately $260,000), no additional remediation is planned for this isolated area of soil in Section 1 of the building. James Wagoner, II, of DOE-HQ and Mike Murray Oak Ridge National Laboratory have reviewed and approved the HA in accordance with DOE protocols. A copy of the approval letter is also enclosed.

The AAS Post-Remedial Action Report (PRAR) will be completed within approximately two months; a copy will be forwarded to you when it is issued. The PRAR will be the comprehensive report describing the site conditions following the remedial action effort.

Should you have any questions regarding this hazard assessment, please feel free to contact me at (615) 576-9634 or Joe Wood at (615) 576-5207.

Sincerely,

David G. Adler, Site Manager
Former Sites Restoration Division

Enclosures

OhioEPA
State of Ohio Environmental Protection Agency

P.O. Box 163669, 1800 WaterMark Dr.
Columbus, Ohio 43216-3669
(614) 644-3020
FAX (614) 644-2329

George V. Voinovich
Governor

Date: JAN 0 3 1995

Dear Sir/Madam:

Please find a copy of the data sheet on the back of this letter and the provisional United States Environmental Protection Agency (U.S. EPA) Identification (ID) number that was assigned. Please examine all the information on the reverse side carefully. If there are any discrepancies, please contact us as soon as possible.

The identification number issued by the agency can be used for only this specific *one-time event*. The use of the provisional number for any other purpose is illegal. After completion of the job, please notify the Ohio EPA in writing, at the address below, to have the number deactivated from our list. If there is a possibility of regular hazardous waste generation in the future at the same site, it is recommended that you obtain a permanent U.S. EPA ID number for your site. A permanent number is obtained by completing a Notification of Regulated Waste Activity (8700-12) form. The form and booklet can be obtained from the Ohio EPA at the address below.

It is possible that, depending on the type of waste and the quantity that was shipped, you may be subject to reporting requirements. Ohio hazardous waste rules require anyone who generates 1000 kg (or 2200 lbs, or approximately 263 liquid gallons) of non-acute hazardous waste in a calendar month to submit a *Generator Annual Report* to the Ohio EPA. It is your responsibility to determine if the reporting requirements are applicable to you and to notify the Ohio EPA. Failure to submit reports may result in enforcement action. If there are any questions regarding reporting requirements, contact Ms. Paula Canter at the phone number listed below.

If you have any questions regarding the identification number, please contact the Data Management Section at 614/644-2977. The mailing address is:

Ohio EPA
Division of Hazardous Waste Management
Data Management Section
1800 WaterMark Drive
Columbus, Ohio 43215-1099

Thank you for your cooperation in the hazardous waste program.

Printed on recycled paper
EPA 1613 (rev. 6/94)

C90521

OhioEPA
State of Ohio Environmental Protection Agency

PROVISIONAL ID NUMBER: OHP 5000106655

A. Name of Installation: THE FORMER ASSOC. AIRCRAFT TOOL & MANUFACTURING SITE

B. Location Address: 3660 DIXIE HWY

C. City: FAIRFIELD — Zip Code: 45014

D. County: BUTLER

E. Mailing Address same as Location Address? yes [ ] no [X]

F. Mailing Address: BECHTEL NATIONAL / 151 LAFAYETTE DR PO BOX 350

G. City: OAK RIDGE — State: TN — Zip Code: 37831 (136)

H. Contact Person (Last Name): SEXTON — First Name: DAVID

I. Contact Phone Number: 615-574-3643

J. Purpose for needing a provisional ID number: Clean up site

K. Waste: DOD8

L. Initial Contact/Phone Number: DAVID SEXTON 615/574-3643

FOR OFFICE USE ONLY

REVIEW	ISSUE DATE	MAILED	INACTIVE
[signature]	JAN 03 1995	JAN 03 1995	

125062

USDOE OAKRIDGE OPERATIONS OFFICE, PO. BOX 2001,
OAKRIDGE, TN 37831-8723

120674

Department of Energy

Oak Ridge Operations
P.O. Box 2001
Oak Ridge, Tennessee 37831-8723

September 19, 1994

Mr. Saul Gleiser
Ohio Historical Society
Historic Preservation Division
1982 [illegible] Avenue
Columbus, Ohio 43211-2497

Dear Mr. Gleiser:

ASSOCIATE AIRCRAFT SITE - NHPA (SECTION 106) DETERMINATION

In accordance with Section 106 of the National Historic Preservation Act (NHPA), the Department of Energy (DOE) has determined that the proposed removal of radiological contamination at the former Associate Aircraft site located at 3660 Dixie Highway, Fairfield, Ohio, will have no effect on properties included, or eligible for inclusion, on the National Register of Historic Places.

A description of proposed site activities is enclosed, along with site maps and photographs. Your concurrence that this undertaking will have no effect on properties included, or eligible for inclusion, on the National Register of Historic Places is requested by October 7, 1994.

If you have any questions or if you need additional information, please call me at (615) 576-0273.

Sincerely,

Gary S. Hartman

Gary S. Hartman, Environmental Scientist
Former Sites Restoration Division

Enclosures
cc w/enclosures:
G. L. Palau, BNI
R. T. Moore, SE-311
D. G. Adler, EW-93
J. G. Hart, EW-93
L. K. Price, EW-93
W. M. Seay, EW-93

120674

PROJECT SUMMARY

REMOVAL OF RADIOLOGICAL CONTAMINATION ASSOCIATE AIRCRAFT SITE

PROPOSED ACTION: The Department of Energy Oak Ridge Operations (DOE/ORO, Formerly Utilized Sites Remedial Action Program (FUSRAP), proposes to remove and radiologically decontaminate the former Associate Aircraft site. Radioactive contamination at the site consists of uranium metal contamination both inside and outside of the buildings. Removal of radioactive contamination at the site will result in the excavation of concrete floor areas and subsurface soils, excavation of parking lot materials, decontamination of structural surfaces in the portion of the building used for U.S. Atomic Energy Commission (AEC) contract work, and decontamination of drains and associated drain-lines.

LOCATION: The proposed action would take place at the former Associate Aircraft site located at 3660 Dixie Highway, Fairfield (Butler County), Ohio, approximately 10 miles northwest of Cincinnati.

DISCUSSION: Associate Aircraft Tool and Manufacturing Company performed uranium machining work from February to September 1958 for National Lead of Ohio (NLO), a prime contractor for the AEC. The machine shop at the former Associate Aircraft site produced hollow uranium slugs. Operations included hollow drilling, reaming, and turning uranium slugs to a final outside diameter. The former Associate Aircraft facility is still an operating machine shop with a total area of approximately 20,000 to 25,000 square feet. Historical records note that the machining work was confined to an exclusive portion of the building. The current occupant of the site, Force Control Industries, Inc., purchased the site in 1969 from Dixie Machinery; the owner of the site is the James and Lester Best Partnership. According to a current employee who also visited Associate Aircraft in the 1950s, the site has not been remodeled extensively.

DETERMINATION: DOE has determined that the proposed action would have no effect on any archaeological sites or relics or historic properties included or eligible for inclusion in the National Register of Historic Places. DOE requests your concurrence in this determination.

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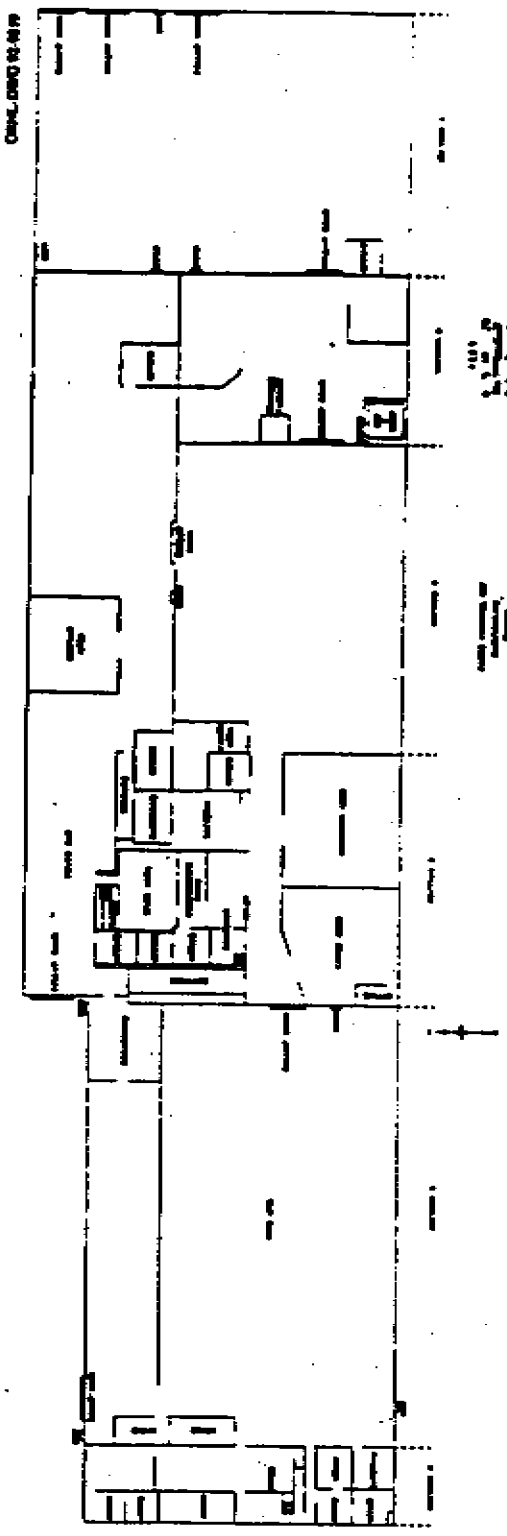

Fig. 5. Diagram showing the floor plan of the building at the former Aeronca Aircraft site, Fairfield, Ohio.

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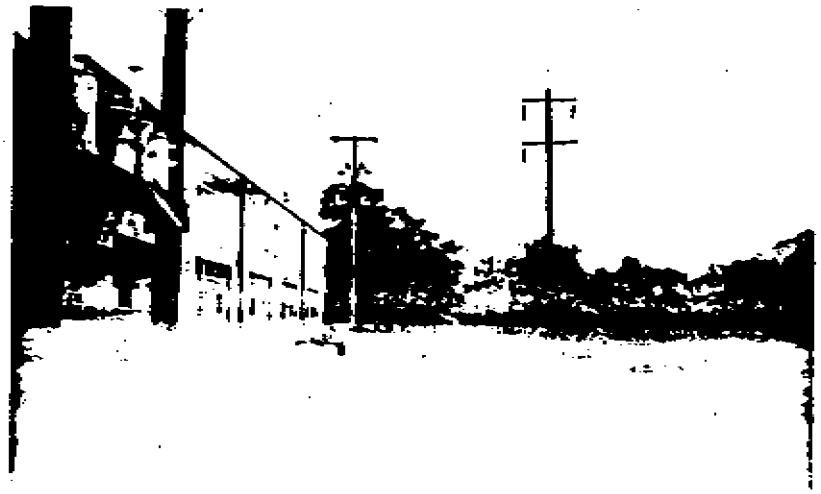
ASSOCIATE
AIRCRAFT
SITE

EXTERIOR OF
BUILDING

3660 Dixie Highway
Fairfield, Ohio



120674

ASSOCIATE
AIRCRAFT
SITE

INTERIOR OF
BUILDING.

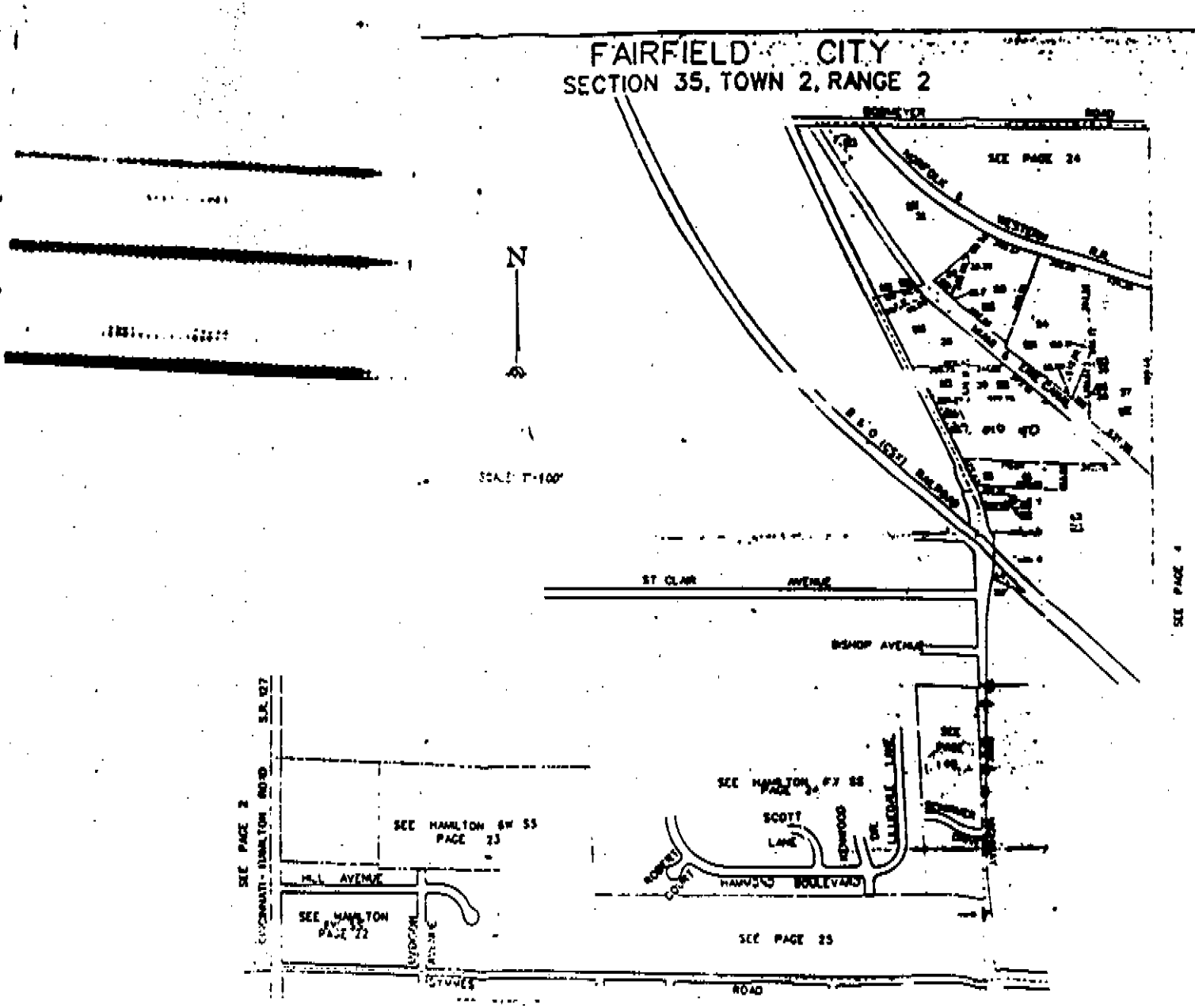
3660 Dixie Highway
Fairfield, Ohio

12674

FAIRFIELD CITY
SECTION 35, TOWN 2, RANGE 2

003.000

Associate Aircraft Site
3660 Dixie Highway
Fairfield, Ohio



11-52

1262

Bechtel

Interoffice Memorandum

To	Distribution	File No.	7440/124, 135
Subject	EIN: Ohio Hazardous Waste Regulations; Empty Container Rule	Date	February 6, 1995
		From	D. D. Sexton
		Of	ES&H
Copies to	T. E. Morris G. R. Galen G. L. Palau	At	Oak Ridge Ext. 4-3643

BACKGROUND

This Environmental Information Notice (EIN) provides regulatory guidance concerning compliance with the Ohio Hazardous Waste regulations for residues of hazardous waste in empty containers or inner liners (e.g., the Empty Container Rule). This EIN is based on research and evaluation of §3745-51-07 of the Ohio Administrative Code (OAC).

SUMMARY OF THE RULE

General

If a hazardous waste is emptied from a container, the residue remaining in the container is not considered a hazardous waste if the container meets certain requirements. These requirements provide an exemption from hazardous waste management regulations for containers holding residues of hazardous waste which are considered "empty." Such "empty" containers are not subject to hazardous waste regulation.

Non-acute Hazardous Waste

A container that has held non-acute hazardous waste is considered "empty" if all wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container (e.g., pumping and pouring) and either no more than one inch of residue remains on the bottom of the container or no more than three percent by weight of the total capacity of the container remains inside.

Acute Hazardous Waste

A container that has held an acute hazardous waste is considered empty if the container has been triple rinsed using an appropriate solvent, cleansed by another method that has been shown in scientific literature or by testing to achieve equivalent removal, or the inner liner of the container has been removed.

Compressed Gas

A container that has held a hazardous waste that is a compressed gas is empty when the pressure in the container approaches atmospheric.

RECOMMENDATION

Containers holding non-acute hazardous waste should be used until all possible wastes have been removed by pumping, spraying or pouring waste from the container. Provided that no more than one inch of residue remains on the bottom of the container or no more than three percent by weight of the total capacity of the container remains inside, the container is considered empty and is not subject to hazardous waste regulation.

ATTACHMENTS

1. OAC 3745-51-07
2. OAC 3745-55-70

3745-51-07 Residues of hazardous waste in empty containers

(A)(1) Any hazardous waste remaining in either an empty container or an inner liner removed from an empty container, as defined in paragraph (B) of this rule, is not subject to regulation under rules 3745-50-40 to 3745-50-62 or Chapters 3745-51 to 3745-57, 3745-59, or 3745-65 to 3745-69 of the Administrative Code or Chapter 119. of the Revised Code or to the notification requirements of Chapter 3734. of the Revised Code.

(2) Any hazardous waste in either a container that is not empty or an inner liner removed from a container that is not empty, as defined in paragraph (B) of this rule, is subject to regulation under rules 3745-50-40 to 3745-50-62 and Chapters 3745-51 to 3745-57, 3745-59, and 3745-65 to 3745-69 of the Administrative Code and to the notification requirements of Chapter 3734. of the Revised Code.

(B)(1) A container or an inner liner removed from a container that has held any hazardous waste, except a waste that is a compressed gas or that is identified as an acute hazardous waste in rule 3745-51-31, 3745-51-32, or paragraph (E) of rule 3745-51-33 of the Administrative Code, is empty if:

(a) All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container, e.g., pouring, pumping, and aspirating; and

(b) No more than 2.5 centimeters (one inch) of residue remain on the bottom of the container or inner liner; or

(c)(i) No more than three per cent by weight of the total capacity of the container remains in the container or inner liner if the container is less than or equal to one hundred ten gallons in size; or

(ii) No more than 0.3 per cent by weight of the total capacity of the container remains in the container or inner liner if the container is greater than one hundred ten gallons in size.

(2) A container that has held a hazardous waste that is a compressed gas is empty when the pressure in the container approaches atmospheric.

(3) A container or an inner liner removed from a container that has held an acute hazardous waste listed in rule 3745- 51-31, 3745-51-32, or paragraph (E) of rule 3745-51-33 of the Administrative Code is empty if:

(a) The container or inner liner has been triple rinsed using a solvent capable of removing the commercial chemical product or manufacturing chemical intermediate;

(b) The container or inner liner has been cleansed by another method that has been shown in the scientific literature, or by tests conducted by the generator, to achieve equivalent removal; or

(c) In the case of a container, the inner liner that prevented contact of the commercial chemical product or manufacturing chemical intermediate with the container, has been removed.

3745-55-70 Applicability; use and management of containers

Rules 3745-55-70 to 3745-55-78 of the Administrative Code apply to owners and operators of all hazardous waste facilities that store containers of hazardous waste, except as rule 3745-54-01 of the Administrative Code provides otherwise.

[Comment: Under rule 3745-51-07 of the Administrative Code and paragraph (C) of rule 3745-51-33 of the Administrative Code, if a hazardous waste is emptied from a container the residue remaining in the container is not considered a hazardous waste if the container is "empty" as defined in rule 3745-51-07 of the Administrative Code. In that event, management of the container is exempt from the requirements of rules 3745-55-70 to 3745-55-78 of the Administrative Code.]

2.9 RESTRICTIONS

There are no radiologically based restrictions on the future use of the subject property.

2.10 FEDERAL REGISTER NOTICE

This section contains a copy of the notice published in the Federal Register. It documents the certification that the subject property is in compliance with all applicable decontamination criteria and standards.

[Federal Register: September 16, 1996 (Volume 61, Number 180)]
[Notices]
[Page 48667-48668]
From the Federal Register Online via GPO Access [wais.access.gpo.gov]

DEPARTMENT OF ENERGY

Certification of the Radiological Condition of the Associate Aircraft Site in Fairfield, OH

AGENCY: Department of Energy.

ACTION: Notice of certification.

SUMMARY: The Department of Energy (DOE) has completed remedial actions to decontaminate a property in Fairfield, Ohio. Formerly, the property was found to contain quantities of residual radioactive material resulting from activities conducted by DOE's predecessors at the former Associate Aircraft Tool and Manufacturing Company. Radiological surveys show that the property now meets applicable requirements for radiologically unrestricted use.

ADDRESSES: The certification docket is available at the following locations:

Public Reading Room, Room 1E-190, Forrestal Building, U.S. Department of Energy, 1000 Independence Avenue, S.W., Washington, D.C. 20585.
Public Document Room, Oak Ridge Operations Office, U.S. Department of Energy, 200 Administration Road, Oak Ridge, Tennessee 37831.
Lane Public Library, Fairfield Branch, 701 Wessel Drive, Fairfield, Ohio 45014.

FOR FURTHER INFORMATION CONTACT: John C. Lehr, Acting Director, Office of Eastern Area Programs, Office of Environmental Management (EM-42), U.S. Department of Energy, Washington, D.C. 20585, (301) 903-2328 Fax: (301) 903-2385.

SUPPLEMENTARY INFORMATION: The Department of Energy, Office of Environmental Management, has conducted remedial action at the Associate Aircraft site in Fairfield, Ohio, under the Formerly Utilized Sites Remedial Action Program (FUSRAP). The objective of the program is to identify and remediate or otherwise control sites where residual radioactive contamination remains from activities carried out under contract to the Manhattan Engineer District/Atomic Energy Commission (MED/AEC) during the early years of the nation's atomic energy program. The Associate Aircraft site was designated for cleanup under FUSRAP in April 1993.

From February to September 1956, the Associate Aircraft Tool and Manufacturing Company, under subcontract to National Lead of Ohio (NLO), a primary contractor for the AEC, provided a variety of machine shop services on natural uranium metal (i.e., uranium metal that was neither enriched nor depleted in the U-235 isotope but that contained U-235 in natural abundance). Operations at the site consisted of hollow drilling and turning of uranium metal slugs. After production was discontinued in September 1956, Associate Aircraft personnel decontaminated the building and equipment in accordance with the NLO Industrial Hygiene Department's specifications.

In June and September 1992, Oak Ridge National Laboratory conducted radiological surveys in and around the former Associate Aircraft building. Radioactive contamination exceeding current DOE health-based guidelines for release of properties for radiologically unrestricted use was identified inside the building and in two small isolated areas outside. The property was included in FUSRAP in April 1993 and was remediated from December 1994 to June 1995.

Post-remedial action surveys have demonstrated and DOE has certified that the subject property is in compliance with the Department's radiological decontamination criteria and standards. The standards are established to protect members of the general public and occupants of the properties and to ensure that future use of the properties will result in no radiological exposure above applicable health-based guidelines.

These findings are supported by the Department's Certification Docket for the Remedial Action Performed at the Associate Aircraft Tool and Manufacturing Company Site in Fairfield, Ohio, December 1995. Accordingly, this property is released from FUSRAP.

The certification docket will be available for review between 9:00 a.m. and 4:00 p.m., Monday through Friday (except Federal holidays) in the Department's Public Reading Room, located in Room 1E-190 of the Forrestal Building, 1000 Independence Avenue, S.W., Washington, D.C. 20585. Copies of the certification docket will also be available in the DOE Public Document

[[Page 48668]]

Room, U.S. Department of Energy, Oak Ridge Operations Office, Oak Ridge, Tennessee 37831 and at the Lane Public Library, Fairfield Branch, 701 Wessel Drive, Fairfield, Ohio 45014.

DOE, through the Oak Ridge Operations Office, Former Sites Restoration Division, has issued the following statement:

Statement of Certification: Associate Aircraft Tool and Manufacturing Company Site, Fairfield, Ohio

DOE, Oak Ridge Operations Office, Former Sites Restoration Division, has reviewed and analyzed the radiological data obtained following remedial action at the Associate Aircraft site (3660 Dixie Highway, Fairfield, Ohio; Parcel No. 40 filed in Deed Book 1625, Page 139 in the land records of Butler County, Ohio). Based on analysis of all data collected, including post-remedial action surveys, DOE certifies that any residual contamination which remains onsite falls within current guidelines for use without radiological restrictions. This certification of compliance provides assurance that reasonably foreseeable future use of the property will result in no radiological exposure above current radiological guidelines established to protect members of the general public as well as occupants of the site.

Property owned by Lester J. Besl and James L. Besl Partnership: 3660 Dixie Highway, Fairfield, Ohio 45014.

Issued in Washington, D.C. on September 4, 1996.
James M. Owendoff,
Deputy Assistant Secretary for Environmental Restoration.
[FR Doc. 96-23626 Filed 9-13-96; 8:45 am]
BILLING CODE 6450-01-P

2.11 APPROVED CERTIFICATION STATEMENT

The following memorandum and certification statement document the certification of the subject property for future use.

STATEMENT OF CERTIFICATION: ASSOCIATE AIRCRAFT TOOL AND MANUFACTURING COMPANY SITE IN FAIRFIELD, OHIO

DOE, Oak Ridge Operations Office, Former Sites Restoration Division, has reviewed and analyzed the radiological data obtained following remedial action at the Associate Aircraft site (3660 Dixie Highway, Fairfield, Ohio; Parcel No. 40 filed in Deed Book 1625, Page 139 in the land records of Butler County, Ohio). Based on analysis of all data collected, including post-remedial action surveys, DOE certifies that any residual contamination which remains onsite falls within current guidelines for use without radiological restrictions. This certification of compliance provides assurance that reasonably foreseeable future use of the property will result in no radiological exposure above current radiological guidelines established to protect members of the general public as well as occupants of the site.

Property owned by:

Lester J. Besl and James L. Besl Partnership
3660 Dixie Highway
Fairfield, Ohio 45014

Lester K. Price, Director
Former Sites Restoration Division
Oak Ridge Operations Office
U.S. Department of Energy

8/15/96
Date

[6450-01-P]
DEPARTMENT OF ENERGY

Certification of the Radiological Condition of the Associate Aircraft Site in Fairfield, Ohio

AGENCY: Department of Energy

ACTION: Notice of Certification

SUMMARY: The Department of Energy (DOE) has completed remedial actions to decontaminate a property in Fairfield, Ohio. Formerly, the property was found to contain quantities of residual radioactive material resulting from activities conducted by DOE's predecessors at the former Associate Aircraft Tool and Manufacturing Company. Radiological surveys show that the property now meets applicable requirements for radiologically unrestricted use.

ADDRESSES: The certification docket is available at the following locations:

Public Reading Room
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U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Public Document Room
Oak Ridge Operations Office
U.S. Department of Energy
200 Administration Road
Oak Ridge, Tennessee 37831

Lane Public Library

Fairfield Branch

701 Wessel Drive

Fairfield, Ohio 45014

FOR FURTHER INFORMATION CONTACT:

John C. Lehr, Acting Director

Office of Eastern Area Programs

Office of Environmental Management (EM-42)

U.S. Department of Energy

Washington, D.C. 20585

(301) 903-2328 Fax: (301) 903-2385

SUPPLEMENTARY INFORMATION:

The Department of Energy, Office of Environmental Management, has conducted remedial action at the Associate Aircraft site in Fairfield, Ohio, under the Formerly Utilized Sites Remedial Action Program (FUSRAP). The objective of the program is to identify and remediate or otherwise control sites where residual radioactive contamination remains from activities carried out under contract to the Manhattan Engineer District/Atomic Energy Commission (MED/AEC) during the early years of the nation's atomic energy program. The Associate Aircraft site was designated for cleanup under FUSRAP in April 1993.

From February to September 1956, the Associate Aircraft Tool and Manufacturing Company, under subcontract to National Lead of Ohio (NLO), a primary contractor for the AEC, provided a variety of machine shop services on natural

uranium metal (i.e., uranium metal that was neither enriched nor depleted in the U-235 isotope but that contained U-235 in natural abundance). Operations at the site consisted of hollow drilling and turning of uranium metal slugs. After production was discontinued in September 1956, Associate Aircraft personnel decontaminated the building and equipment in accordance with the NLO Industrial Hygiene Department's specifications.

In June and September 1992, Oak Ridge National Laboratory conducted radiological surveys in and around the former Associate Aircraft building. Radioactive contamination exceeding current DOE health-based guidelines for release of properties for radiologically unrestricted use was identified inside the building and in two small isolated areas outside. The property was included in FUSRAP in April 1993 and was remediated from December 1994 to June 1995.

Post-remedial action surveys have demonstrated and DOE has certified that the subject property is in compliance with the Department's radiological decontamination criteria and standards. The standards are established to protect members of the general public and occupants of the properties and to ensure that future use of the properties will result in no radiological exposure above applicable health-based guidelines.

These findings are supported by the Department's Certification Docket for the Remedial Action Performed at the Associate Aircraft Tool and Manufacturing Company Site in Fairfield, Ohio, December 1995. Accordingly, this property is released from FUSRAP.

The certification docket will be available for review between 9:00 a.m. and 4:00 p.m., Monday through Friday (except Federal holidays) in the Department's Public Reading Room, located in Room 1E-190 of the Forrestal Building, 1000 Independence Avenue, S.W., Washington, D.C. 20585. Copies of the certification docket will also be available in the DOE Public Document Room, U.S. Department of Energy, Oak Ridge Operations Office, Oak Ridge, Tennessee 37831 and at the Lane Public Library, Fairfield Branch, 701 Wessel Drive, Fairfield, Ohio 45014.

DOE, through the Oak Ridge Operations Office, Former Sites Restoration Division, has issued the following statement:

STATEMENT OF CERTIFICATION: ASSOCIATE AIRCRAFT TOOL AND MANUFACTURING COMPANY SITE, FAIRFIELD, OHIO

DOE, Oak Ridge Operations Office, Former Sites Restoration Division, has reviewed and analyzed the radiological data obtained following remedial action at the Associate Aircraft site (3660 Dixie Highway, Fairfield, Ohio; Parcel No. 40 filed in Deed Book 1625, Page 139 in the land records of Butler County, Ohio). Based on analysis of all data collected, including post-remedial action surveys, DOE certifies that any residual contamination which remains onsite falls within current guidelines for use without radiological restrictions. This certification of compliance provides assurance that reasonably foreseeable future use of the property will result in no radiological exposure above current radiological guidelines established to protect members of the general public as well as occupants of the site.

Property owned by Lester J. Besl and James L. Besl Partnership:

3660 Dixie Highway

Fairfield, Ohio 45014

Issued in Washington, D.C. on 4 SEPTEMBER, 1996.

James M. Owendoff
Deputy Assistant Secretary
for Environmental Restoration

United States Government

Department of Energy

memorandum

DATE: AUG 2 8 1996

Oct 2 ;; 25 Jul '96

REPLY TO ATTN OF: EM-42 (W. A. Williams, 903-8149)

SUBJECT: **RECOMMENDATION FOR CERTIFICATION OF REMEDIAL ACTION AT THE ASSOCIATE AIRCRAFT SITE IN FAIRFIELD, OHIO**

TO: J. Owendoff, EM-40

I am attaching for your signature a Federal Register Notice concerning the cleanup of contamination associated with the former Atomic Energy Commission (AEC) activities at the Associate Aircraft Site in Fairfield, Ohio.

The Department of Energy (DOE), Office of Environmental Management, Office of Eastern Area Programs, Formerly Utilized Sites Remedial Action Program (FUSRAP) Team, has conducted remedial action at the Associate Aircraft site in Fairfield, Ohio, as part of FUSRAP. The objective of the program is to identify and remediate or otherwise control sites where residual radioactive contamination remains from activities carried out under contract to the Manhattan Engineer District/Atomic Energy Commission (MED/AEC) during the early years of the nation's atomic energy program. In April 1993, the Associate Aircraft site was designated for cleanup under FUSRAP.

From February to September 1956, the Associate Aircraft Tool and Manufacturing Company, under subcontract to National Lead of Ohio (NLO), a primary subcontractor for the AEC, provided a variety of machine shop services on natural uranium metal (i.e., uranium metal that was neither enriched nor depleted but contained the uranium isotopes in natural abundance). Operations at the site consisted of hollow drilling and turning of uranium metal slugs. After production was discontinued in September, Associate Aircraft personnel decontaminated the building and equipment in accordance with the NLO Industrial Hygiene Department's specifications.

The Associate Aircraft site is an operating machine shop with a total area of approximately 1,900 m^2 to 2,400 m^2. The site is located at 3660 Dixie Highway in Fairfield, Ohio, and is occupied by Force Control Industries, Inc.

In June and September 1992, Oak Ridge National Laboratory conducted radiological surveys in and around the former Associate Aircraft building. Radioactive contamination exceeding current DOE health-based guidelines for release of properties for radiologically unrestricted use was identified inside the building and in two small isolated areas outside. The property was included in FUSRAP in April 1993 and was remediated from December 1994 to June 1995.

Post-remedial action surveys have demonstrated and DOE has certified that the subject property is in compliance with the DOE radiological decontamination criteria and standards. The standards are established to

protect members of the general public and occupants of the properties and to ensure that future use of the properties will result in no radiological exposure above applicable health-based guidelines. Accordingly, this property is released from FUSRAP.

Based on a review of all documents related to the subject property, we have concluded that the site is in compliance with the criteria and standards that were established to be in accordance with DOE Guidelines and Orders, to be consistent with other appropriate Nuclear Regulatory Commission and Environmental Protection Agency guidelines, and to protect the public health and the environment.

The Office of Eastern Area Programs is preparing the certification docket for the subject property. The Federal Register Notice will be part of the docket.

I recommend that you sign the attached Federal Register Notice, as well as the transmittal memorandum to the Federal Liaison Officer. This office will notify interested State and local agencies, the public, local land offices, and the specific property owners of the certification actions by correspondence and local newspaper announcements, as appropriate. The documents transmitted with the certification statement and the Federal Register Notice will be compiled in final docket for the Office of Eastern Area Programs for retention in accordance with DOE Order 1324.2 (Disposal Schedule 25).

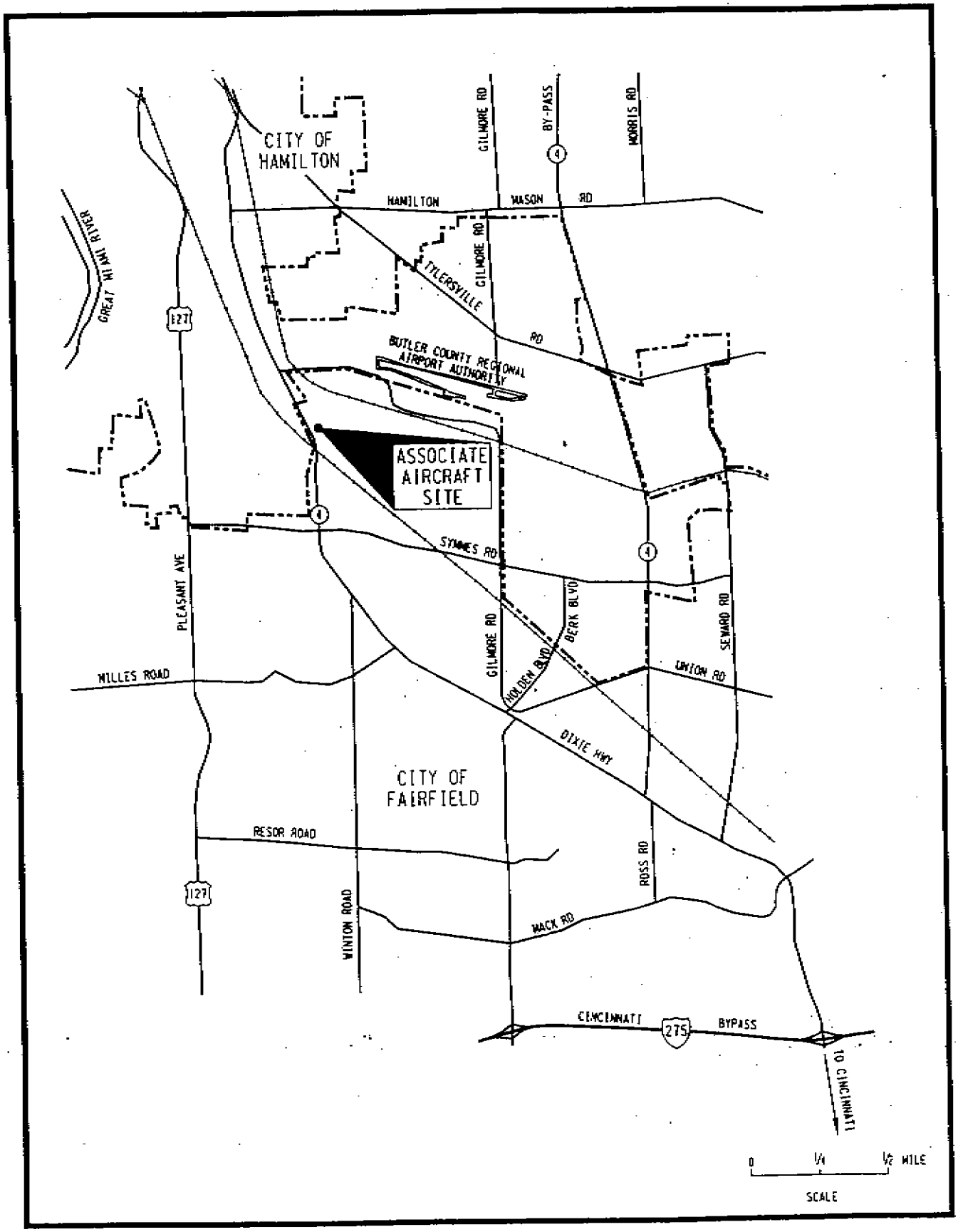
John C. Lehr
Acting Director
Office of Eastern Area Programs
Office of Environmental Restoration

2 Attachments

cc: D. Adler, DOE/OR
J. Kopotic, DOE/OR
S. Oldham, DOE/OR
W. A. Williams, EM-42

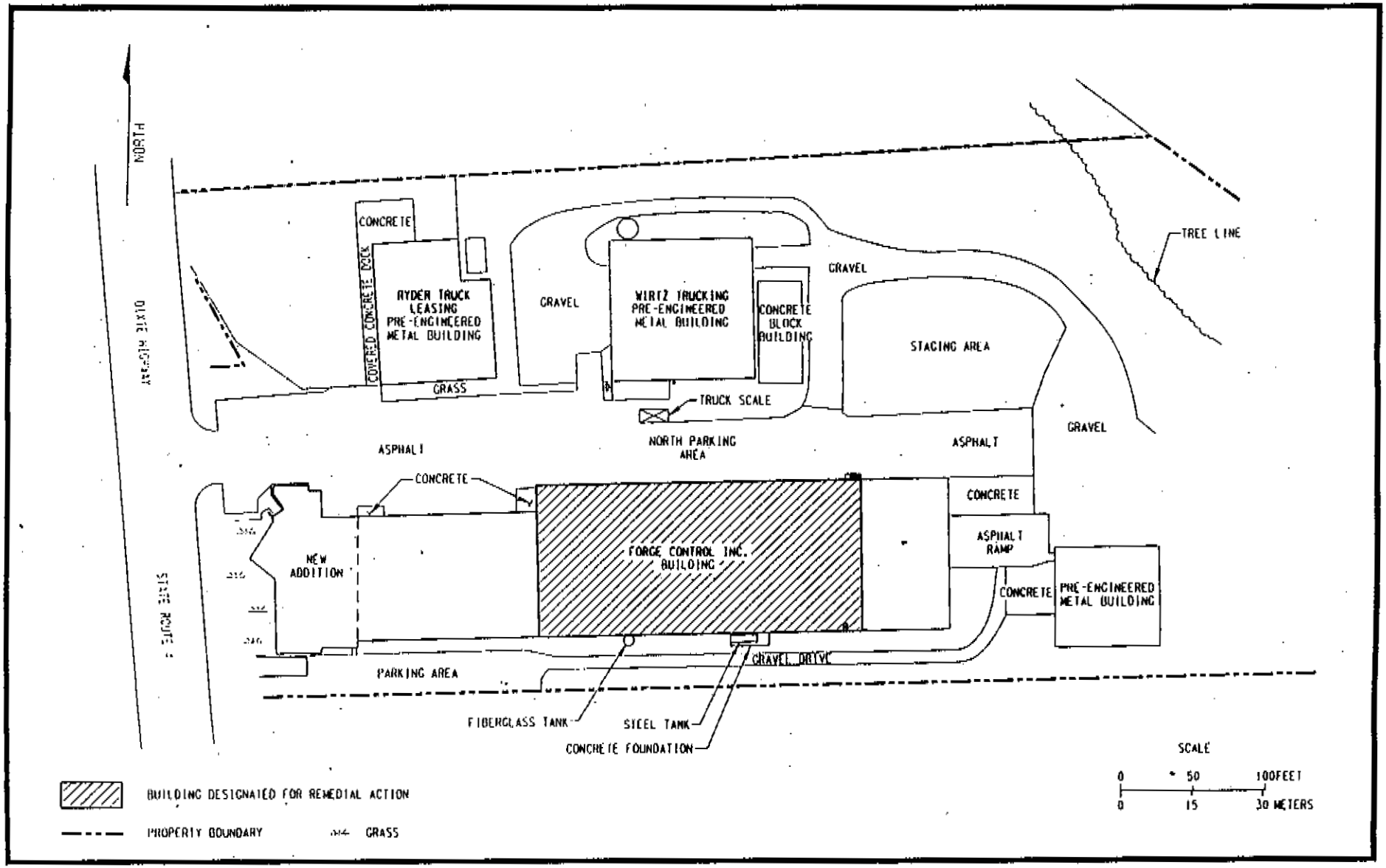
EXHIBIT III

DIAGRAMS OF THE REMEDIAL ACTION PERFORMED AT THE ASSOCIATE AIRCRAFT SITE IN FAIRFIELD, OHIO, 1994 - 1995.



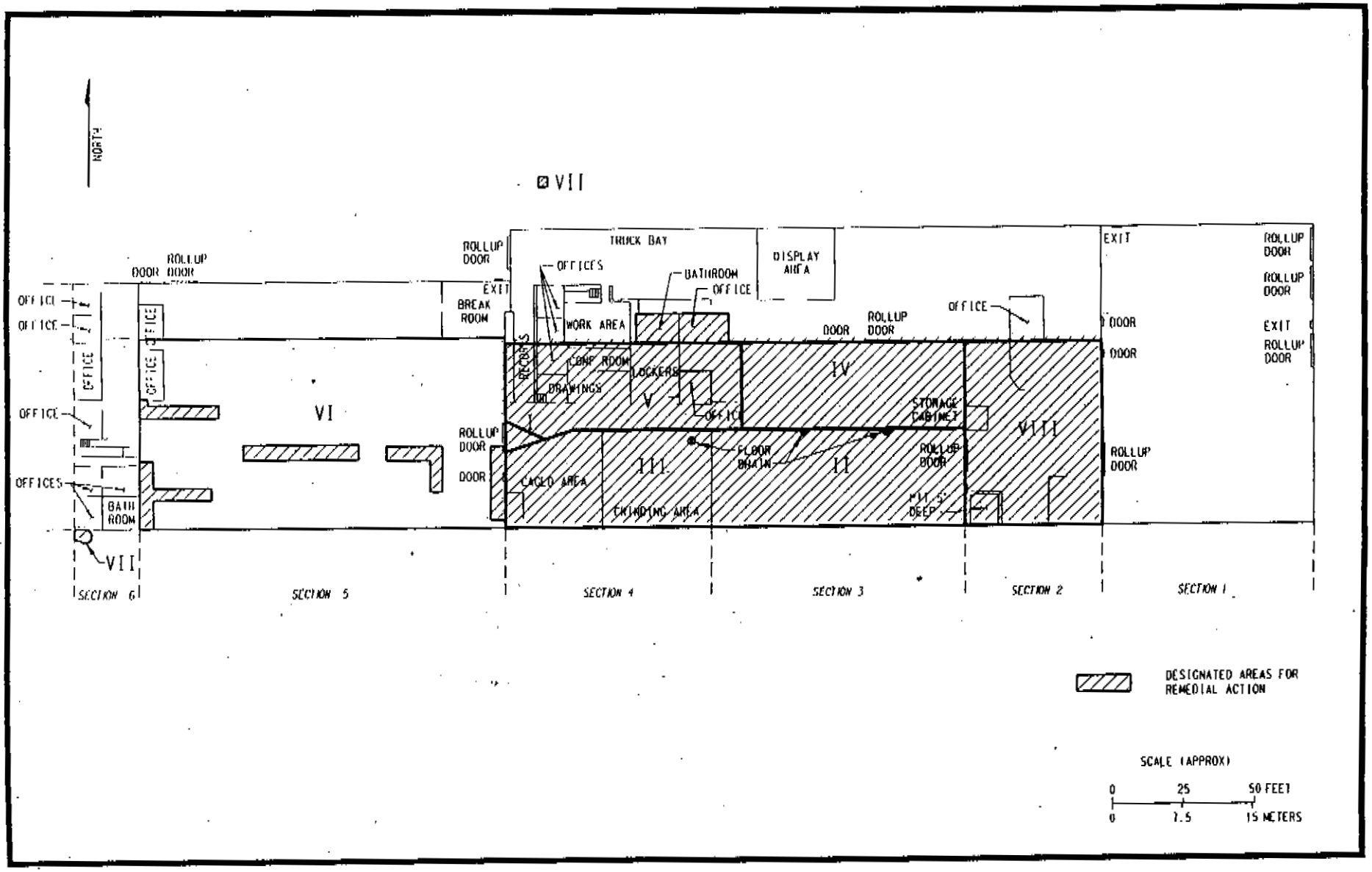
R73F12.DGN

Figure III-1
General Site Location



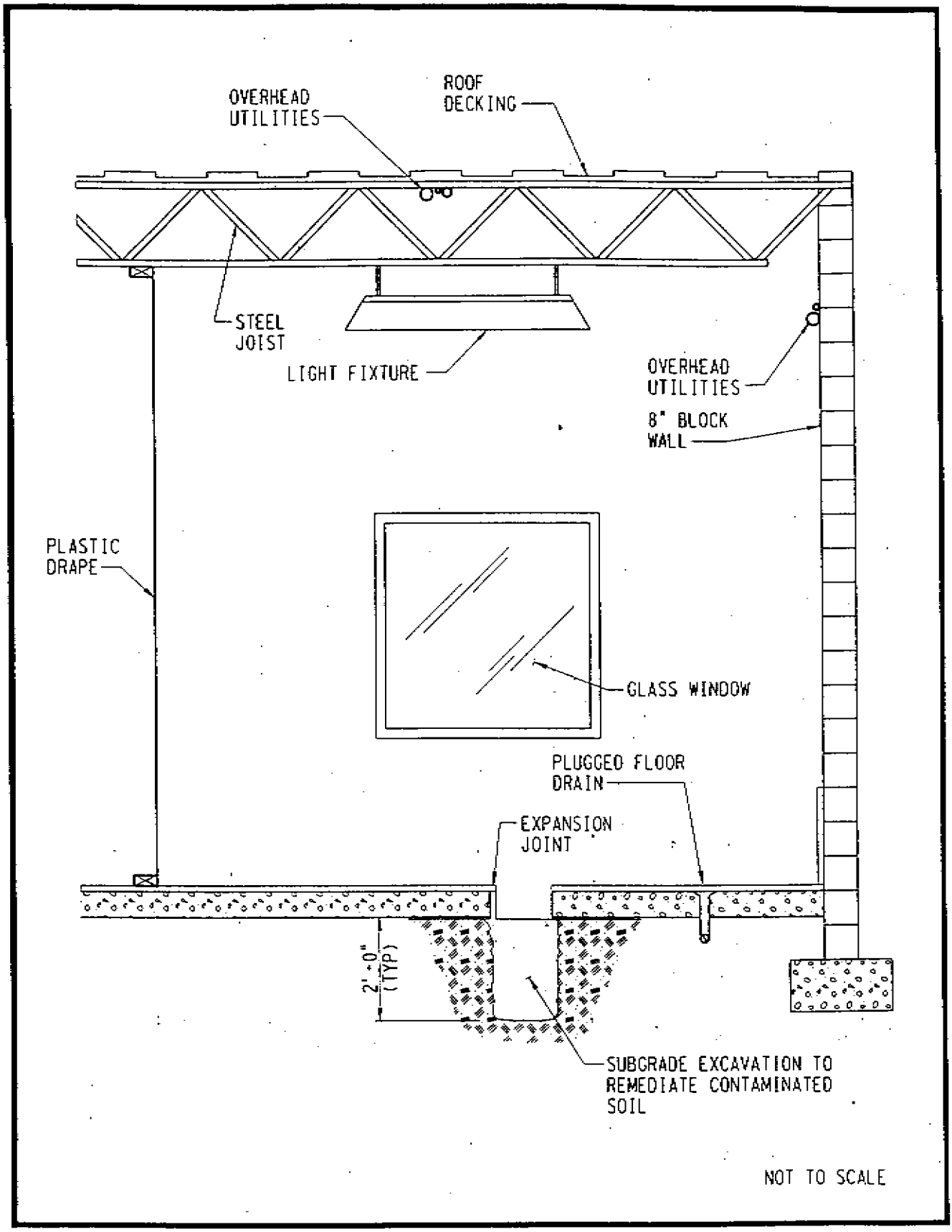
R73F006.DGN

Figure III-2
Site Plan



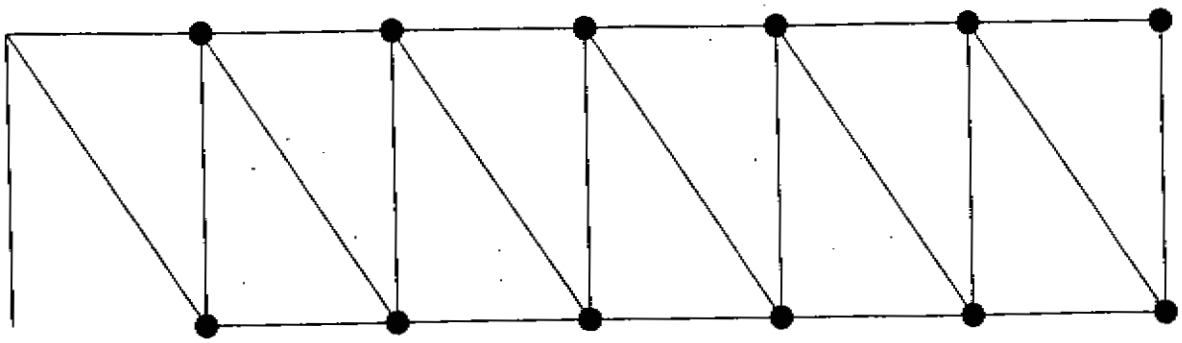
R73F010.DGN

Figure III-3
Sequence of Work



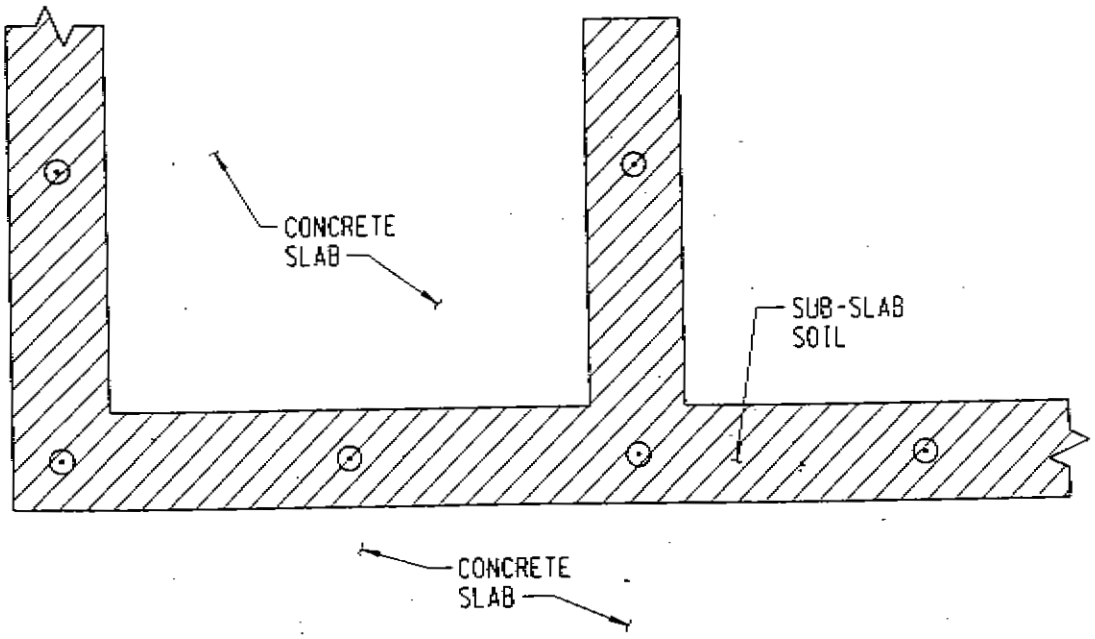
R73f009.DGN

Figure III-4
Typical Components Within a Zone



TYPICAL SURVEY LOCATIONS OF A TRUSS

(CROSS-SECTIONAL VIEW)



TYPICAL SAMPLING LOCATIONS OF AN EXPANSION JOINT

(PLAN VIEW)

● DIRECT AND TRANSFERABLE SURVEY LOCATION

⊙ SOIL SAMPLING LOCATION

R73F11.DGN

Figure III-5
Typical Survey and Sampling Locations