149669

SLDS
Administrative
Record
9809301042

Bechtel

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

Telephone: (423) 220-2000

Job No. 14501, FUSRAP
DOE Contract No. DE-AC05-91OR21949
Code: 2552/WBS: 116

JAN 23 1997

U.S. Environmental Protection Agency
Site Assessment and Federal
Facility Section - Superfund Branch
Region VII
726 Minnesota Avenue
Kansas City, Kansas 66101

Attention: Mr. Daniel Wall

Subject: Remedial Action Plan for Building K at the St. Louis Downtown Site

Dear Mr. Wall:

As discussed in our most recent biweekly telecon, enclosed is a copy of the remedial action plan for the decontamination of Building K at the St. Louis Downtown Site. The plan outlines in a summary fashion the results of recent boundary delineation radiological surveys and chemical sampling activities conducted in the building. Additionally, a description of the scope of work of to be performed is included.

Decontamination activities are scheduled to begin on February 3, and are expected to continue for the next four weeks. A schedule of our planned decontamination activities is also included for your consideration. As always, we encourage your participation in site visits during decontamination activities to review our progress.

Please contact Wayne Johnson (423) 576-5165 or myself (423) 241-2192 if you have concerns or questions regarding our decontamination activities.

Sincerely,

Ken Albin
Project Manager - FUSRAP

WFJ:kt:MO97L008.DOC

Enclosure: Remedial Action Plan for Building K at the St. Louis Downtown Site

cc: Bob Geller, MDNR

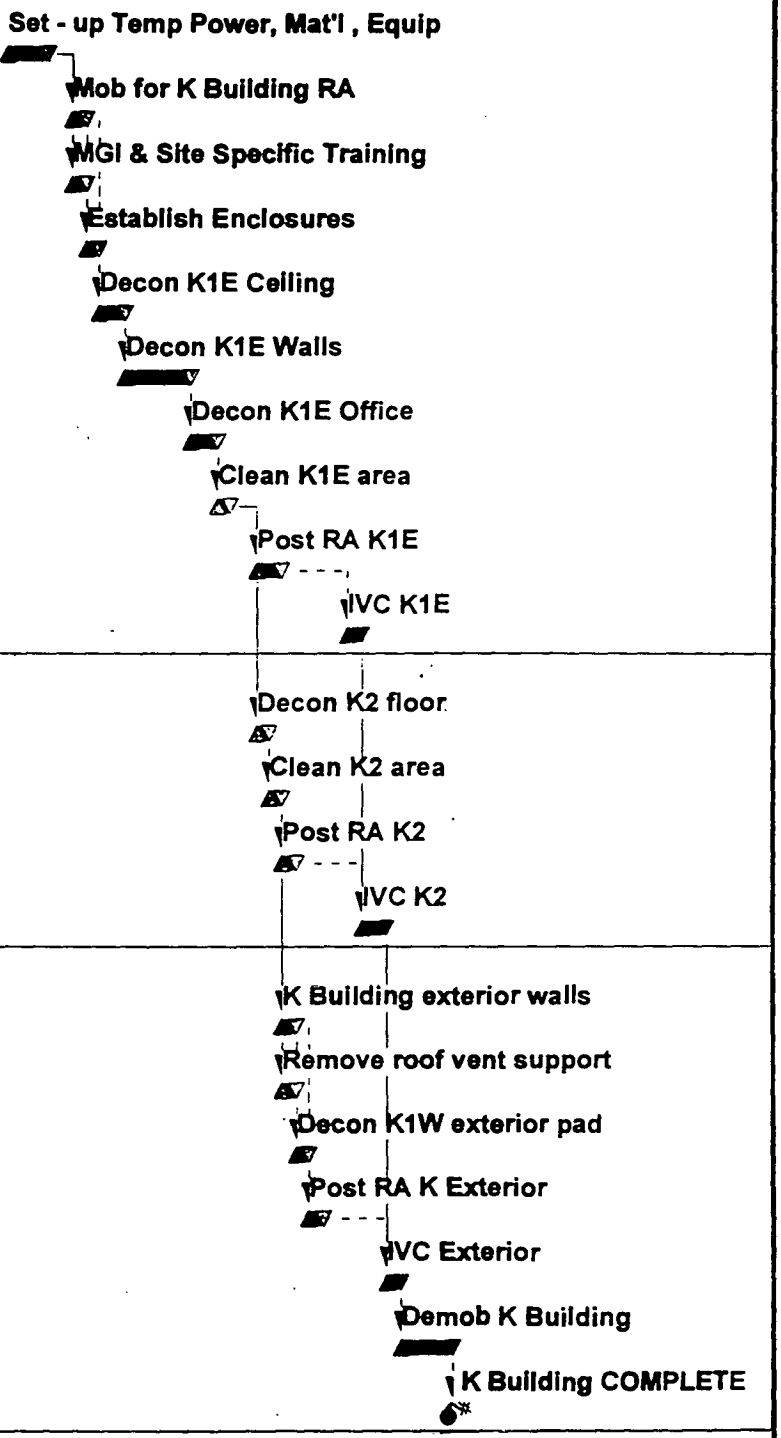
ACTION REQ'D ☐ YES ☒ NO DUE DATE _____

RESPONSE TO CHRON NO. _____

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

ST LOUIS DOWNTOWN
DECON - Bldg K

K1E			
DS3701	3	29JAN97	31JAN97
DS3700	1	03FEB97*	03FEB97
DS3705	1	03FEB97*	03FEB97
DS3709	1	04FEB97	04FEB97
DS3710	2	05FEB97	06FEB97
DS3712	3	07FEB97	11FEB97
DS3714	2	12FEB97	13FEB97
DS3716	1	14FEB97	14FEB97
DS3718	2	17FEB97	18FEB97
DS3719	1	24FEB97*	24FEB97
K2			
DS3724	1	17FEB97	17FEB97
DS3726	1	18FEB97	18FEB97
DS3728	1	19FEB97	19FEB97
DS3729	2	25FEB97	26FEB97
K Building EXTERIOR			
DS3730	1	19FEB97	19FEB97
DS3731	1	19FEB97	19FEB97
DS3733	1	20FEB97	20FEB97
DS3732	1	21FEB97	21FEB97
DS3734	1	27FEB97	27FEB97
DS3740	2	28FEB97	03MAR97
DS3750	0		03MAR97



Project Start 12MAY95
Project Finish 10OCT97
Data Date 08JAN97
Plot Date 21JAN97

© Primavera Systems, Inc.

Schedule Bar
Plan Bar
Progress Bar
Critical Activity

MOZ5:DSX1

Sheet 1 of 1

FUSRAP
MO/OH TEAM - FY 97
K BUILDING DECON

Predecisional Draft-Do Not Cite

DRAFT

REMEDIAL ACTION PLAN

FOR BUILDING K

AT THE ST. LOUIS DOWNTOWN SITE

ST. LOUIS, MISSOURI

JANUARY 1997

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

Predecisional Draft-Do Not Cite

Predecisional Draft-Do Not Cite

CONTENTS

Predecisional Draft-Do Not Cite

Predecisional Draft-Do Not Cite

FIGURES

Predecisional Draft-Do Not Cite

ACRONYMS

AEC	U.S. Atomic Energy Commission
ARAR	applicable or relevant and appropriate requirement
BNI	Bechtel National, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	U.S. Department of Energy
FUSRAP	Formerly Utilized Sites Remedial Action Program
NESHAPS	National Emission Standards for Hazardous Air Pollutants
RCRA	Resource Conservation and Recovery Act
SLDS	St. Louis Downtown Site
TCLP	toxicity characteristics leaching procedure

UNITS OF MEASURE

cm	centimeter
dpm	disintegrations per minute
ft	feet
ha	hectare
m	meter

1.0 INTRODUCTION

In 1974, the Atomic Energy Commission (AEC), a predecessor agency to the U.S. Department of Energy (DOE), instituted the Formerly Utilized Sites Remedial Action Program (FUSRAP). This program is now managed by DOE to identify and clean up or otherwise control sites where residual radioactive materials (exceeding current guidelines) remain from the early years of the nation's atomic energy program or from commercial operations causing conditions that Congress has authorized DOE to remedy under FUSRAP. Building K, located in St. Louis, Missouri, is part of the St. Louis Downtown Site (SLDS), which is one group of properties within the St. Louis FUSRAP site.

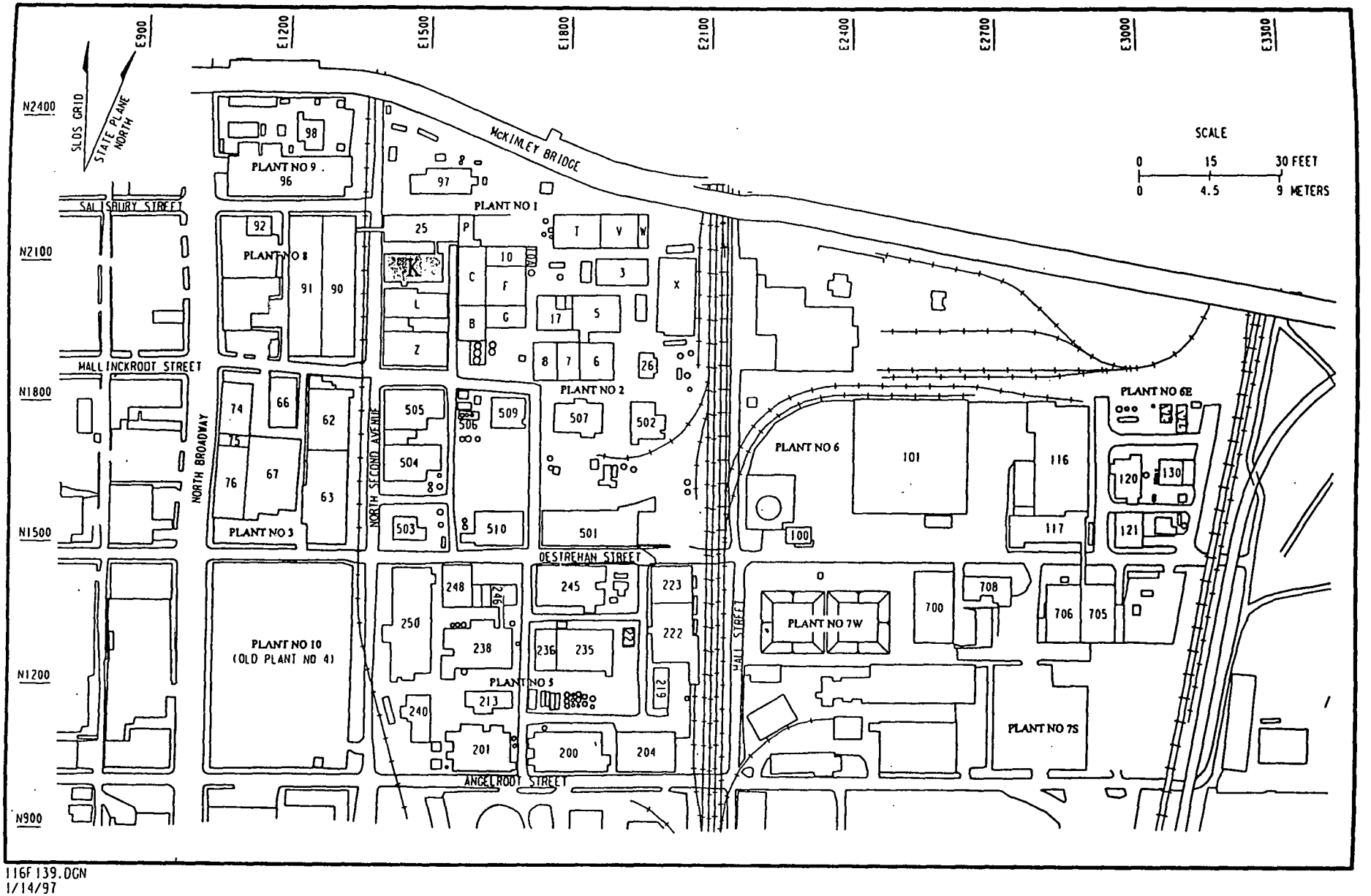
Previous investigations in Building K have identified and delineated general areas with elevated levels of radioactivity on interior and exterior building surfaces. Supplemental surveys were performed in December 1996 to more precisely define these areas of contamination and provide information for the remedial design. Remedial action in Building K is scheduled to start in February 1997.

2.0 BUILDING K DESCRIPTION AND BACKGROUND

From 1942 to 1957, the Mallinckrodt Chemical Works facility located at SLDS was under contract with the AEC for processing and producing various forms of uranium compounds. SLDS encompasses approximately 18 ha (45 acres) and contains numerous buildings and facilities that are grouped into plant areas. Activities conducted in several plants involved manufacturing uranium dioxide from pitchblende ore. The ore was digested in acid and filtered to form uranyl nitrate; a solvent extraction procedure and denitration followed to form uranium oxide. Fluorination with hydrofluoric acid created uranium tetrafluoride, which after reduction with heat produced uranium metal.

Building K is a two-story, rectangular brick building, approximately 18 m × 38 m (60 ft × 125 ft), located in Plant 1 (see Figures 1 and 2). AEC work was performed in area K1E. This 9-m × 19-m (30-ft × 58-ft) room on the first floor of Building K was used as a temporary plant for uranium processing from 1942 to 1945. Decontamination work was conducted from 1948 to 1950 in accordance with then-current AEC criteria, and the plant was released to the owners in 1951.

In 1989 and 1995, radiological surveys were conducted in Building K. These surveys targeted interior and exterior walls, ceilings, roofs, and floors of the two-story structure, as well as miscellaneous equipment stored within. More than 600 individual locations were surveyed for residual fixed and removable alpha and beta-gamma radiation; building survey locations are shown in the attached Design Drawings 116-SC522-C02 through C05 (Attachments A through D). Results of the 1989 survey are discussed in the characterization report for SLDS (BNI 1990). Survey results indicated that most of the residual radioactive contamination is on the floor and lower walls of the first level of the building, particularly on the eastern side (known as K1E). All the surveys on the western side of the first level (known as K1W) showed no residual levels of radioactivity in excess of applicable guidelines. The vast



116F139.DGN
1/14/97

Figure 1
St. Louis Downtown Site

majority of surveys on the second level of the building and the roof showed no residual radioactivity in excess of applicable guidelines. Residual radioactive contamination on the second floor was limited to a few isolated areas. In addition, a few isolated areas were identified on the lower exterior walls.

3.0 PURPOSE AND SCOPE

The primary goal of the proposed activities is to release Building K for use without radiological restrictions. The principal work activities involved in this decontamination effort are removing the radioactive materials from interior and exterior building surfaces, packaging the materials, and transporting the materials offsite to a licensed disposal facility. The building is scheduled to be demolished by Mallinckrodt and disposed of locally. The building slab and subsurface are also scheduled for future remediation.

3.1 REMEDIAL ACTION CRITERIA

Areas in the building that contain residual surface radioactivity exceeding the guidelines for uranium based on DOE Order 5400.5 will be remediated as required to meet these guidelines. The guidelines applied at Building K are 5,000 disintegrations per minute (dpm) per 100 cm^2. The limit for removable contamination is 1,000 dpm per 100 cm^2.

3.2 BOUNDARY DELINEATION/DATA GAP SAMPLING (1996)

To most effectively plan decontamination of the radioactively contaminated portions of Building K, additional sampling data were needed. Follow-up sampling activities included collection of representative samples of painted and unpainted brick, masonry/mortar, steel and other metal, and wood. Discussions were held with the property owner to determine the processes used during and after AEC activities. The information obtained was reviewed to verify that no wastes regulated under the Resource Conservation and Recovery Act (RCRA) had been used. Nonetheless, samples were tested for toxicity characteristics leaching procedure (TCLP) parameters: volatile and semivolatile organics, pesticides, herbicides, metals, total list metals identified by atomic absorption, and reactivity, corrosivity, and flashpoint per SW846 analytical protocol. Results of these tests indicated that none of the materials tested was RCRA hazardous.

Samples were also analyzed for isotopic radionulides, including uranium-234, uranium-235, and uranium-238; radium-226; thorium-228, thorium-232, and thorium-230; and potassium-40.

More extensive surveys were conducted in Building KIE to delineate the boundaries of the radioactive contamination detected during the previous survey. More than 1,000 additional individual locations were surveyed for residual fixed and removable alpha and beta-gamma radiation. Results of these surveys led to further delineation of contaminated areas and were consistent with the results of historical surveys.

After stored materials were removed, previously inaccessible areas of the building, K1W and K2, were surveyed. Results of this survey indicate that areas of contamination in these sections are minimal and isolated. These results are consistent with the historical surveys discussed above. Mallinckrodt will provide further access so that additional investigative surveys can be conducted in areas that were modified after AEC activities with the addition of drywall sheeting, the elevator in K1W, and floor coverings.

Results of the analyses conducted so far provided information essential for waste management and disposal purposes as well as protection of the health and safety of the decontamination workers. Air sampling conducted in the building indicated that radon concentrations are well below conservative action levels.

3.3 DECONTAMINATION, DISMANTLEMENT, AND INDEPENDENT VERIFICATION

The methods used to remediate the areas within the building are standard decontamination techniques. Transferable contamination will be removed by wiping, scraping, or using a high-efficiency particulate air vacuum. (Drawings showing decontamination plans are included as Attachments E through G.) Fixed contamination, except for the K1E floor, will be removed by scraping, chipping, or scabbling. The K1E building slab will remain in place until subsurface contamination is remediated. All structures, equipment, materials, and surfaces not designated for decontamination will be protected from damage and cross-contamination. Equipment used for decontamination activities will have vacuum attachments or use water misting to mitigate the generation of dust. Work activities will be conducted in a "controlled" and enclosed work area, and unauthorized personnel will be restricted from the area. Personnel and perimeter radiological air monitoring will be performed continuously during decontamination work activities. Decontamination operations will be conducted in a manner that will not adversely affect the structural integrity of the building.

Because Building K is scheduled to be demolished by Mallinckrodt in June 1997, decontaminated areas will not be restored unless restoration is required to maintain the structural integrity of the building or to mitigate a safety hazard.

Post-remedial action surveys will be conducted in remediated areas to ensure compliance with cleanup criteria. The independent verification contractor will review the data and procedures and will conduct additional surveys within Building K to ensure that cleanup criteria are met. The IVC will release the building for use without radiological restrictions before demolition of the building is conducted.

3.4 PACKAGING, TRANSPORTATION, AND DISPOSAL

All contaminated materials generated during decontamination operations will be packaged in strong, tight containers. Containers will be labeled and stored in accordance with applicable requirements. Any contaminated materials transferred from the building will be in a sealed container. The packaged waste

will be transported to the designated storage area and secured. The waste will be loaded on transport vehicles and shipped to Envirocare in Clive, Utah.

3.5 REGULATORY FRAMEWORK

Decontamination of Building K is proceeding as an interim component of a comprehensive cleanup strategy for the St. Louis site, in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Because Building K is being decontaminated under CERCLA, compliance with applicable or relevant and appropriate requirements (ARARs) will be achieved.

National Emission Standards for Hazardous Air Pollutants (NESHAPs), 40 CFR Part 61, Subparts H and Q are ARARs for Building K. As a result, calculations have been performed to verify that decontamination activities do not exceed the thresholds established in the regulations.

The NESHAPs requirements related to the removal of asbestos as part of demolition or renovation projects will not be applicable. An asbestos assessment has confirmed that areas requiring decontamination do not contain asbestos.

Decontamination activities will not generate hazardous waste. Based on data obtained through testing (see Section 3.2), no materials exhibiting hazardous waste characteristics have been identified. In addition, process knowledge does not indicate the presence of any listed waste. Should hazardous waste be identified, it will be managed in accordance with Missouri hazardous waste regulations.

Because the decontamination of Building K is a federal undertaking, the requirements of the National Historic Preservation Act have been met. The Missouri State Historic Preservation Office has concurred with DOE's determination that decontamination activities will have no effect on any historic or cultural resources.

4.0 REFERENCE

BNI (Bechtel National, Inc.) 1990. *Radiological, Chemical, and Hydrogeological Characterization Report for the St. Louis Downtown Site in St. Louis, Missouri*, DOE/OR/20722-258, Vol. 1, Revision 1, prepared for the Department of Energy, Oak Ridge Operations Office, Oak Ridge, Tenn. (September).

DESIGN DRAWING REPLACEMENT SHEET

THE OVERSIZED DOCUMENT ATTACHED TO (CCN/SUBJECT CODE)

14966/2552 WAS

MICROFILMED AS PART OF THE DESIGN DRAWING FILE.

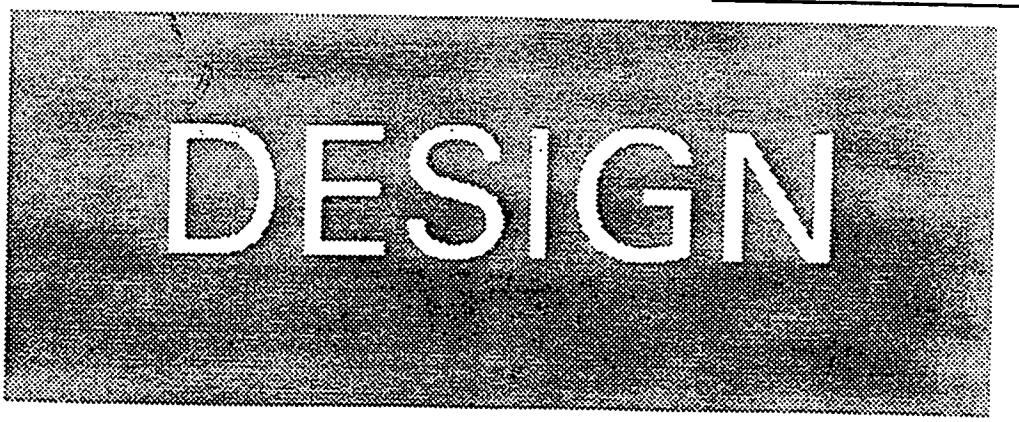
DOCUMENT IDENTIFICATION IS:

DESIGN DRAWING NO. 116-DD522-C02

DRAWING TITLE BLDG K1E Radl. Survey Plans And Elevations

REVISION NO. 01

REVISION DATE 1-16-97



Document Preparer's Initials: JM

Date of Preparation 1-23-97

DESIGN DRAWING REPLACEMENT SHEET

THE OVERSIZED DOCUMENT ATTACHED TO (CCN/SUBJECT CODE)

14966 9/2552 WAS

MICROFILMED AS PART OF THE DESIGN DRAWING FILE.

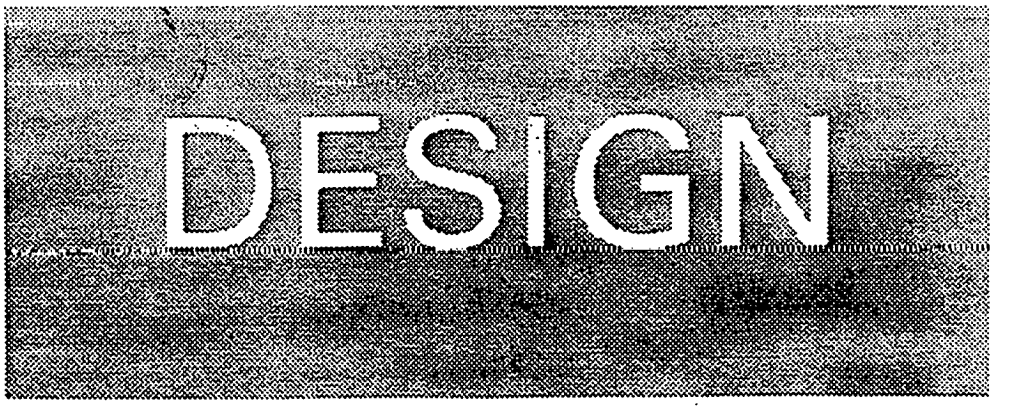
DOCUMENT IDENTIFICATION IS:

DESIGN DRAWING NO. 116-DD522-C03

DRAWING TITLE BLDG K1W RadL Survey Plans And Elevations

REVISION NO. 01

REVISION DATE 01-16-97



Document Preparer's Initials: JM

Date of Preparation 01-23-97

DESIGN DRAWING REPLACEMENT SHEET

THE OVERSIZED DOCUMENT ATTACHED TO (CCN/SUBJECT CODE)
149669/2552 WAS
MICROFILMED AS PART OF THE DESIGN DRAWING FILE.

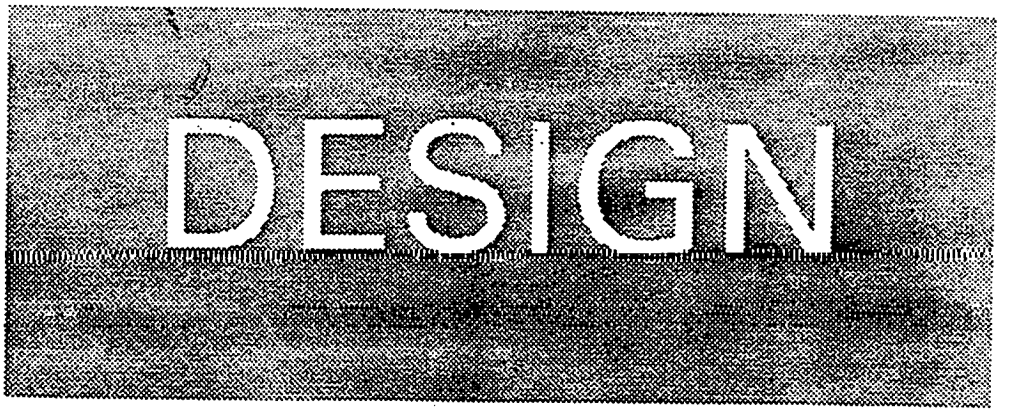
DOCUMENT IDENTIFICATION IS:

DESIGN DRAWING NO. 116-DD522-C04

DRAWING TITLE BLDG K2 RADL Survey Plans
AND Elevations

REVISION NO. 01

REVISION DATE 01-16-97



Document Preparer's Initials: JM

Date of Preparation 01-23-97

DESIGN DRAWING REPLACEMENT SHEET

THE OVERSIZED DOCUMENT ATTACHED TO (CCN/SUBJECT CODE)
149669/2552 WAS
MICROFILMED AS PART OF THE DESIGN DRAWING FILE.

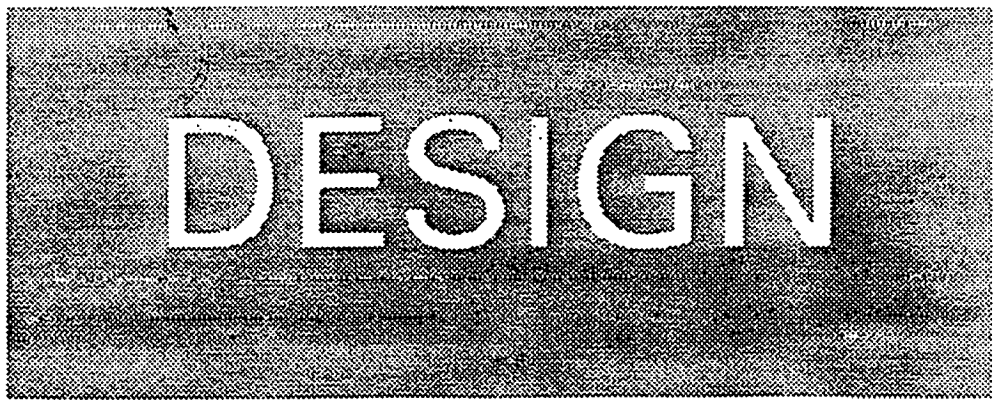
DOCUMENT IDENTIFICATION IS:

DESIGN DRAWING NO. H6-DD522-C05

DRAWING TITLE BLDG K RADI Survey Roof and Pad Plan and Exterior Elevations

REVISION NO. 01

REVISION DATE 01-16-97



Document Preparer's Initials: JM

Date of Preparation 01-23-97

DESIGN DRAWING REPLACEMENT SHEET

THE OVERSIZED DOCUMENT ATTACHED TO (CCN/SUBJECT CODE)
14966/2552 WAS

MICROFILMED AS PART OF THE DESIGN DRAWING FILE.

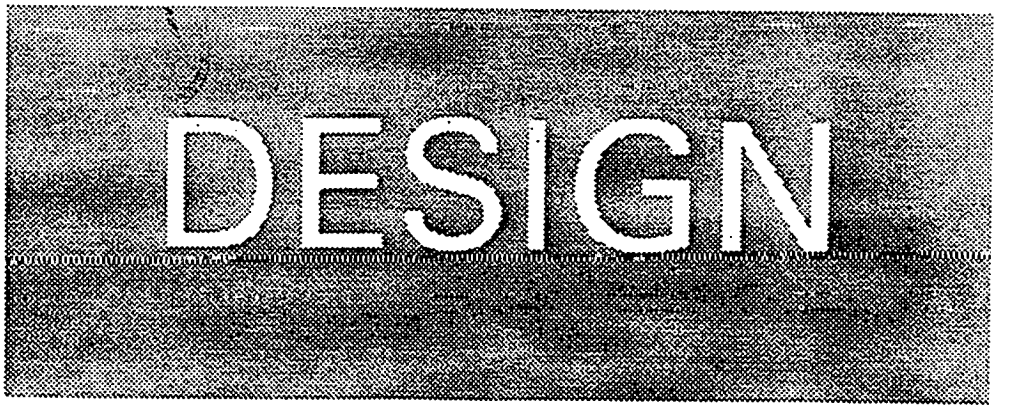
DOCUMENT IDENTIFICATION IS:

DESIGN DRAWING NO. 116-DD522-C06

DRAWING TITLE BLDG K1E Decontamination
Plans and Elevations

REVISION NO. 0

REVISION DATE 01-16-97



Document Preparer's Initials: JM

Date of Preparation 01-23-97

DESIGN DRAWING REPLACEMENT SHEET

THE OVERSIZED DOCUMENT ATTACHED TO (CCN/SUBJECT CODE)
149669/ 2552 WAS
MICROFILMED AS PART OF THE DESIGN DRAWING FILE.

DOCUMENT IDENTIFICATION IS:

DESIGN DRAWING NO. 116-DD522-C07

DRAWING TITLE BLDG K2 Decontamination
Plans and Elevations

REVISION NO. 0

REVISION DATE 01-16-97

Document Preparer's Initials: JM

Date of Preparation 01-23-97

REPLDWG.FRM