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K-65 DECANT SUMP TANK REMOVAL ACTION WORK PLAN FMPC DECEMBER 1990

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WMCO/DOE-ORO
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WORK PLAN

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K-65 DECANT SUMP TANK

REMOVAL ACTION

WORK PLAN

FEED MATERIALS PRODUCTION CENTER

DECEMBER 1990

Prepared by:

Westinghouse Materials Company of Ohio
Cincinnati, Ohio

For:

The United States Department of Energy
Oak Ridge Operations Office

905

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I. INTRODUCTION

One of the Remedial Investigation/Feasibility Study (RI/FS) identified operable units, Operable Unit 4, at the Feed Materials Production Center (FMPC) includes the two K-65 silos (Silos 1 and 2), the metal oxide silo (Silo 3), Silo 4 and the potentially contaminated soils surrounding the waste storage silos. A Removal Site Evaluation (RSE) has been generated by the Department of Energy (DOE) consistent with 40 CFR 300.410 and it was determined by the DOE, as the lead agency at the FMPC, that a time critical removal action is necessary to remove water from the K-65 Decant Sump Tank. This removal action will contribute to the efficient performance of the long term remedial action for Operable Unit 4. The removal action is being conducted pursuant to the Consent Agreement Under CERCLA 120 and 106(a) between the DOE and the United States Environmental Protection Agency (U. S. EPA).

The Consent Agreement requires that a work plan be submitted to the U. S. EPA for review and comment prior to implementation of all removal actions. This work plan satisfies this commitment in the Consent Agreement and is consistent with the requirements of 29 CFR 1910.120. All activities performed under this work plan will be in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and consistent with the OSWER Directive 9360.0-03B, SUPERFUND REMOVAL PROCEDURES, Rev.3.

II. BACKGROUND

1.0 Summary of the Potential Threat

In monthly water sampling of the K-65 Decant Sump Tank, elevated levels of uranium have been encountered. Above background levels of radium have also been found in the water. Although there is no data to indicate any of the three components (underdrain system, decant sump tank, and corrugated pipe) of the decant sump tank drainage and collection system have been compromised, a break in any position could release water to the surrounding soil. This water, due to its radionuclide content, is a potential threat to the environment. There is also concern for the potential of puncturing the tank during the K-65 Silos embankment and subsoils sampling, which is scheduled to be completed in the near future.

2.0 Related Actions

There are various ongoing activities and projects concerning the K-65 Silos area. Many of these activities are not in the field implementation stage at this time. These include the Silos Number 1 and 2 Removal Action as defined in the Consent Agreement as Removal #4 and sampling of the K-65 Silos residues, embankment and subsoils.

The Silos Number 1 and 2 Removal Action has been determined to be a non-time critical removal action. The scope of this removal action can be broadly

defined as the control of contamination, including decreasing the chronic radon emissions, from the contents of Silos 1 and 2 and will contribute to the efficient performance of the long term remedial action for Operable Unit 4. This removal action is being conducted pursuant to the Consent Agreement as Removal Number 4: Silos 1 and 2. An Engineering Evaluation/Cost Analysis (EE/CA) for the K-65 Silos Removal Action has been prepared to evaluate the removal action alternatives, using the preliminary RI/FS data, to support the selection of a preferred alternative. Consistency with the long term remedial action for Operable Unit 4 was also considered the EE/CA. This Removal Action and the work plan for its implementation have been approved by the U.S. EPA.

Also, the K-65 Silos embankment and subsoils will be sampled utilizing five low-angle borings and analyzed to determine and verify the extent of contamination in the soils surrounding the K-65 Silos. The K-65 Silos embankment and below-silo soils will be analyzed for geotechnical, chemical and radiological parameters. This sampling will be conducted as part of the RI/FS Facilities Testing Program in support of the final remedial action for Operable Unit 4.

Other ongoing activities and projects concerning the K-65 Silos area include resampling the K-65 residues, treatability testing and upgrades to the radon treatment system to support resampling the K-65 residues.

3.0 Roles of the Participants

The DOE is the lead agency for this removal action and will coordinate and execute this removal action. The U.S.EPA and the Ohio Environmental Protection Agency (OEPA) roles have been one of providing guidance and participation in the preparation of the CERCLA 120 Consent Agreement and technical information exchanges.

ASI, as a contractor to DOE, is conducting the RI/FS program including activities such as sampling the soils around the K-65 Silos and the contents of the K-65 Silos.

Westinghouse Materials Company of Ohio (WMCO), as the FMPC Management and Operating contractor, is responsible to implement this removal action in a manner consistent with DOE and regulatory guidance.

4.0 Removal Action

The K-65 Decant Sump Tank Removal Action will consist of removing the water from the K-65 decant sump tank and the dispositioning of the removed liquid. With the preliminary HSL analysis results available, treatment will occur upon transferring the water to an existing FMPC water treatment facilities for treatment of inorganics, uranium, thorium and radium. The preliminary HSL analysis results indicate that there are not any appreciable amounts of volatile organic compounds. Based on the ongoing FMPC

monthly sample results, the principle isotopes of Uranium, Radium 226, and Thorium 230 are considered to be the primary radionuclide contaminants of concern. Management and control of the liquid will be performed as according to hazardous waste management practices.

5.0 Integration with the Remedial Action

This removal action will be completed prior to initiating the final remedial action for Operable Unit 4. Also, completion of this removal action mitigates the potential contamination to the surrounding soil which supports the remedial objectives for Operable Unit 4.

I. SUPPORT ACTIVITIES

1.0 Planning Activities

Activities to be undertaken prior to the actual site work are planning, training, design, and management of the removal actions. Included in this activity will be the preparation of detailed task listings and delineation of responsibilities to support the schedule given in Attachment I. These activities are required to render the area reasonably free of hazards to personnel and/or the environment until the RI/FS process has been completed.

2.0 Additional Data/Studies Required

The liquid within the decant sump tank has been sampled through the corrugated piping into the decant sump tank. This sampling is in addition to the sampling described in Section III - 2.0 of this work plan. The collection of these samples was performed by the FMPC Environmental Monitoring Group. The collected samples were sent to a independent laboratory for analysis as established in the Quality Assurance Project Plan (QAPP) approved as part of the RI/FS Work Plan. The validated results from the lab will become part of the Administrative Record File. These samples were analyzed at the independent laboratory for the Full Hazardous Substance List (HSL) Parameters (see Attachment III) and total radionuclides (see Attachment IV). This sampling occurred within the month of October 1990. The preliminary sampling analysis results are included as attachments.

Field inspections of the K-65 decant sump tank system were conducted during the time the sample of decant liquid was collected. The piping from the decant liquid removal pumping system utilized in the mid 1960's remains in the decant sump tank extending up through the 30 inch diameter corrugated pipe manway. This piping is not affixed to the tank in any way. The 20 inch diameter manway in the top of tank is open but appears to be partially blocked possibly by a piece of wood which may have been used as a work platform to bridge the tank opening. The distortion of the 30 inch diameter access way caused by the prior shifting of the earth berm has created an "offset" in the corrugated pipe making it necessary to "fish" any pipe, etc.

around the resultant curvature to gain access into the tank.

3.0 Specific Design Activities

After approval of this work plan, design efforts will be finalized for this removal action. Detailed design drawings will be completed for installation of pumping system and the retrofit of an existing liquid transfer tanker. The pump will be placed in the decant sump tank with a hose leading directly to the transport trailer.

The liquid will be transferred to a tank trailer where it will be sampled and sent to an independent certified laboratory to be analyzed for full HSLs and total radionuclide analysis. Management and control of the liquid will be performed in accordance with hazardous waste management practices. After the HSL samples are taken, the tank trailer will be transported to an existing FMPC waste water treatment facility where the liquid will be stored in Refinery tank F3E-222 or the Refinery Sump tank F3E-408, based on availability, until the HSL analysis results are available and then, treated as required.

After the detailed design has been completed, functional test procedures will be generated to allow testing of the pumping system prior to transferring the liquid from the decant sump tank to the transport trailer.

4.0 Training Requirements

All personnel involved will be trained in accordance with the Occupational Safety and Health Administration (OSHA) standards found in 29 CFR 1910.120. In addition to this training, all personnel involved will be trained on; 1) how to handle emergency situations in the K-65 Silos area according to the FMPC K-65 Silo Numbers 1 and 2 Area Emergency Standard Operating Procedure (SOP) 65-C-107 dated March 1, 1990, 2) the functional test procedure to be generated for testing the pump and piping system, and 3) the SOP for the operation of the pumping and collection system.

IV. FIELD ACTIONS

1.0 Implementation of the Removal Action

Implementation of this removal action will be performed by FMPC operations and maintenance personnel. The installation and construction type activities, in addition to the maintenance activities, will be performed by FMPC maintenance personnel. Operation and monitoring of the system will be performed by FMPC operations personnel.

A submersible deep-well pump with an approximate capacity of 750 gallons per hour at 45 feet head will be attached to a 200-foot length of one-inch

diameter rubber hose. Electric power shall be supplied to the pump through a #12 wire flexible cord suitable for use in a submerged environments. The pump will be supplied electric power from a portable generator to be located outside the fenced area near the access road on the west side. A 50-foot length of nylon rope with minimum breaking strength of 3000 pounds shall be attached to the completed assembly and affixed to a driven stake or other suitable anchor point. A point approximately 42 feet from the bottom of the pump should be marked on the rope or hose. This mark will be provide a reference to verify that the pump has reached the bottom of the sump tank (approximately 42 feet below top of the earth berm). The hose, rope, and wire may be taped together to form a bundle to facilitate lowering the assembly into the decant sump tank. The pump which will be approximately four inches in diameter and three feet long may require an assist to pass through the partially obstructed opening at the top of the sump tank. A 40-foot rod made of 3/4-inch conduit, or similar materials, may be used to assist in sliding the submersible pump through the tank opening.

An existing 5000-gallon capacity Fruehauf semi tank trailer (X924) shall be spotted on the access road west of the K-65 silos. This tank trailer shall be inspected to assure that it is clean to avoid potential additional contamination of the sump tank water. The trailer shall be modified as shown on the attached sketch, Figure 2, to provide a means of draining the tank and providing a liquid level indication. A 3/4-inch ball valve shall be installed in the discharge end of the one-inch hose to provide a positive shutoff.

Pumping may be initiated by opening the shutoff valve and starting the generator to power the system after connecting the hose to the tank trailer (X924) and venting the tank. The approximate filling time is anticipated to be roughly six hours. The pump must be stopped when the sump water is approximately six inches from the top of the tank. The altitude of the spotted trailer will affect the usable volume of the tank. The liquid level tube to be installed on tank trailer X-924 will give a direct visual indication of the water level at the rear of the trailer. After the pump has been stopped, the ball valve at the end of the hose should be closed to prevent any water from draining from the hose after disconnecting from the tank trailer. A sample of the liquid will be taken from the tank trailer to be analyzed for HSLs and total radionuclides.

After filling, the tank trailer shall be transported to Plant 2/3, where the liquid will be transferred to Refinery tank F3E-222 or the Refinery Sump tank F3E-409, for storage until HSL and total radionuclude analysis results are available. Pumping or air bumping through the three-inch hose at a pressure of approximately 12 pounds may be employed to transfer the sump water from the tanker into the treatment system. The approximate time required to empty the tank trailer will be about 45 minutes.

The empty trailer may be returned to the silo area for refilling following the same steps employed in making the initial fill.

The water level in the decant sump system should be measured and recorded each time prior to and after filling the transport tanker. This information will aid in determining the quantity of water removed from the silo under drain system. The water level in transport tank must be visually monitored on a continual basis to avoid overflowing the transport tank and to verify that the pumping system continues to function. The power to the pump must be turned off if the flow of water stops. The water level in the transport tank should increase a minimum of one inch every ten minutes at the middle of the tank under normal operating conditions. The water level in the tank will increase at a significantly faster rate at the top of the tank necessitating close operator attention to shut off the pumping system.

2.0 Treatment Process

The liquid will be transferred from the K-65 area to an existing tank in Plant 2/3 (commonly called the refinery). The liquid will remain stored in this tank until the HSL and total radionuclides analysis results are available. If the thorium discharge limit of 459 ug/l (per FMPC Standard Operating Procedures) is exceeded, the liquid will be treated in the Refinery Sump. If the thorium content is less than the discharge limit, the liquid will be transferred from storage in the Plant 2/3 to Plant 8.

Treatment for thorium bearing wastewaters in the Refinery Sump is an follows: the liquid is acidified with nitric, barium carbonate and sodium sulfate are added in separate steps as precipitators. The wastewater pH was neutralized with magnesium oxide. Upon completion of the neutralization, the wastewater will be transferred to Plant 8.

At Plant 8, the wastewater pH was raised with lime, then filtered by the rotary vacuum filter. The filtrate and solids are kept segregated from other materials due to the thorium content. If after processing Plant 8, the sampled wastewater is found to be within discharge limits of all contaminants, the water is pumped to the General Sump for nitrate treatment.

After treatment in Plant 8, the wastewater will be sampled again in the General Sump and segregated for nitrate treatment. If the nitrate concentration is low, the wastewater would be pump to the Biodenitrification Surge Lagoon, where some additional solids removal by settling would occur prior to treatment in the Biodenitrification Bioreactors. If the concentration is high, the wastewater will be pumped to a holding tank for blending into the Biodenitrification Bioreactors for nitrate reduction. After nitrate treatment and if the wastewater meets standard, it is then discharged to the Effluent Treatment System (ETS) for Biochemical Oxygen demand and Total Suspended Solids control . Discharge from the ETS is through an National Pollutant Discharge Elimination System (NPDES) monitoring point.

3.0 Operations and Maintenance

Operation of the pumping system will begin after the functional testing of the system is complete. All valves on the system will be manually operated valves with a visual level indicator on the transport trailer. Utilizing As Low as Reasonably Achievable (ALARA) principle in regards to work performed in proximity to the silos, the pumping system will be visually monitored from a remote location outside the perimeter fence once pumping of the liquid has started. In addition to visual level indication, the remote location will allow for safe operation of the pumping and collection system.

Transporting the semi trailer with the liquid in the tank to an existing FMPC waste water treatment facility will be completed by FMPC Transportation personnel. Management and control of the liquid will be performed as according to waste management practices.

V. SAMPLING AND ANALYSIS PLAN

Since August 1989, the liquid in the corrugated pipe above the sump tank has been sampled and analyzed by FMPC personnel monthly for the following constituents(see Attachment II):

Uranium 234
Uranium 235
Uranium 236
Uranium 238
Total Uranium
Radium 226
Thorium 230

It is assumed that the distortion of the 30 inch diameter access way caused by the prior shifting of the earth berm has created an "offset" in the corrugated pipe making it necessary to "fish" any pipe, etc. around the resultant curvature to gain access into the tank. This distortion and the piping from the decant liquid removal pumping system utilized in the mid 1960's remaining in the decant sump tank caused the FMPC personnel not to obtain a true sample from the decant sump tank, instead they obtained a sample from the corrugated pipe. This monthly sampling will still continue during and after implementation of this removal action. If there is not enough liquid in the corrugated pipe to perform an analysis, it will be recorded as such, but the monthly sampling will continue.

A representative sample from each load will be taken from the liquid in the tanker truck and prior to transferring it to Plant 2/3, where the liquid will be stored in Refinery tank F3E-222 or the Refinery Sump tank F3E-408 until the HSL and total radionuclide analysis results are available. The collection of these samples will be performed by the FMPC Environmental Monitoring Group. The collected samples will be sent to on independent laboratory for analysis as established in the Quality Assurance Project Plan (QAPP) approved as part of the RI/FS Work Plan. The results from the lab will become part of the Administrative Record File. These

samples will be analyzed at the independent laboratory for the Full Hazardous Substance List (HSL) Parameters (see Attachment III) and total radionuclides (see Attachment IV). Treatment of the liquid at the existing FMPC wastewater treatment facility will be dependent on the HSL and total radionuclides analysis results.

Sampling the wastewater during treatment and the effluent discharged after treatment will be in accordance with the FMPC policy and procedures, the FMPC Federal Facilities Compliance Agreement, and the FMPC National Pollutant Discharge Elimination System (NPDES) Permit.

VI. HEALTH AND SAFETY PLAN

The work to be performed will be consistent with the Health and Safety Plan prepared for this removal action. A copy of this plan is provided as Attachment V of this work plan. The plan identifies, evaluates, and controls all safety and health hazards. In addition, it provides for emergency response for hazardous operations. The plan is consistent with 29 CFR 1910.120 and the FMPC Site Health and Safety Plan. Safety documentation will be prepared according to FMPC-2116 Topical Manual "Implementating FMPC Policies and Procedures for System Safety Analysis and Review System" and DOE/OR-901 Guidance for Preparation of Safety Analysis Reports.

VII. QUALITY ASSURANCE

The K-65 Decant Sump Tank Removal Action will be conducted according to requirements of the overall quality assurance program at the FMPC which is described in the site Quality Assurance Plan, FMPC 2139. The Quality Assurance Plan is based on the criteria specified in ASME NQA-1, Federal EPA Guideline QAMS-005/80 and DOE Orders 5700.6 and 5400.1. Specific quality assurance requirements will be incorporated into written and approved procedures and into personnel training. The Quality Assurance Department will conduct periodic surveillance to verify compliance.

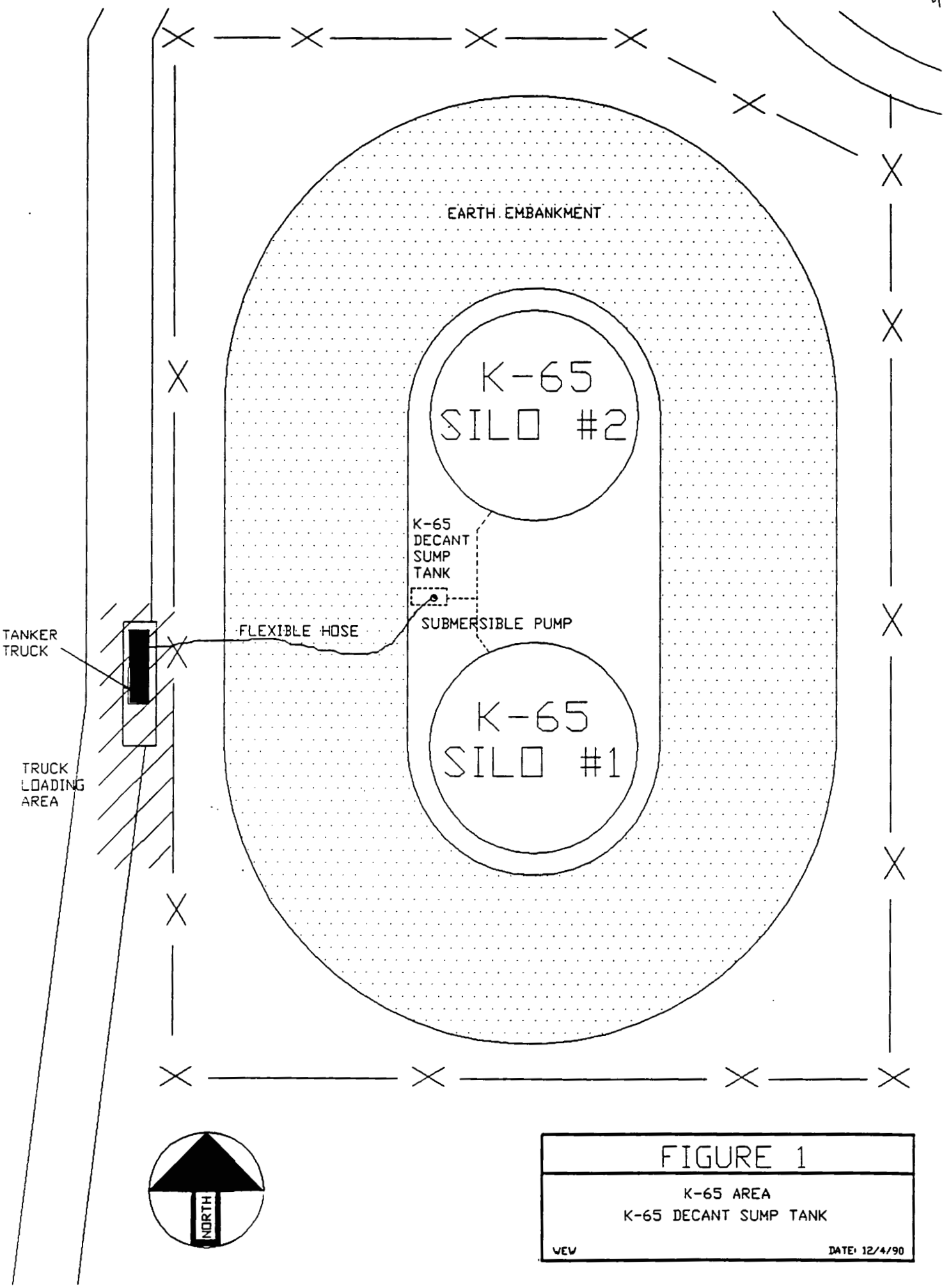
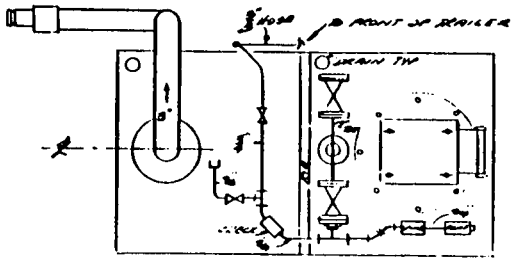


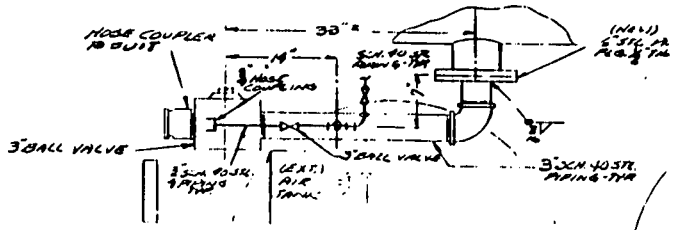
FIGURE 1

K-65 AREA
K-65 DECANT SUMP TANK

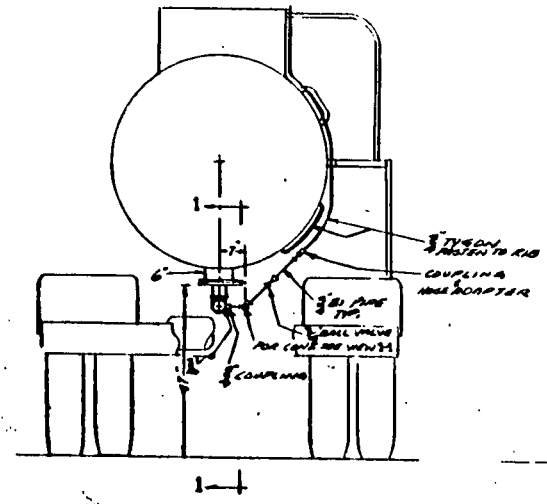
WEW DATE: 12/4/90

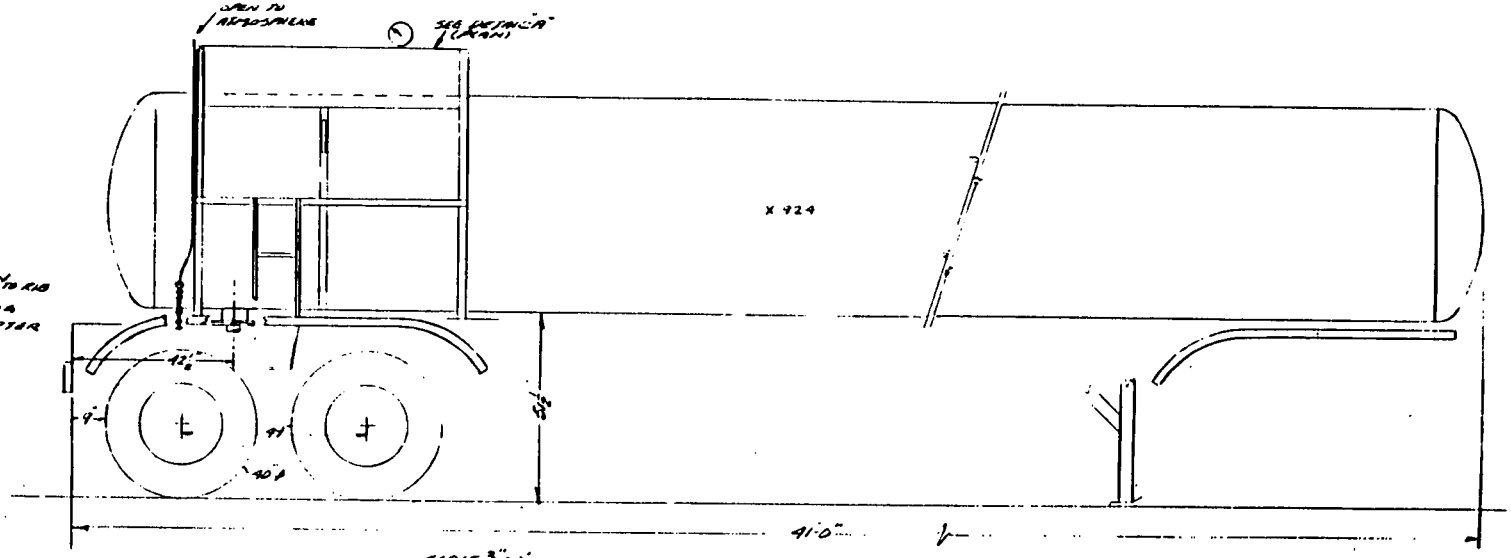


DETAIL "A"



VIEW 1-1
SCALE 1/2"=1'





SCALE 3/8"=1'

REVISIONS	DATE	DWN. BY	APPD	NO.	REVISIONS	DATE	DWN. BY	APPD	REF. DWG. NO.	REF. DWG. TITLE

APPROVALS

CIVIL & STR.		H.S.S.	
MECHANICAL		PRODUCTION	
ELECTRICAL		TECHNICAL	
CHEMICAL		MAINTENANCE	
ENGINEER		FIRE SAFETY	
CHECKED			

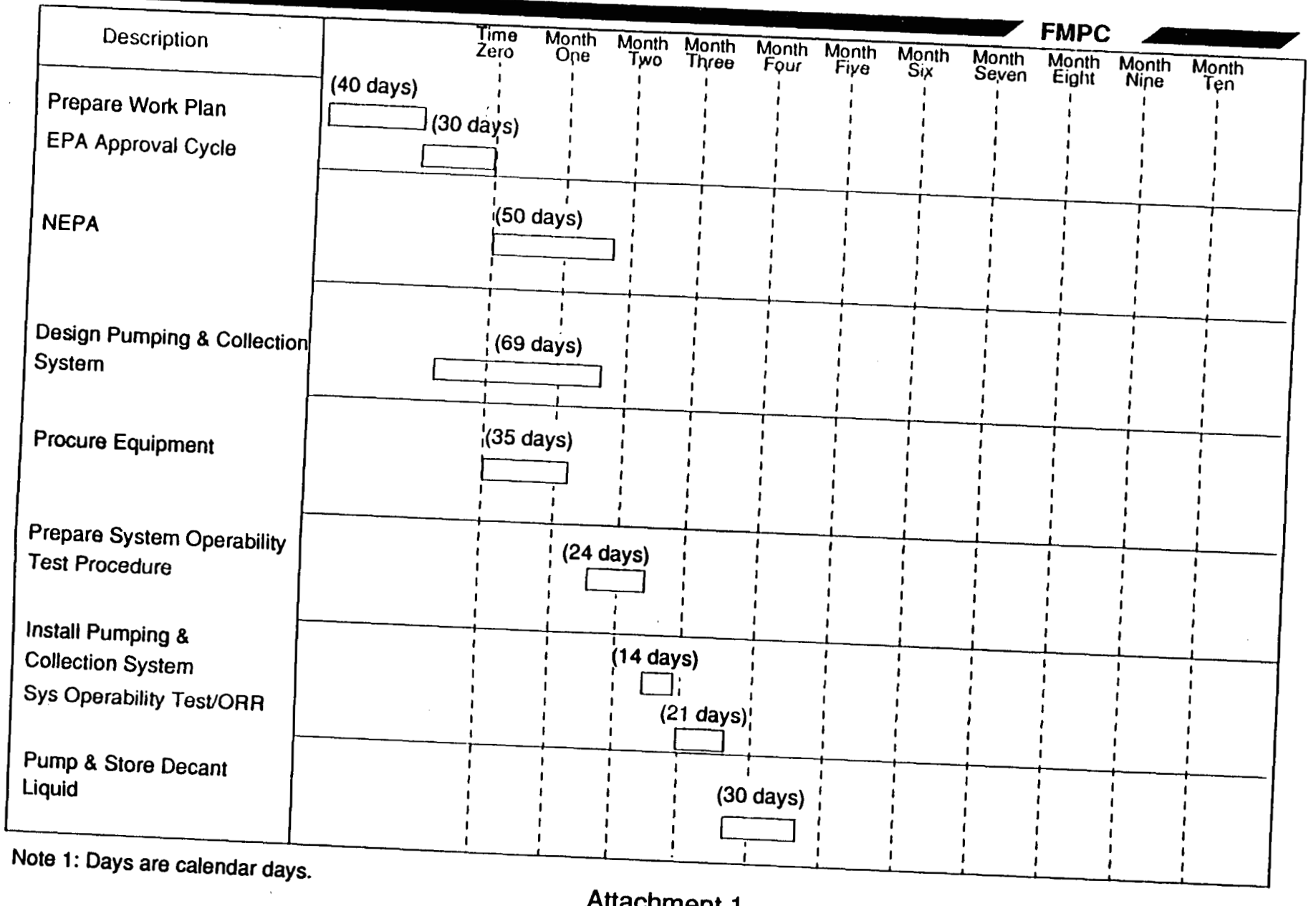
FEED MATERIALS PRODUCTION CENTER
FERNALD, OHIO
U. S. DEPARTMENT OF ENERGY

K65 AREA
TRANSPORT TANKER
MODIFICATIONS
SKETCH RES-1966-2

ENGINEERING DIVISION

PROJ. NO. 4-1-7
DATE 7-27-77

K65 Decant Sump Tank Removal Action Schedule



Note 1: Days are calendar days.

Attachment 1

Attachment II

K-65 DECANT SUMP TANK

Monthly Sampling Results
(Expressed in pCi/L, except where otherwise specified)

MONTH	U-234	WT. % U BASIS	U-235	WT. % U BASIS	U-236	WT. % U BASIS	U-238	WT. % U BASIS	TOTAL U	(ppm)	Ra-226	Th-230	TOTAL ACTIVITY
ust, 1989	17150	0.006	723	0.73	29	0.001	15278	99.27	33000	(46)	260	1.1	
tember, 1989	21000	0.0064	790	0.72	55	0.0017	17000	99.27	39000	(51.2)	190	<0.40	
ober, 1989	16000	0.0064	620	0.73	33	0.0013	13000	99.26	30000	(39.4)	120	<0.40	
mber, 1989	13795	0.006	565	0.71	24	0.001	12290	99.28	27000	(37)	98	<0.40	
ember, 1989	12583	0.005	628	0.72	26	0.001	13453	99.28	27000	(40.5)	67	<0.30	
uary, 1990	20133	0.006	837	0.72	34	0.001	17937	99.28	39000	(54)	1600		540
ruary, 1990	13360	0.005	657	0.71	27	0.001	14283	99.28	28000	(43)	100		640
ch, 1990	14913	0.005	734	0.71	<31	<0.001	15944	99.28	<32000	(48)	194		130
il, 1990	10191	0.004	627	0.71	<26	<0.001	13619	99.28	<24000	(41)			135

ATTACHMENT III

FULL HAZARDOUS SUBSTANCE LIST (HSL) PARAMETERS

HSL INORGANICS

Aluminum
Antimony
Arsenic
Barium
Beryllium
Cadmium
Calcium
Chromium
Cobalt
Copper
Iron
Lead
Magnesium
Methoxychlor
Methylethylketone
Manganese
Mercury
Nickel
Potassium
Selenium
Silver
Sodium
Thallium
Vanadium
Zinc
Cyanide
O & P Creosol
Creosol
Chloroform
Chlorodane

HSL VOLATILES

Chloromethane
Bromomethane
Vinyl Chloride
Chloroethane
Methylene Chloride
Acetone
Carbon Disulfide
1,1-Dichloroethene
1,1-Dichloroethane
trans-1,2-Dichloroethene
Chloroform
1,2-Dichloroethane
2-Butanone
1,1,1-Trichloroethane
Carbon Tetrachloride
Vinyl Acetate
1,1-Dichloroethylene
Bromodichloromethane
1,1,2,2-Tetrachloroethane
1,2-Dichloropropane
trans-1,3-Dichloropropene
Trichloroethene
Dibromochloromethane
1,1,2-Trichloroethane
Benzene
cis-1,3-Dichloropropene
2-Chloroethyl Vinyl Ether
Bromoform
2-Hexanone
4-Methyl-2-pentanone
Tetrachloroethene
Toluene
Chlorobenzene
1,1,1-Trichloroethylene
Ethyl Benzene
Styrene
Total Xylenes

ATTACHMENT III (Cont.)

HSL SEMI-VOLATILES

Phenol
bis(2-Chloroethyl) ether
2-Chlorophenol
1,3-Dichlorobenzene
1,4-Dichlorobenzene
Benzyl Alcohol
1,2-Dichlorobenzene
2-Methylphenol
bis(2-Chloroisopropyl) ether
4-Methylphenol
N-Nitroso-Dipropylamine
Hexachloroethane
Nitrobenzene
Isophorone
2-Nitrophenol
2,4-Dimethylphenol
Benzoic Acid
bis(2-Chloroethoxy) methane
2,4-Dichlorophenol
1,2,4-Trichlorobenzene
Naphthalene
4-Chloroaniline
Hexachlorobutadiene
4-Chloro-3-methylphenol (para-chloro-meta-cresol)
2-Methylnaphthalene
Hexachlorocyclopentadiene
2,4,6-Trichlorophenol
2,4,5-Trichlorophenol
2-Chloronaphthalene
2-Nitroaniline
Dimethyl Phthalatecenaphthylene
3-Nitroaniline
Acenaphthene
2,4-Dinitrophenol
4-Nitrophenol
Dibenzofuran
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Diethylphthalate
4-Chlorophenyl Phenyl ether
Fluorene
4-Nitroaniline
4,6-Dinitro-2-methylphenol
N-nitrosodiphenylamine
4-Bromophenyl Phenyl ether
Hexachlorobenzene
Pentachlorophenol
Phenanthrene
Anthracene
Di-n-butylphthalate
Fluoranthene
Pyrene
Butyl Benzyl Phthalate
3,3'-Dichlorobenzidine
Benzo(a)anthracene
bis(2-ethylhexyl)phthalate
Chrysene
Di-n-octyl Phthalate
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Benzo(a)pyrene
Indeno(1,2,3-cd)pyrene
Dibenz(a,h)anthracene
Benzo(g,h,i)perylene

ATTACHMENT III (Cont.)

HSL PESTICIDES

alpha-BHC	Endosulfan I	4,4'-DDT	AROCLOR-1232
beta-BHC	Dieldrin	Endrin Ketone	AROCLOR-1242
delta-BHC	4,4'-DDE	Methoxychlor	AROCLOR-1248
gamma-BHC (Lindane)	Endrin	Chlordane	AROCLOR-1254
Heptachlor	Endosulfan II	Toxaphene	AROCLOR-1260
Aldrin	4,4'-DDD		AROCLOR-1016
Heptachlor Epoxide	Endosulfan Sulfate		AROCLOR-1221

ATTACHMENT IV

Total Radionuclide Parameters

Total Uranium
Isotopic Uranium
Isotopic Plutonium
Radium-226
Radium-228
Neptunium-237

Total Thorium
Isotopic Thorium
Technetium-99
Cesium-137
Strontium-90
Ruthenium-106

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ATTACHMENT V

K-65 DECANT SUMP TANK REMOVAL ACTION

PRELIMINARY SAMPLING ANALYSIS RESULTS

21

INTERNATIONAL TECHNOLOGY CORPORATION

DATE: 11/15/90

PLEASE DELIVER THE FOLLOWING PAGES TO:

NAME: John Razor

FIRM/LOCATION ASI- Fernald

TELECOPIER NUMBER: 513-738-3207

VERIFICATION NUMBER:

FROM:

NAME: Jenny Vance

IT RADIOLOGICAL SCIENCES LABORATORY
P.O. BOX 549/1550 BEAR CREEK ROAD
OAK RIDGE, TENNESSEE 37831

PHONE: 615-482-9707
FAX: 615-481-3606

NOTES: No value is reported for TON because it calculates to a negative value. The negative TON value is due to the high nitrate content (881 mg/. A high nitrate content will oxidize NH_3 from organic nitrogen to give a negative interference.

Volatiles to be Fed Ex'ed today (CLP Pkg). Semivolatiles should be comple by the beginning next week.

IF YOU DO NOT RECEIVE ALL THE PAGES NOTED, PLEASE CALL AND THE TELECOPY WILL THEN BE COMPLETED.

CONFIRMATION OF RECEIPT REQUESTED

_____YES _____NO

PAGE 1 OF 9

ITAS-MW098R01

Page __ of __

WET CHEMISTRY

PROJECT CODE: ADV 36377 DATE RECEIVED: 11/01/90

SAMPLE DESCRIPTION: K-65 Decant Tank CONCENTRATION UNITS: mg/L

CLIENT #:	99403				
SAMPLE #:					
NH_3, TON, PO_4	FF2549				
Cl, Fl, SO_4	FF2548				
NO_3 / PHENOL	FF2545/FF2544				
SULFIDE	FF2546				
TOC	FF2547				
TOX	FF2550				

RESULTS

	Prep Date	Anal Date	BLANK	99403		
AMMONIA	11/08/90	11/08/90	0.10 U	12.6		
TON	__/__/__	11/09/90				
TL. PHOS.	11/14/90	11/14/90	0.02 U	8.13		
CHLORIDE	11/09/90	11/09/90	0.50 U	90.9		
FLUORIDE	11/14/90	11/14/90	0.10 U	18.7		
SULFATE	11/12/90	11/12/90	2.00 U	5550		
NITRATE	11/07/90	11/07/90	0.10 U	881		
PHENOL	11/06/90	11/06/90	0.01 U	0.02		
SULFIDE	11/05/90	11/05/90	0.5 U	0.5 U		
TOC	11/07/90	11/07/90	1.00 U	108		
TOX	11/08/90	11/08/90	0.010 U	0.755		

REVIEWED BY: _____ REVIEWED BY: _____

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

99403

Lab Name: IT_OAK_RIDGE_____ Contract: FERNALD___

Lab Code: ITMWL_ Case No.: 36377 SAS No.: _____ SDG No.: 99403_

Matrix (soil/water): WATER Lab Sample ID: FF 2543___

Level (low/med): _____ Date Received: 11/01/90

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	36200			P
7440-36-0	Antimony	169			P
7440-38-2	Arsenic	855			P
7440-39-3	Barium	683			P
7440-41-7	Beryllium	11.6			P
7440-43-9	Cadmium	28.4			P
7440-70-2	Calcium	236000			P
7440-47-3	Chromium	417			P
7440-48-4	Cobalt	1660			P
7440-50-8	Copper	887			P
7439-89-6	Iron	70100			P
7439-92-1	Lead	39000			P
7439-95-4	Magnesium	57200			P
7439-96-5	Manganese	1620			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	2330			P
7440-09-7	Potassium	38000			A
7782-49-2	Selenium	5530			P
7440-22-4	Silver	182			P
7440-23-5	Sodium	100	U		P
7440-28-0	Thallium	2.0	U	W	F
7440-62-2	Vanadium	511			P
7440-66-6	Zinc	11300			P
	Cyanide	462			AS

Color Before: GREEN____ Clarity Before: OPAQUE Texture: N/A___

Color After: YELLOW___ Clarity After: CLEAR_ Artifacts: YES___

Comments:
GRASS AND BUGS WERE PRESENT IN SAMPLE. SAMPLE WAS FLUORESCENT GREEN.
FF 2542 FOR HG IS THE SAME AS FF 2543.
FF 2551 FOR CN IS THE SAME AS FF 2543.

U.S. EPA - CLP

3
BLANKS

Lab Name: IT_OAK_RIDGE_____ Contract: FERNALD___

Lab Code: ITMWL_ Case No.: 36377 SAS No.: _____ SDG No.: 99403_

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	60.0	U	60.0	U	60.0	U	60.0	U	60.0	U	P
Antimony	30.0	U	30.0	U	30.0	U	30.0	U	30.0	U	P
Arsenic	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	P
Barium	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	P
Beryllium	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	P
Cadmium	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	P
Calcium	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	P
Chromium	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	P
Cobalt	10.0	U	-14.7	B	-18.9	B	-27.3	B	-10.5	B	P
Copper	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	P
Iron	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	P
Lead	40.0	U	40.0	U	40.0	U	40.0	U	40.0	U	P
Magnesium	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	P
Manganese	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	P
Mercury	0.2	U	0.2	U					0.2	U	CV
Nickel	20.0	U	20.0	U	20.0	U	20.0	U	20.0	U	P
Potassium	100.0	U	100.0	U	100.0	U	100.0	U	100.0	U	A
Selenium	80.0	U	80.0	U	80.0	U	80.0	U	80.0	U	P
Silver	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	P
Sodium	100.0	U	100.0	U	100.0	U	100.0	U	100.0	U	P
Thallium	2.0	U	2.0	U	2.0	U			2.0	U	F
Vanadium	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	P
Zinc	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	P
Cyanide	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	AS

PRELIMINARY

0001

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE

99402

Lab Name: ITAS-OAK RIDGE Contract: ADV

Lab Code: IT-MWL Case No.: 16361 SAS No.: NA SDG No.: 99402

Matrix: (soil/water) WATER Lab Sample ID: FF2301

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: FF2301R

Level: (low/med) LOW Date Received: 10/25/90

% Moisture: not dec. ____ Date Analyzed: 10/29/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	6	B
67-64-1	Acetone	16	B
75-15-0	Carbon Disulfide	2	J
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	15	B
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	1	J
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethane	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	13	
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Total Xylenes	5	U

WS 11.4.90

00006
EPA SAMPLE N

99402

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ITAS-OAK RIDGE Contract: ADV

Lab Code: IT-WWL Case No.: 16363 SAS No.: NA SDG No.: 99402

Matrix: (soil/water) WATER Lab Sample ID: FF2301

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: FF2301R

Level: (low/med) LOW Date Received: 10/25/90

% Moisture: not dec. ____ Date Analyzed: 10/29/90

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	10.10	40	J
2.	UNKNOWN	17.80	11	J

PRELIMINARY

LCS 11-14-90

905

00077

EPA SAMPLE :

VBLKS1

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: ITAS-OAK RIDGE Contract: ADV

Lab Code: IT-MOL Case No.: 16363 SAS No.: NR SDG No.: 99402

Matrix: (soil/water) WATER Lab Sample ID: VBB1029

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VBB1029

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ Date Analyzed: 10/29/90

Column: (pack/cap) PACK Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	
67-64-1	Acetone	3	J
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	2	J
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	2	J
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	1	J
1330-20-7	Total Xylenes	5.	U

MLS 11-14-90 38

905

00078
EPA SAMPLE NO

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

VBLKB1

Lab Name: ITAS-OAK RIDGE Contract: ADV

Lab Code: IT-WWL Case No.: 16163 SAS No.: NA SDG No.: 99402

Matrix: (soil/water) WATER Lab Sample ID: VBB1029

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VBB1029

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ Date Analyzed: 10/29/90

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

PRELIMINARY

WDS 11/14/90

905

INTERNATIONAL TECHNOLOGY CORPORATION

DATE: 11/21/90

PLEASE DELIVER THE FOLLOWING PAGES TO:

NAME: John Razor or Bob Galbraith

FIRM/LOCATION ASI- Fernald

TELECOPIER NUMBER: 513-738-3207

VERIFICATION NUMBER:

FROM:

NAME: Jenny Vance

IT RADIOLOGICAL SCIENCES LABORATORY
P.O. BOX 549/1550 BEAR CREEK ROAD
OAK RIDGE, TENNESSEE 37831

PHONE: 615-482-9707
FAX: 615-481-3606

NOTES: The extracts from the original prep had low surrogate recoveries. The samples were then reprepped and reanalyzed. Data from both extractions / analyses are included.

IF YOU DO NOT RECEIVE ALL THE PAGES NOTED,
PLEASE CALL AND THE TELECOPY WILL THEN BE COMPLETED.

CONFIRMATION OF RECEIPT REQUESTED

_____YES _____NO

PAGE 1 OF 11

905

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

99403

Lab Name: ITAS-OAK RIDGE Contract: ADV

Lab Code: IT-MWL Case No.: 36377 SAS No.: NA SDG No.: 99403

Matrix: (soil/water) WATER Lab Sample ID: FF2552

Sample wt/vol: 500 (g/mL) ML Lab File ID: FF2552

Level: (low/med) LOW Date Received: 11/01/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/05/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/19/90

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	20	U
111-44-4	bis(2-Chloroethyl)Ether	20	U
95-57-8	2-Chlorophenol	20	U
541-73-1	1,3-Dichlorobenzene	20	U
106-46-7	1,4-Dichlorobenzene	20	U
100-51-6	Benzyl Alcohol	20	U
95-50-1	1,2-Dichlorobenzene	20	U
95-48-7	2-Methylphenol	20	U
108-60-1	bis(2-Chloroisopropyl)Ether	20	U
106-44-5	4-Methylphenol	20	U
621-64-7	N-Nitroso-Di-n-Propylamine	20	U
67-72-1	Hexachloroethane	20	U
98-95-3	Nitrobenzene	20	U
78-59-1	Isophorone	20	U
88-75-5	2-Nitrophenol	20	U
105-67-9	2,4-Dimethylphenol	20	U
65-85-0	Benzoic Acid	4	J
111-91-1	bis(2-Chloroethoxy)Methane	20	U
120-83-2	2,4-Dichlorophenol	20	U
120-82-1	1,2,4-Trichlorobenzene	20	U
91-20-3	Naphthalene	20	U
106-47-8	4-Chloroaniline	20	U
87-68-3	Hexachlorobutadiene	20	U
59-50-7	4-Chloro-3-Methylphenol	20	U
91-57-6	2-Methylnaphthalene	20	U
77-47-4	Hexachlorocyclopentadiene	20	U
88-06-2	2,4,6-Trichlorophenol	20	U
95-95-4	2,4,5-Trichlorophenol	100	U
91-58-7	2-Chloronaphthalene	20	U
88-74-4	2-Nitroaniline	100	U
131-11-3	Dimethyl Phthalate	20	U
208-96-8	Acenaphthylene	20	U
606-20-2	2,6-Dinitrotoluene	20	U

WS 31 11-20

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
99403

Lab Name: ITAS-OAK RIDGE Contract: ADV

Lab Code: IT-MWL Case No.: 36377 SAS No.: NA SDG No.: 99403

Matrix: (soil/water) WATER Lab Sample ID: FF2552

Sample wt/vol: 500 (g/mL) ML Lab File ID: FF2552

Level: (low/med) LOW Date Received: 11/01/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/05/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/19/90

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	100	U
83-32-9	Acenaphthene	20	U
51-28-5	2,4-Dinitrophenol	100	U
100-02-7	4-Nitrophenol	100	U
132-64-9	Dibenzofuran	20	U
121-14-2	2,4-Dinitrotoluene	20	U
84-66-2	Diethylphthalate	20	U
7005-72-3	4-Chlorophenyl-phenylether	20	U
86-73-7	Fluorene	20	U
100-01-6	4-Nitroaniline	100	U
534-52-1	4,6-Dinitro-2-Methylphenol	100	U
86-30-6	N-Nitrosodiphenylamine (1)	20	U
101-55-3	4-Bromophenyl-phenylether	20	U
118-74-1	Hexachlorobenzene	20	U
87-86-5	Pentachlorophenol	100	U
85-01-8	Phenanthrene	20	U
120-12-7	Anthracene	20	U
84-74-2	Di-n-Butylphthalate	20	U
206-44-0	Fluoranthene	20	U
129-00-0	Pyrene	20	U
85-68-7	Butylbenzylphthalate	20	U
91-94-1	3,3'-Dichlorobenzidine	40	U
56-55-3	Benzo(a)Anthracene	20	U
218-01-9	Chrysene	20	U
117-81-7	bis(2-Ethylhexyl)Phthalate	20	U
117-84-0	Di-n-Octyl Phthalate	20	U
205-99-2	Benzo(b)Fluoranthene	20	U
207-08-9	Benzo(k)Fluoranthene	20	U
50-32-8	Benzo(a)Pyrene	20	U
193-39-5	Indeno(1,2,3-cd)Pyrene	20	U
53-70-3	Dibenz(a,h)Anthracene	20	U
191-24-2	Benzo(g,h,i)Perylene	20	U

(1) - Cannot be separated from Diphenylamine

Q05

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO

99403

Lab Name: ITAS-OAK RIDGE Contract: ADV

Lab Code: IT-MWL Case No.: 36377 SAS No.: NA SDG No.: 99403

Matrix: (soil/water) WATER Lab Sample ID: FF2552

Sample wt/vol: 500 (g/mL) ML Lab File ID: FF2552

Level: (low/med) LOW Date Received: 11/01/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/05/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/19/90

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

Number TICs found: 17

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		CYCLOHEXENE, METHYLPROPOXY I	12.79	330	J
2.	126-73-8	PHOSPHORIC ACID TRIBUTYL EST	17.42	210	J
3.	51422-75-4	CYCLOHEXANE, 1-BROMO-2-CHLOR	13.17	110	J
4.		CYCLOHEXENE, METHYLPROPOXY I	12.47	90	J
5.	19456-18-9	1,2-CYCLOHEXANEDIOL, CYCLIC	14.97	78	J
6.		UNKNOWN	11.54	42	J
7.	1112-35-2	1,4-PENTADIENE, 3,3-DIMETHYL	12.02	39	J
8.	110-59-8	PENTANENITRILE	5.25	54	J
9.	67-66-3	METHANE, TRICHLORO-	4.73	44	J
10.		UNKNOWN	13.85	30	J
11.		UNKNOWN	11.30	28	J
12.		UNK C6H11OCL	9.70	35	J
13.	62108-23-0	DECANE, 2,5,6-TRIMETHYL-	10.67	29	J
14.	54105-67-8	HEPTADECANE, 2,6-DIMETHYL-	14.62	21	J
15.	821-09-0	4-PENTEN-1-OL	4.88	26	J
16.	111-71-7	HEPTANAL	9.24	25	J
17.	286-76-0	BICYCLO 7.1.0 DECANE	13.32	17	J

WDS 11/20/90

905

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
99403R

Lab Name: ITAS-OAK RIDGE Contract: ADV

Lab Code: IT-MWL Case No.: 36377 SAS No.: NA SDG No.: 99403

Matrix: (soil/water) WATER Lab Sample ID: FF2552

Sample wt/vol: 1000 (g/mL) ML Lab File ID: FF2552R

Level: (low/med) LOW Date Received: 11/01/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/15/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/19/90

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

99403R

Lab Name: ITAS-OAK RIDGE Contract: ADV

Lab Code: IT-MWL Case No.: 36377 SAS No.: NA SDG No.: 99403

Matrix: (soil/water) WATER Lab Sample ID: FF2552

Sample wt/vol: 1000 (g/mL) ML Lab File ID: FF2552R

Level: (low/med) LOW Date Received: 11/01/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/15/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/19/90

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1105 20

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1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

99403R

Lab Name: ITAS-OAK RIDGE Contract: ADV

Lab Code: IT-MWL Case No.: 36377 SAS No.: NA SDG No.: 99403

Matrix: (soil/water) WATER Lab Sample ID: FF2552

Sample wt/vol: 1000 (g/mL) ML Lab File ID: FF2552R

Level: (low/med) LOW Date Received: 11/01/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/15/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/19/90

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 126-73-8	PHOSPHORIC ACID TRIBUTYL EST	17.44	140	J
2. 55591-17-8	S-INDACENE-1,7-DIONE, 2,3,5,	24.05	11	J
3.	UNKNOWN	19.10	6.2	J
4. 62108-27-4	DECANE, 2,4,6-TRIMETHYL-	10.67	4.6	J

KJS 11.20.90

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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO

SBLKB1

Lab Name: ITAS-OAK RIDGE Contract: ADV

Lab Code: IT-MWL Case No.: 36377 SAS No.: NA SDG No.: 99403

Matrix: (soil/water) WATER Lab Sample ID: Q2007

Sample wt/vol: 1000 (g/mL) ML Lab File ID: Q2007

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/05/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/19/90

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKB1

Lab Name: ITAS-OAK RIDGE Contract: ADV

Lab Code: IT-MWL Case No.: 36377 SAS No.: NA SDG No.: 99403

Matrix: (soil/water) WATER Lab Sample ID: Q2007

Sample wt/vol: 1000 (g/mL) ML Lab File ID: Q2007

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/05/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/19/90

GPC Cleanup: (Y/N) N pH: ____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

905

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKB2

Lab Name: ITAS-OAK RIDGE Contract: ADV

Lab Code: IT-MWL Case No.: 36377 SAS No.: NA SDG No.: 99403

Matrix: (soil/water) WATER Lab Sample ID: Q2031

Sample wt/vol: 1000 (g/mL) ML Lab File ID: Q2031R

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/15/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/19/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
100-51-6	Benzyl Alcohol	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	bis(2-Chloroisopropyl)Ether	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
65-85-0	Benzoic Acid	50	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	50	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethyl Phthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKB2

Lab Name: ITAS-OAK RIDGE Contract: ADV

Lab Code: IT-MWL Case No.: 36377 SAS No.: NA SDG No.: 99403

Matrix: (soil/water) WATER Lab Sample ID: 02031

Sample wt/vol: 1000 (g/mL) ML Lab File ID: 02031R

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/15/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/19/90

GPC Cleanup: (Y/N) N pH: _____ Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	10	U
51-28-5	2,4-Dinitrophenol	50	U
100-02-7	4-Nitrophenol	50	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	50	U
534-52-1	4,6-Dinitro-2-Methylphenol	50	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	50	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

INTERNATIONAL TECHNOLOGY CORPORATION

DATE: 11/27/90

PLEASE DELIVER THE FOLLOWING PAGES TO:

NAME: John Razor

FIRM/LOCATION ASI- Fernald

TELECOPIER NUMBER: 513-738-3207

VERIFICATION NUMBER:

FROM:

NAME: Jenny Vance

IT RADIOLOGICAL SCIENCES LABORATORY
P.O. BOX 549/1550 BEAR CREEK ROAD
OAK RIDGE, TENNESSEE 37831

PHONE: 615-482-9707
FAX: 615-481-3606

NOTES: Pest/PCB results for 99403
(K-65 Decant Tank)

IF YOU DO NOT RECEIVE ALL THE PAGES NOTED,
PLEASE CALL AND THE TELECOPY WILL THEN BE COMPLETED.

CONFIRMATION OF RECEIPT REQUESTED

_____ YES _____ NO

PAGE 1 OF 3

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

99403

Lab Name: ITAS-KNOXVILLE Contract: FERNALD

Lab Code: IT-MWL Case No.: 36377 SAS No.: NA SDG No.: 99403

Matrix: (soil/water) WATER Lab Sample ID: FF2552

Sample wt/vol: 1000 (g/mL) ML Lab File ID:

Level: (low/med) LOW Date Received: 11/01/90

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/16/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/19/90

GPC Cleanup: (Y/N) N pH: 6.0 Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.50	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.22	J
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	0.081	J
11096-82-5	Aroclor-1260	1.0	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLK1

Lab Name: ITAS-KNOXVILLE Contract: FERNALD

Lab Code: IT-MWL Case No.: 36377 SAS No.: NA SDG No.: 99403

Matrix: (soil/water) WATER Lab Sample ID: Q2034

Sample wt/vol: 1000 (g/mL) ML Lab File ID:

Level: (low/med) LOW Date Received: NA

% Moisture: not dec. ____ dec. ____ Date Extracted: 11/16/90

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 11/19/90

GPC Cleanup: (Y/N) N pH: ND Dilution Factor: 1.0

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
5103-71-9	alpha-Chlordane	0.50	U
5103-74-2	gamma-Chlordane	0.50	U
8001-35-2	Toxaphene	1.0	U
12674-11-2	Aroclor-1016	0.50	U
11104-28-2	Aroclor-1221	0.50	U
11141-16-5	Aroclor-1232	0.50	U
53469-21-9	Aroclor-1242	0.50	U
12672-29-6	Aroclor-1248	0.50	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

ATTACHMENT VI

HEALTH AND SAFETY PLAN

FOR THE

K-65 DECANT SUMP TANK

REMOVAL ACTION

FEED MATERIALS PRODUCTION CENTER

DECEMBER 1990

APPROVAL:

J. Y. Horgan for

S.W. Coyle, Manager
Environmental Management
Westinghouse Materials Company of Ohio

CONCURRENCE:

J. J. Volpe, Vice President
Industrial Radiological Safety and Training
Westinghouse Materials Company of Ohio

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1.0 TASKS TO BE PERFORMED

The K-65 Decant Sump Tank Removal Action will consist of removing the water from the K-65 decant sump tank and the disposition of the removed liquid. With the preliminary HSL analysis results available, treatment will occur upon transferring the water to existing FMPC water treatment facilities for treatment of heavy metals, uranium, thorium and radium. The preliminary HSL analysis results indicate that there are not any appreciable amounts of volatile organic compounds. The principle isotopes of Uranium, Radium 226, and Thorium 230 are considered to be the primary radionuclide contaminants of concern. Management and control of the liquid will be performed according to hazardous waste management practices.

Installation of the pump and the associated piping will:

yes	Disturb Surface Soil	no	Sample Surface Water
no	Disturb Subsurface Soil	no	Sample Lagoons
no	Use Heavy Equipment	no	Use Boat
no	Enter Confined Space	yes	Involve Radioactivity
no	Disturb Containerized Matter	no	Involve Trenches

The functional testing of the pump and piping system will:

no	Disturb Surface Soil	no	Sample Surface Water
no	Disturb Subsurface Soil	no	Sample Lagoons
no	Use Heavy Equipment	no	Use Boat
no	Enter Confined Space	yes	Involve Radioactivity
no	Disturb Containerized Matter	no	Involve Trenches

Pumping the liquid from the sump tank to the tanker truck will:

no	Disturb Surface Soil	no	Sample Surface Water
no	Disturb Subsurface Soil	no	Sample Lagoons
no	Use Heavy Equipment	no	Use Boat
no	Enter Confined Space	yes	Involve Radioactivity
yes	Disturb Containerized Matter	no	Involve Trenches

The sampling of the liquid will:

no	Disturb Surface Soil	no	Sample Surface Water
no	Disturb Subsurface Soil	no	Sample Lagoons
no	Use Heavy Equipment	no	Use Boat
no	Enter Confined Space	yes	Involve Radioactivity
yes	Disturb Containerized Matter	no	Involve Trenches

Transporting liquid to existing FMPC Water Treatment Facility will:

no	Disturb Surface Soil	no	Sample Surface Water
no	Disturb Subsurface Soil	no	Sample Lagoons
no	Use Heavy Equipment	no	Use Boat
no	Enter Confined Space	yes	Involve Radioactivity
yes	Disturb Containerized Matter	no	Involve Trenches

Pumping the liquid from the tanker truck to tanks at the FMPC water treatment facility will:

no	Disturb Surface Soil	no	Sample Surface Water
no	Disturb Subsurface Soil	no	Sample Lagoons
no	Use Heavy Equipment	no	Use Boat
no	Enter Confined Space	yes	Involve Radioactivity
yes	Disturb Containerized Matter	no	Involve Trenches

2.0 SITE HISTORY

The K-65 Silos are large concrete structures, built in 1951 and 1952, which contain the residues of pitchblende processing at the FMPC and at St. Louis (Mallinckrodt Chemical Works). These residues contain radium, uranium, and thorium (230). Beneath each silo an underdrain system was constructed to collect any potential leakage through the floor of the silo. This underdrain system consisted of a series of pipes beneath the floor which was designed to discharge into a sump tank. The silos were designed to also have a decant system which discharged into this same tank. The decant system was designed to remove the liquid portion of the K-65 slurry after the solids had settled. Since this liquid was withdrawn in conjunction with the process of filling the silos, it was used on a daily basis during the years the silos were filled. As the primary purpose of this tank was to receive the liquid, it was called the decant sump tank. This tank has a 9,000 gallon capacity.

The earthen berms were placed around the silos in 1964 to provide structural support to the silos. At this time, the decant system was disconnected from this tank but the underdrain system remained intact. The purpose was to continue to have the capability of collecting any potential leakage from the underdrain system. Access was provided to this sump by attaching a 30" diameter corrugated galvanized steel pipe to the tank. This pipe extended upward 33 feet to the top of the berm. Although this pipe provided access to the decant sump tank, no information exists which indicates the tank was used to monitor for potential leakage into the underdrain system. The tank had not been cleaned of residue from handling liquid when the decant system was removed and the silo berms constructed.

3.0 TASK SPECIFIC HAZARD ASSESSMENT

Routine sampling of the decant sump tank is not known to have occurred until it began in August, 1989. Since that time, the decant sump tank has been sampled monthly. This sampling indicated the potential hazards identified below. Prior to the initiation of the removal field activities, a reassessment of the conditions will be conducted to ensure that conditions are such that a safe working environment can be provided. All newly identified

hazards will be addressed with the Industrial, Radiological, Safety and Training (IRS&T) representative(s) to determine the degree of hazard and if any additional requirements to this safety plan are needed.

3.1 Physical Hazards

- Radiological Hazards
  - External
  - Internal
- Noise
- Overhead Hazards
- Heat Stress

3.2 Chemical/Radiological Hazards

Table 1 includes the suspect contaminants along with the exposure limits, the primary hazard, the applicable action limit, and the background level in ambient air. Included in the table are the following radionuclides (in order of their expected significance) from K-65 residue are expected in the liquid: thorium-230, radium-226, natural uranium and natural thorium.

3.2.1 Penetrating radiation from the K-65 silos can be expected in the range of about 50 mrem/hr on the K-65 berm near the top of the corrugated pipe to about .6 mrem/hr at the inside of the fence to the west of the sump. The highest radiation readings in the area are about 150 mrem/hr on contact with the silo domes.

3.2.2 Radon from the K-65 Silos has the highest potential for personnel exposure.

Table 1

CHEMICAL/RADIOLOGICAL HAZARD TABLE

Contaminant	Primary Hazard	Limit	Action Level	Action
Lead	Skin Adsorption/ Ingestion	0.05 mg/m^3	0.03 mg/m^3	Skin Protection
Thorium-230	Ingestion/ Inhalation	3×10^{-12} uCi/ml[1]	7.5×10^{-13} uCi/ml	Note 1
Radium-226	Ingestion/ Inhalation	3×10^{-10} uCi/ml[1]	7.5×10^{-11} uCi/ml	Note 1

[1]This is the Derived Air Concentration (DAC). For long-lived alpha activity where the radionuclides are unknown, the Action Limits specified for Thorium-230 shall be used.

Table 1 (Cont'd)

CHEMICAL/RADIOLOGICAL HAZARD TABLE

Contaminant	Primary Hazard	Limit	Action Level	Action
Uranium-238	Ingestion/ Inhalation	2×10^{-11} uCi/ml	5×10^{-12} uCi/ml	Note 1
Radon-222	Ingestion/ Inhalation	.33 WL[2]	0.075 - 1.65 WL[2]	Note 1

Notes

1. Full-face air purifying respirators with combination HEPA filter.

4.0 MONITORING

4.1 Goals

Prior to any task performed in the K-65 area, air monitoring will be performed as determined to be necessary at the time of issuance of the work permit(s) to ensure that exposure levels do not exceed established exposure limits.

4.2 Monitoring Equipment and Frequency of Monitoring

4.2.1 Airborne Radioactivity

Air monitoring will be performed to insure that contaminant concentrations in the breathing zone do not exceed the concentrations specified by established exposure levels. The air monitoring program will consist of radon and radon progeny monitoring and monitoring for long-lived particulates, such as Radium-226 and Thorium-230.

Continuous radon gas monitoring will be provided at the K-65 Area fence line using alpha scintillation devices known as RGM-2 and/or similar devices to be specified by FMPC Industrial, Radiological Safety and Training personnel. Action limits for the RGM-2 and actions to be taken are delineated in the Radon Monitoring and Sampling Checklist for the K-65 Silos, DWP-005.

Working level grab samples (Radon Progeny) will be collected utilizing a portable, battery powered air pump (BZA) with a 37 mm membrane filter. At a minimum, grab samples will be taken before start of work, and randomly

[2]WL - Working Level

while workers are on top of the earth embankment. Samples should be taken in the worker's breathing zone to draw samples representative of the air to which the worker is exposed. Grab samples will be taken and calculated per the FMPC Radon Air Sampling Procedure.

To determine the amount of long-lived airborne radioactivity to which workers are exposed high volume air samples will be taken at the location of personnel during pumping. The sample will be checked for gross radioactivity to verify the adequacy of respiratory protection. Air samples indicating that personnel may have been exposed to greater than 40 DAC-hours in one week will trigger dose assessment by Radiological Safety, Dosimetry Subsection.

4.2.2 Radioactive Surface Contamination

During the installation of the pumping system and when personnel are in the K-65 area on top of the earth embankment, weekly surveys for removable radioactive surface contamination will be performed in the work areas. Contamination surveys will be performed on potentially contaminated fluid systems, as they are opened to ensure that adequate protective clothing is being worn and to verify radiological postings. Direct frisks and/or field swipe surveys will be performed on potential leak sites during pressure testing.

4.2.3 Radiation Surveys

Radiation surveys will be conducted at the beginning of work, and intermittently on the piping and hoses during pumping. Personnel will be required to wear direct reading dosimeters in the K-65 area to monitor radiation exposure periodically.

4.2.4 Chemical Hazard

Exposure to significant chemical vapor concentrations are not expected with the tasks associated with the K-65 Decant Sump Tank Removal Action. Air sampling for chemicals will be conducted as determined to be necessary by the Industrial Hygiene representative.

4.2.5 Thermoluminescent Dosimetry (TLD)

TLDs will be worn by all workers.

4.2.6 Monitoring for Physical Hazards

Industrial Hygiene shall be contacted for heat stress monitoring when the temperature reaches 85° and readings will be taken at that time to ensure that adequate control measures are taken. Control measures will include plenty of water, rest breaks and careful attention by the supervisor in charge. Also, cool vests will be utilized if necessary.

5.0 PERSONAL PROTECTIVE EQUIPMENT

All employees in the task areas will wear the following personal protective equipment while performing the required tasks.

5.1 Installation of Pump and Piping System

ITEM	NEED	JUSTIFICATION
Full Face Air Purifying Respirator	Yes(No)[3]	Required in K-65 Area or as specified by IRS&T representative
Cartridges: HEPA	Yes(No)[3]	Required in K-65 Area or as specified by IRS&T representative
Hard Hat	Yes(No)[3]	As needed for overhead work
Hearing Protection	No	
Inner Gloves	No(Yes)[3]	Used beneath leather gloves
Rubber/Latex Boots	No	
Leather-Palm Gloves	No(Yes)[3]	As needed for physical protection of hands
Rubber/Nitrile Gloves	No	
Cloth or other Anti-Contamination Coveralls	Yes	
Controlled Area Coveralls	Yes	
Cloth Hood	Yes(No)[3]	
Supplied Air Respirator(SAR)	No	
Safety Glasses	Yes(No)[3]	Minimum Requirement, may be satisfied by full-face respirator

[3]The first decision is the most likely decision. If conditions change then the ISR&T representatives will require the decision in ( ).

5.1 Installation of Pump and Piping System (Cont'd)

ITEM	NEED	JUSTIFICATION
Safety Goggles/ Face Shields	No	
Safety Shoes	Yes	Minimum Requirement
Shoe Covers	Yes	Required in K-65 Area or as specified by IRS&T representative

5.2 Functional Testing for Pump and Piping System

ITEM	NEED	JUSTIFICATION
Full Face Air Purifying Respirator	Yes	Required in K-65 Area and near potentially spraying pump/hoses
Cartridges: HEPA	Yes	Required in K-65 Area and near potentially spraying pump/hoses
Hard Hat	Yes	As needed for overhead work
Hearing Protection	No(Yes)[4]	As specified by Industrial Hygiene based on pump
Inner Gloves	No(Yes)[4]	Used beneath leather palm gloves
Rubber/Latex Boots	No(Yes)[4]	May be used for additional protection against contact with liquid
Leather-Palm Gloves	No(Yes)[4]	As needed for physical protection of hands
Rubber/Nitrile Gloves	Yes(No)[4]	As needed to prevent contact with liquids
Cloth or other	Yes(No)[4]	Needed in K-65 area

[4]The first decision is the most likely decision. If conditions change then the ISR&T representatives will require the decision in ( ).

5.2 Functional Testing for Pump and Piping System (Cont')

ITEM	NEED	JUSTIFICATION
Anti-Contamination Coveralls	Yes	when plastic coveralls are not used
Controlled Area Coveralls	Yes	Minimum requirement for work in K-65 area
Cloth Hood	Yes(No)[5]	Needed in K-65 area when plastic coveralls are not used
SAR	No	
Safety Glasses	Yes	Minimum Requirement, may be satisfied by full-face respirator
Safety Goggles/ Face Shield	Yes	To protect eyes from liquid splash where full-face respirator is not used
Safety Shoes	Yes	Minimum Requirement
Shoe Covers	Yes	
Plastic Coveralls	Yes(No)[5]	Needed in lieu of cloth coveralls and required near potentially spraying pump/hoses and and K-65 area
Plastic Hood	Yes(No)[5]	Needed in lieu of cloth coveralls and required near potentially spraying pump/hoses and and K-65 area

[5]The first decision is the most likely decision. If conditions change then the ISR&T representatives will require the decision in ( ).

5.3 Pumping the liquid from the sump tank to the tanker truck

ITEM	NEED	JUSTIFICATION
Full Face Air Purifying Respirator	Yes	Required in K-65 Area and near potentially spraying pump/hoses
Cartridges: HEPA	Yes	Required in K-65 Area and near potentially spraying pump/hoses
Hard Hat	Yes	As needed for overhead work
Hearing Protection	No(Yes)[6]	As specified by Industrial Hygiene based on pump
Inner Gloves	No(Yes)[6]	Used beneath leather palm gloves
Rubber/Latex Boots	No(Yes)[6]	May be used for additional protection against contact with liquid
Leather-Palm Gloves	No(Yes)[6]	As needed for physical protection of hands
Rubber/Nitrile Gloves	Yes(No)[6]	As needed to prevent contact with liquids
Cloth or other Anti-Contamination Coveralls	Yes(No)[6]	Needed in K-65 area when plastic coveralls are not used
Controlled Area Coveralls	Yes	Minimum requirement for work in K-65 area
Cloth Hood	Yes(No)[6]	Needed in K-65 area when plastic coveralls are not used
SAR	No	

[6]The first decision is the most likely decision. If conditions change then the ISR&T representatives will require the decision in ( ).

5.3 Pumping the liquid from the sump tank to the tanker truck (Cont'd)

ITEM	NEED	JUSTIFICATION
Safety Glasses	Yes	Minimum Requirement, may be satisfied by full-face respirator
Safety Goggles/ Face Shield	Yes	To protect eyes from liquid splash where full-face respirator is not used
Safety Shoes	Yes	Minimum Requirement
Shoe Covers	Yes	
Plastic Coveralls	Yes(No)[7]	Needed in lieu of cloth coveralls and required near potentially spraying pump/hoses and and K-65 area
Plastic Hood	Yes(No)[7]	Needed in lieu of cloth coveralls required near potentially spraying pump/hoses and and K-65 area

5.4 Sampling of the Liquid[8]

ITEM	NEED	JUSTIFICATION
Full Face Air Purifying Respirator	Yes(No)[7]	Required in K-65 Area or as specified by IRS&T representative
Cartridges: HEPA	Yes(No)[7]	Required in K-65 Area or as specified by IRS&T representative
Hard Hat	Yes(No)[7]	As needed for overhead work
Hearing Protection	No	

[7]The first decision is the most likely decision. If conditions change then the ISR&T representatives will require the decision in ( ).

[8]If the task involves potentially spraying liquid from pumps or hoses then the requirements will be the same as those specified in Section 5.3

5.4 Sampling of the Liquid[9] (Cont'd)

ITEM	NEED	JUSTIFICATION
Inner Gloves	No(Yes)[10]	Used beneath leather gloves
Rubber/Latex Boots	No	
Leather-Palm Gloves	No(Yes)[10]	As needed for physical protection of hands
Rubber/Nitrile Gloves	No	
Cloth or other Anti-Contamination Coveralls	Yes	
Controlled Area Coveralls	Yes	
Cloth Hood	Yes(No)[10]	
Supplied Air Respirator(SAR)	No	
Safety Glasses	Yes(No)[10]	Minimum Requirement, may be satisfied by full-face respirator
Safety Goggles/ Face Shields	No	
Safety Shoes	Yes	Minimum Requirement
Shoe Covers	Yes	Required in K-65 Area or as specified by IRS&T representative

5.5 Transporting Liquid to Existing FMPC Water Treatment Facility

ITEM	NEED	JUSTIFICATION
Air Purifying Respirator	No	
Cartridges: HEPA	No	

[9]If the task involves potentially spraying liquid from pumps or hoses then the requirements will be the same as those specified in Section 5.3

[10]The first decision is the most likely decision. If conditions change then the ISR&T representatives will require the decision in ( ).

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5.5 Transporting Liquid to Existing FMPC Water Treatment Facility (Cont'd)

ITEM	NEED	JUSTIFICATION
Hard Hat	Yes	As needed for overhead work
Hearing Protection	No	
Inner Gloves	No(Yes)[11]	Used beneath leather palm gloves
Rubber/Latex Boots	No	
Leather-Palm Gloves	Yes	As needed for physical protection of hands
Rubber/Nitrile Gloves	Yes	As needed to prevent contact with liquids
Cloth or other Anti-Contamination Coveralls	No	
Controlled Area Process Coveralls	No	
PVC Gloves	No(Yes)[11]	Used beneath rubber gloves
SAR	No	
Safety Glasses	Yes	Minimum Requirement
Safety Goggles/ Face Shields	No	
Safety Shoes	Yes	Minimum Requirement
Shoe Covers	No	

5.6 Pumping the Liquid from Tanker Truck to Tanks at the FMPC Water Treatment Facility

ITEM	NEED	JUSTIFICATION
Full Face Air Purifying Respirator	Yes	Required near potentially spraying pump/hoses

[11]The first decision is the most likely decision. If conditions change then the ISR&T representatives will require the decision in ( ).

5.6 Pumping the Liquid from Tanker Truck to Tanks at the FMPC Water Treatment Facility (Cont'd)

ITEM	NEED	JUSTIFICATION
Cartridges: HEPA	Yes	Required near potentially spraying pump/hoses
Hard Hat	Yes	As needed for overhead work
Hearing Protection	No(Yes)[12]	As specified by Industrial Hygiene based on pump
Inner Gloves	No(Yes)[12]	Used beneath leather palm gloves
Rubber/Latex Boots	No(Yes)[12]	May be used for additional protection against contact with liquid
Leather-Palm Gloves	No(Yes)[12]	As needed for physical protection of hands
Rubber/Nitrile Gloves	Yes(No)[12]	As needed to prevent contact with liquids
Cloth or other Anti-Contamination Coveralls	Yes(No)[12]	Needed when plastic coveralls are not used
Controlled Area Coveralls	Yes	Minimum requirement for work in exclusion area
Cloth Hood	Yes(No)[12]	Needed when plastic coveralls are not used
SAR	No	
Safety Glasses	Yes	Minimum Requirement, may be satisfied by full-face respirator
Safety Goggles/ Face Shield	Yes	To protect eyes from liquid splash where full-face respirator is not used

[12]The first decision is the most likely decision. If conditions change then the ISR&T representatives will require the decision in ( ).

5.6 Pumping the Liquid from Tanker Truck to Tanks at the FMPC Water Treatment Facility (Cont'd)

ITEM	NEED	JUSTIFICATION
Safety Shoes	Yes	Minimum Requirement
Shoe Covers	Yes	
Plastic Coveralls	Yes(No)[13]	Needed in lieu of cloth coveralls and required near potentially spraying pump/hoses
Plastic Hood	Yes(No)[13]	Needed in lieu of cloth coveralls required near potentially spraying pump/hoses

6.0 SITE CONTROL

6.1 Access

The work associated with this removal action will be within the FMPC controlled area. In addition, the work area related to this removal action will be posted as "RWP Required for Entry". This will establish the Exclusion Zone per 29 CFR 1910.120. A portion of these tasks will be performed outside the Contamination Controlled Area at the K-65 Silos area. A layout map of the K-65 Decant Sump Tank area is provided in Figure 1 delineating specific exclusion zones as determined by the FMPC radiological safety technicians. Contamination Areas will be set up within the Exclusion Areas. Once identified, a more specific map will be developed identifying the step-off pads and indicate that friskers, protective clothing and a waste container will be at each step-off pad. The step-off pad will only be used decontaminating material that is easily wiped clean. The Radiological Safety Technician will control stay-times in the K-65 Area to ensure that personnel do not exceed the site administrative exposure control level of 150 millirem per week.

The Exclusion Zone is the zone of high potential hazard due to physical or chemical dangers. Access to the Exclusion Zone will be restricted by Radiological Safety to trained and certified employees, as regulated by 29 CFR 1910.120, who are required to enter in order to perform their job functions. There will be different Exclusion Zones for the various tasks. The Exclusion Zone will be marked with barrier tape or other easily recognizable devices. The zone may be expanded if airborne hazards are detected. All areas requiring the use of respiratory protection are included in the

[13]The first decision is the most likely decision. If conditions change then the ISR&T representatives will require the decision in ( ).

exclusion zone. Entrance shall be limited to one area and controlled by the supervisor in charge.

A temporary Controlled Area will required west of the K-65 Area. This temporary Controlled Area will be within the Exclusion Area identified west of the K-65 Silos embankment on Figure 1.

If necessary, Radiological Safety will establish a Contamination Reduction Zone, consisting of step-off pads, at the exit to the Exclusion Zone. This zone will be used for removal of disposable PPE and for cleaning of contaminated equipment.

6.1.1 Radiological Postings

Radiological areas will be posted in accordance with DOE Order 5480.11. The following is a brief summary of posting requirements based on uranium:

TABLE 2

POSTING REQUIREMENTS

Regulated Area (Ra-226 &Th-230)	
	> 20 dpm/100 cm^2 removable
	> 300 dpm/100 cm^2 fixed and removable
Beta-gamma emmitters	> 1000 dmp/100 cm^2 removable
	> 5000 dmp/100 cm^2 fixed and removable
Contaminated Area (Ra-226 & Th-230)	
	> 200 dmp/100 cm^2 removable
	> 3000 dpm/100 cm^2 fixed and removable
Beta-gamma emmitters	> 1000 dpm/100 cm^2 removable
	> 5000 dpm/100 cm^2 fixed and removable
Airborne Radioactivity Area	> 2×10^{-12} uCi/ml
Respirator Area	> 5×10^{-12} uCi/ml
Radiation Area	> 5 mrem/hr

In addition, special postings may be added for access to areas: "RWP Required for Entry" or "Contact HP for Entry."

6.2 Bioassay Samples

Site personnel involved in this project are required to participate in a routine periodic urine assay program. Any suspected exposure to hazardous substances shall be reported and require additional sampling. Personnel are also required to wear a

TLD at all times for radiological purposes. If sample analyses indicate that thorium levels in air or on surfaces were sufficient to deliver more than eight DAC-hours to an individual, in vivo monitoring and/or other bioassay measurements will be performed on that individual as deemed appropriate by FMPC Dosimetry.

6.3 Medical Monitoring

In accordance with 29 CFR 1910.120 and 29 CFR 1910.1025 OSHA requirements, all WMCO and WMCO subcontractor personnel are required to participate in a medical monitoring program which includes:

- A baseline medical examination
- Annual medical examination
- Medical examinations may be required after potential exposures.
- WMCO respirator clearance for users

Prior to the start of work, personnel involved in this project shall be identified by name and badge number. Each individual shall be subject to a medical surveillance approval by the Director, Medical Services. The approval statement shall certify that each individual is medically qualified to perform the work and is physically fit to wear PPE.

6.4 Training Requirements

All WMCO and WMCO subcontractor personnel assigned to the tasks will, as a minimum, meet the following training requirements including:

- Review of this health & safety plan for this work including site specified hazards and procedures. (The safety meeting(s) will be documented.)
- Site radiation safety training
- Site annual respiratory training and quantitative fit test or equivalent approved by site Industrial Hygiene
- Site nuclear criticality training
- 40-hour OSHA training
- 8-hour annual refresher training, as necessary
- 8-hour supervisory training (for supervisors)
- 24-hour supervised field experience
- FMPC site orientation video
- FMPC K-65 Silos Numbers 1 and 2 Area Emergency SOP 65-C-107
- K-65 Decant Sump Tank Removal Action Functional Test Procedure
- K-65 Decant Sump Tank Removal Action SOP

The completion of this training shall be documented by the site training organization.

6.5 Safety Meetings

A safety meeting, which must be documented, shall be conducted prior to the start of each day's work during; installation of temporary dike system, installation of pump

and piping system, functional testing, transporting the liquid, and pumping the liquid. These safety meetings will cover the following applicable subjects:

[] work operations
[] personnel protective equipment
[] all monitoring data
[] hazard communications
[] monitoring tests and results
[] decontamination
[] task organization
[] physical stress
[] emergency procedures
[] communications
[] general safety
[] housekeeping

7.0 EXPOSURE SYMPTOMS

Exposure symptoms for chemical hazards are described in the following paragraphs:

Lead:

Health Risks: High level exposures to inorganic soluble lead compounds causes behavior disturbances and are toxic to the reproductive system.
Lower level chronic exposures increase the incidence of heme synthesis inhibition, neurological effects, gastrointestinal-colic constipation and renal toxicity.

Exposure Routes: Broken skin and respiratory tract

First Aid: Ingestion - Remove person to fresh air.

Adsorption- Remove contaminated clothing. Flush with water for 15 minutes.

Uranium:

Health Risks: High level exposures to soluble uranium compounds causes respiratory irritation and are toxic to the kidneys. Lower level chronic exposures increase the incidence of cancers of the lungs, lymph system, hemopoietic system.

Exposure Routes: Broken skin and respiratory tract

First Aid: Inhalation - Remove person to fresh air. If trouble breathing because of exposure to soluble compounds, start bioassay procedures (urinalysis) to quantify dose.

Broken Skin- Remove contaminated clothing. Flush with water for 15 minutes. Check cleaned skin with frisker to ensure complete uranium removal.

8.0 SITE ENTRY PROCEDURES

During the subsequent activities the following procedures apply: Phase I activities, installation of temporary dike system, installation of pump and piping system, functional testing, transporting the liquid, and pumping the liquid.

- Perform daily safety meeting to familiarize team with site specific hazards.
- Discuss alternate communications signals (if applicable).
- Perform respirator check out and negative/positive pressure fit test prior to use.
- Use buddy system. Teams of at least two individuals will be used for all activities for this removal action.

Prior to the initiation of these work tasks, the following permits are required:

[] Radiation Work Permit
[] Chemical/Hazardous Material Permit
[] Work Permit

Entrance to the Exclusion Zone shall be controlled by approval of the supervisor-in-charge.

9.0 DECONTAMINATION

Personnel and equipment will enter and exit the Exclusion Zone through a step-off pad. Upon exit, personnel will remove any disposable protective clothing and monitor themselves and any outgoing equipment for contamination.

Any personnel contamination will be reported to Radiological Safety who will assist in personnel decontamination. Personnel will remove disposable protective equipment, wash hands, face and any other exposed skin. Detergent and water should be used to gently scrub skin surfaces which have contacted potentially contaminated wastes. The effectiveness of decontamination must be confirmed by frisking or the use of hand and foot monitors. Action limits on personnel of 300 dpm/100 cm^2 alpha or 1,000 dpm/100 cm^2 beta/gamma will trigger decontamination.

Any equipment found to be contaminated will be contained and transported to the Site Decontamination Facility. This facility uses both water, abrasive and chemical decontamination as appropriate and in accordance with its operating procedures

which are beyond the scope of the plan. Frisking and/or wipe tests will be performed to confirm the effectiveness of decontamination. Action limits on material of: 20 dpm/100 cm^2 alpha removable, 100 dpm/100 cm^2 alpha fixed plus removable, 1,000 dpm/100 cm^2 beta/gamma removable and 5,000 dpm/100 cm^2 fixed plus removable will require decontamination or treatment as radioactive material.

10.0 WASTES

Wastes include, but are not limited to:

- Disposable PPE
- "Spent" activated carbon, if used in treatment
- Excess materials such as soil or concrete

All potentially contaminated waste materials resulting from site activities will be collected and placed in drums or other containers. Disposable protective clothing will be placed in plastic bags and disposed of as compactible, potentially contaminated waste.

Drums or containers shall meet DOE 49 CFR Parts 171-178, EPA, 40 CFR Parts 264-265 and 300, and OSHA requirements. Hazard warning label shall be immediately applied to all drums as specified by FMPC management/supervisors and Solid Waste Compliance.

11.0 CONTINGENCY PLANS

The plans shall be consistent with FMPC-2046, "FMPC Emergency Plan".

11.1 Incidents or Injuries Involving Possible Intake of Radiological or Chemical Substances by Employees

Incidents or injuries involving potential intake of uranium or other hazardous substances shall be reported to supervisor and the site Medical Section by the involved employee and an Incident Investigation Report completed by the involved employee. Incident urine samples shall be submitted at the end of the shift and at the start of the next shift if exposure involved uranium.

11.2 Pre-Emergency Planning

During the training and pre-work safety meetings all employees involved in this task shall be trained and reminded of the provisions of the plant emergency procedure, alarm signals and communications, evacuation routes and emergency reporting.

11.3 Lines of Authority

The supervisor in charge, the K-65 silos area supervisor, has the primary responsibility for the prevention of emergency conditions. In the event that an

emergency does occur the individual involved or observing the condition shall immediately notify a supervisor, the communication center or the Assistant Emergency Duty Officer (AEDO). The AEDO is responsible for ensuring that corrective actions have been implemented, the appropriate personnel notified, and reports completed as required.

11.4 Evacuation

In the event of an emergency which necessitates an evacuation of the Exclusion Area, the 3-3, 3-3 shall be sounded over the plant alarm system; a voice message will follow over the Emergency Message System instructing employees to go to their designated Rally Point (see Figure 2). Personnel shall immediately proceed to the Rally Point and participate in the accountability process. Personnel will follow instructions given by the Rally Point Coordinator. When an all-clear condition has been achieved, personnel will be released from the Rally Point.

11.5 Emergency Equipment

The following safety equipment, locations to be identified at safety meetings, is available for employee usage:

[] fire extinguisher	[] manual fire alarm
[] eye wash	[] two-way radio
[] absorbent	[] emergency SCBA units
[] telephone	[] respirators
[] spill drums	[] clean-up materials
	[] local evacuation alarm

11.6 Emergency Notification

All emergencies, including spills and leaks, shall be reported immediately. Emergencies can be reported by telephone dialing 6511; by contacting the communications center via two-way radio; or by pulling a manual fire alarm.

11.7 Fire, Explosion, or Medical Emergency

In the event of a fire, explosion or medical emergency, the communication center shall be notified immediately by manual fire alarm, two-way radio, or by calling 6511. The communication center operator will activate the emergency response team and dispatch them to your location. If a fire is in the incipient stage and perceived controllable without endangering oneself, personnel may use available fire extinguishers. If not in the incipient stage personnel in the immediate area shall evacuate to a safe position and await instructions.

11.8 Spill Control Contingency Plan

The proposed operations pose a possibility for spilling or releasing potentially hazardous materials. These materials include mainly the liquid. Prior to

knowing the HSL analysis results this material will be handled as a hazardous substance. After results of the HSL analysis are known the material will be handled accordingly. All spills, regardless of their size or the classification of the liquid, shall be reported immediately. Emergencies can be reported by telephone dialing 6511; by contacting the communications center via two-way radio; or by pulling a manual fire alarm. The Emergency Response Team and AEDO will respond to the spill according to the FMPC Spill Control Contingency Plan.

11.9 Additional Information

11.9.1 Hospitals

The FMPC Medical Facility (Building 53) is the primary choice for on-site injuries (see Figure 3 for travel routes from the K-65 Area to the FMPC medical facility). The FMPC ambulance will transport the injured to the nearest hospital if necessary. FMPC maintains an emergency response capability which includes an ambulance and Emergency Medical Technicians.

11.9.2 Emergency Telephone Numbers

Ambulance:	6511
Hospital:	6511
Fire:	6511

Name	Work	Radio
EMERGENCY RESPONSE	6511	Control
Industrial Hygiene	6207	357
Radiation Safety	6889	355
Fire and Safety	6235	303
(Safety and Health Officer)	6231	
Assistant Emergency Duty Officer (AEDO)	6431 or 6295	202

12.0 CONFINED SPACE ENTRY

A Confined Space Entry Permit will not be required for the activities to implement this removal action.

13.0 APPROVAL AND COMPLIANCE STATEMENT

This site specific safety plan was produced for the use of WMCO employees and subcontractors. It was intended for the FMPC and specifically for personnel performing the following activities:

- Installation of Pump and Piping System
- Functional Testing Pump and Piping System
- Removing Liquid from Sump Tank to Tanker Truck
- Sampling of the Liquid
- Transporting Liquid to Existing FMPC Waste Water Treatment Facility
- Pumping Liquid from Tanker Truck
  to Tanks at Existing FMPC Waste Water Treatment Facility

The personnel performing these tasks must read and understood the attached site specific health and safety plan and agree to follow its provisions[14]. Written documentation with signatures of those personnel performing these tasks must be maintained.

[14]Compliance with the provisions of the Health and Safety Plan may be audited through announced or unannounced site visits. Be sure that the provisions of this safety plan are implemented and document the reasons for field actions/changes when they are necessary. Site visits may be performed by the DOE or WMCO personnel.

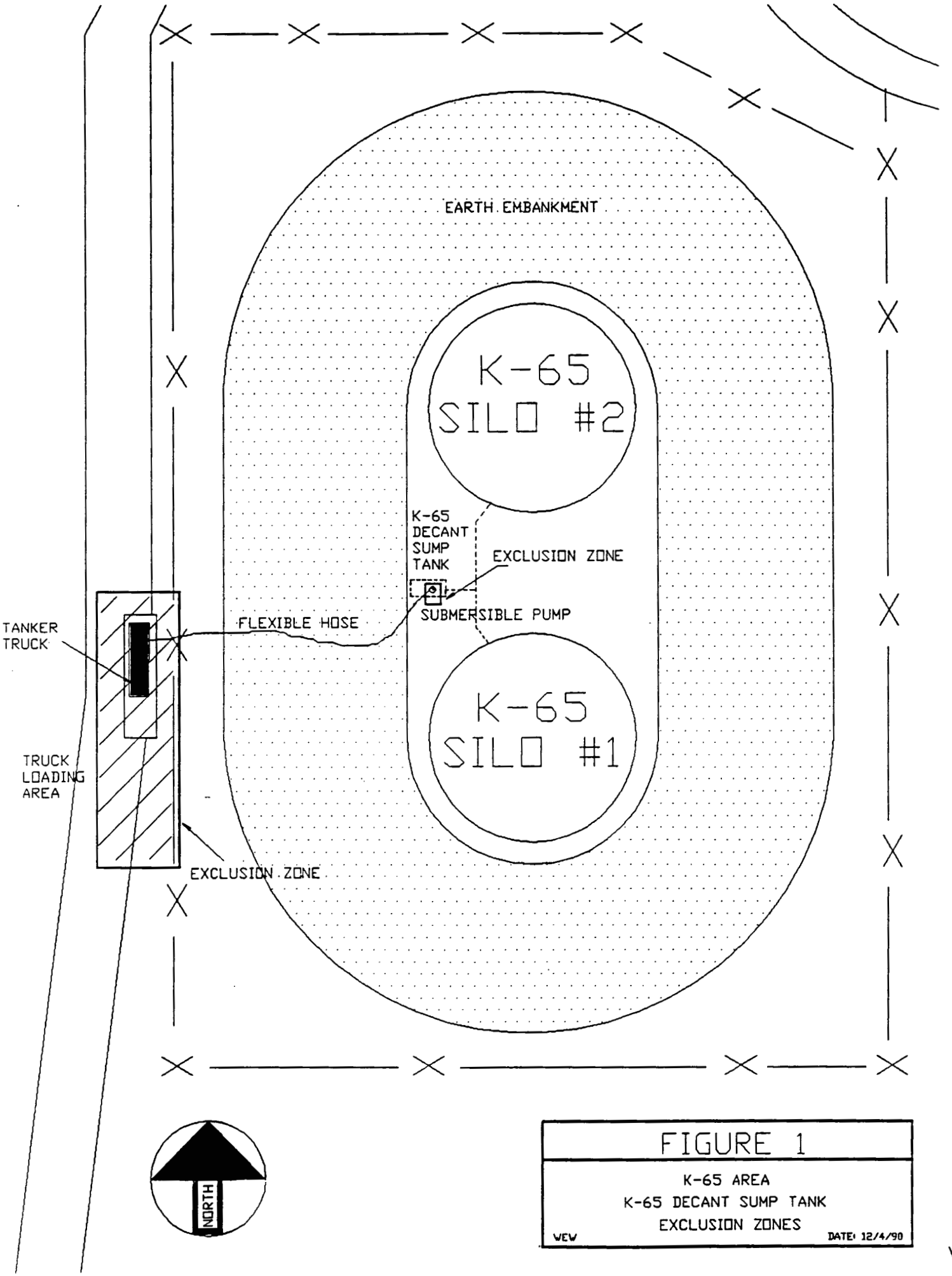
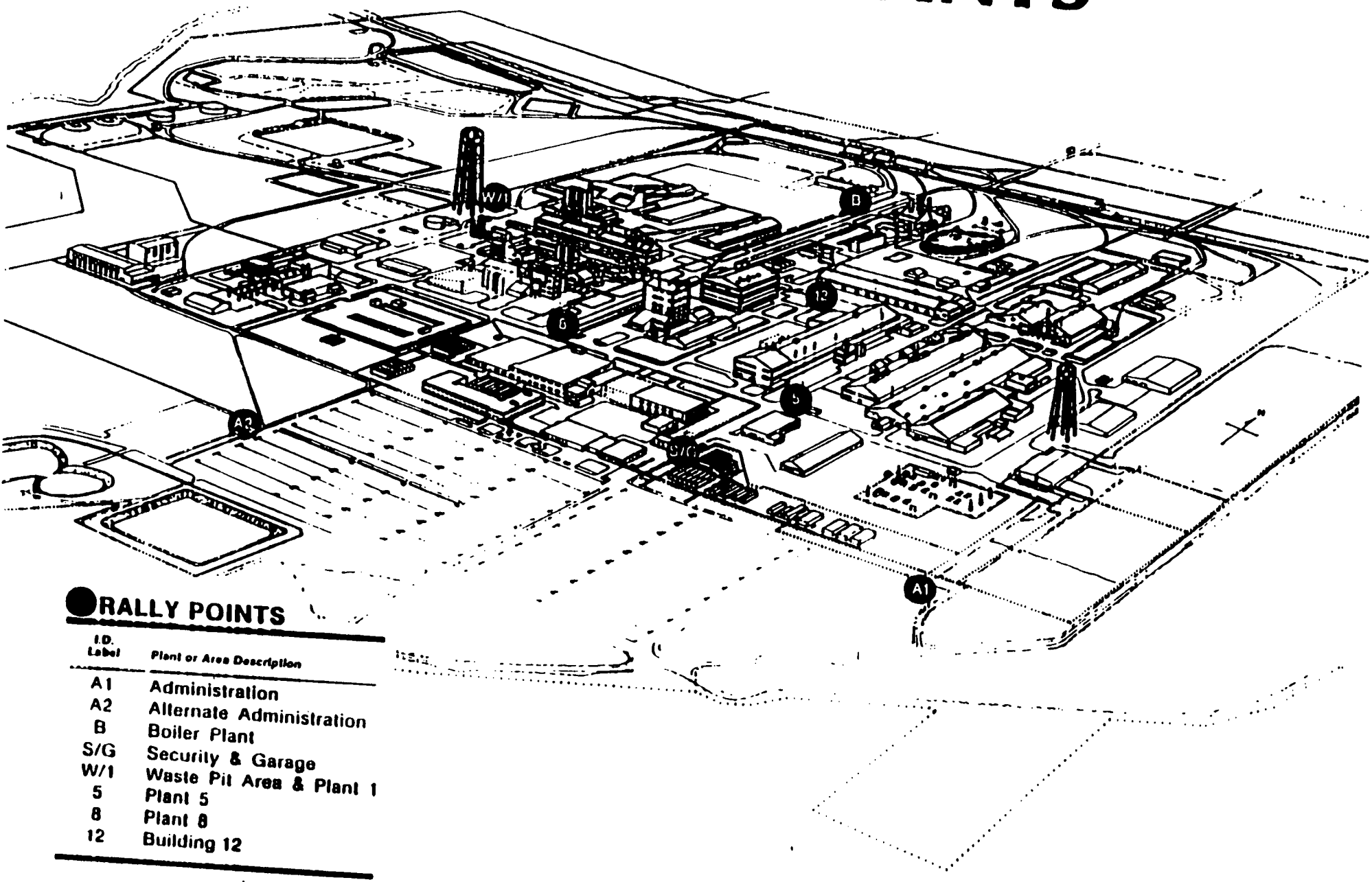


FIGURE 1

K-65 AREA
K-65 DECANT SUMP TANK
EXCLUSION ZONES

WEW DATE: 12/4/90

FMPC RALLY POINTS



RALLY POINTS

I.D. Label	Plant or Area Description
A1	Administration
A2	Alternate Administration
B	Boiler Plant
S/G	Security & Garage
W/1	Waste Pit Area & Plant 1
5	Plant 5
8	Plant 8
12	Building 12

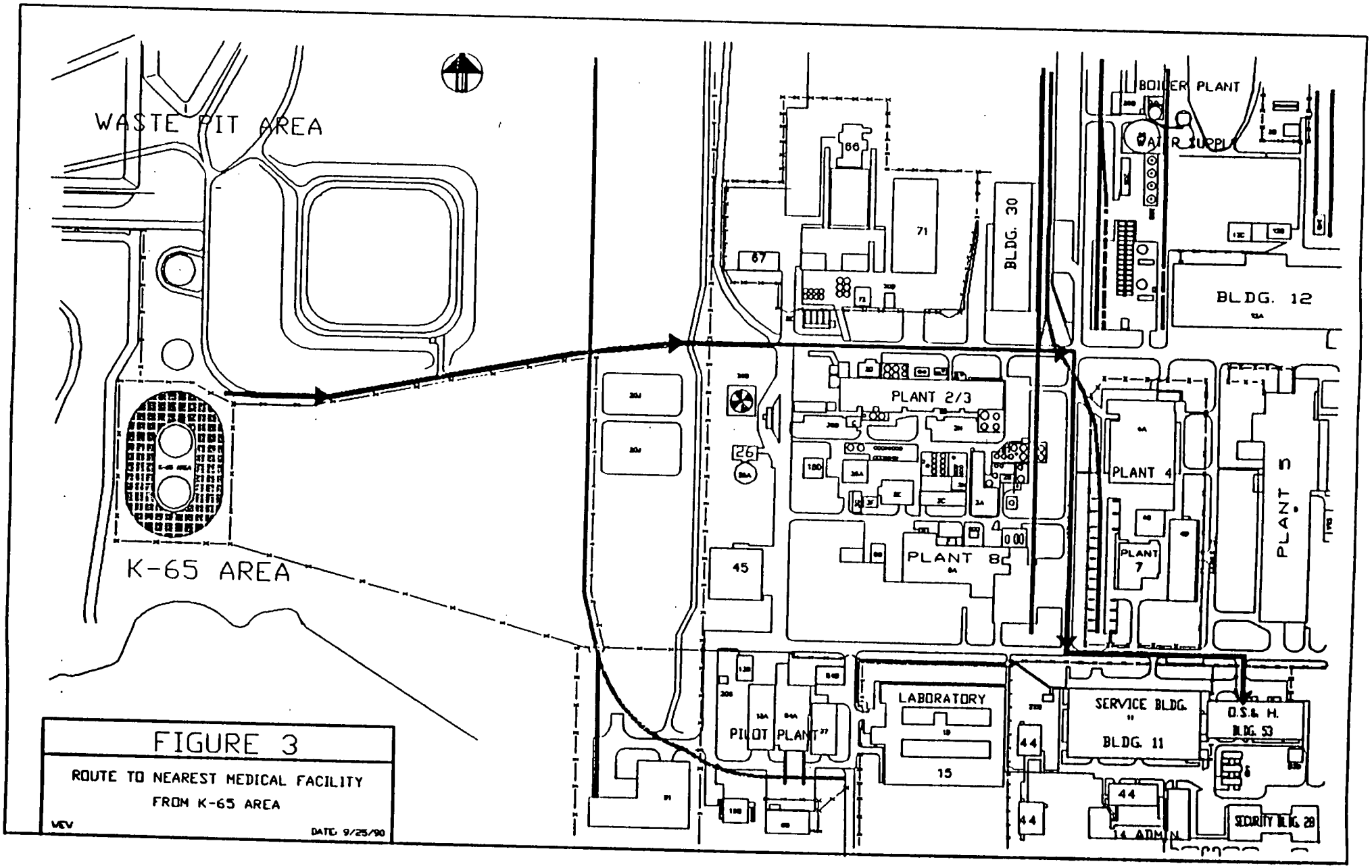


FIGURE 3

ROUTE TO NEAREST MEDICAL FACILITY FROM K-65 AREA

MEV

DATE: 9/25/90