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**FINAL REPORT SILO 3 REMOVAL ACTION
FEBRUARY 1993**

02/01/93

**DOE-FN/EPA
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REPORT**

FINAL REPORT

SILO 3 REMOVAL ACTION

February 1993

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For:

**The United States Department of Energy
Fernald Operations Office
Fernald, Ohio**

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EXECUTIVE SUMMARY

One of the Remedial Investigation/Feasibility Study (RI/FS) identified operable units, known as Operable Unit (OU) 4, at the Fernald Environmental Management Project (FEMP) includes the two K-65 silos (Silos 1 and 2), the metal oxide silo (Silo 3), empty Silo 4, and the soils that surround these waste storage silos. A 1991 Removal Site Evaluation (RSE) was generated by the Department of Energy (DOE) consistent with 40 CFR 300.410 and it was judged by the DOE-FN, as the lead agency at the FEMP, that no removal actions were necessary to remediate Silo 3 prior to final remediation.

However, DOE-FN assessed that there were sufficient radiological concerns from an "as low as reasonably achievable" (ALARA) and DOE Best Management Practices (BMP) standpoint to warrant limited additional preventative measures at the silo. During a December 10, 1991 Silo 3 dome inspection, structural deterioration of the dust collector sidewalls was observed. DOE-FN, as the lead agency, found that a removal action to remove the dust collector and to seal the resultant openings was prudent. The DOE-FN deemed that the threat of airborne release of fugitive metal oxide dust required an expedited removal action pursuant to the EPA Superfund Removal Procedures, OSWER Directive 9360.0-03B.

In accordance with the requirements of the Amended Consent Agreement, under CERCLA 120 and 106(a), between the DOE-FN and the United States Environmental Protection Agency (U.S. EPA), the Silo 3 Removal Action was implemented to protect human health and the environment from the imminent threat of an airborne release of metal oxide dust from Silo 3. Though this Removal Action was not formally called an emergency, it was considered an "expedited" Removal Action. Planning and scheduling activities began on December 12, 1991. This Removal Action was initiated on December 20, 1991. Planned work activities insured that all penetrations through the dome were immediately covered with temporary seals until a permanent cap or gasketed steel plate was installed. Removal of the dust collector and permanent sealing of all obvious open pathways was completed on January 8, 1992.

The waste generated from the Removal Action was containerized and managed in accordance with project management procedures, and in a manner consistent with Resource Conservation and Recovery Act (RCRA) regulations, which were determined to be relevant and appropriate requirements. The material was stored in a controlled holding area, until the final determination was made. The waste generated by this Removal Action was characterized as non-hazardous by a RCRA waste determination. The Silo 3 Removal Action is considered complete. Shipment of the waste resulting from this Removal Action to an approved off-site disposal facility was initiated on October 9, 1992. The remaining waste will be shipped offsite for disposal in accordance with the offsite shipment schedule, which is based on site priorities.

OVERVIEW

Silo 3 is a large concrete structure that was built in 1952, which contains the residues from the extraction of uranium from ores at the Fernald Environmental Management Project (FEMP), formally known as the Feed Materials Production Center (FMPC). The residues in Silo 3 are dry solid product oxides of metals originally present in the ore concentrate. The Silo 3 residues were heat dried (calcined) at the FMPC refinery and air conveyed to the silo. A dust collector, located on the center manway, was used to separate the solids from the air stream.

Process information indicated that hazardous constituents, as defined by RCRA, were not stored in Silo 3. The calcined residues, located in Silo 3, contain radionuclides and naturally-occurring heavy metal constituents as indicated by the results of sampling and analyses (see Attachment A).

The residues that exist in Silo 3 are defined as by-product material and are therefore excluded from RCRA regulations under 40 CFR 261.4(a)(4). The heavy metals observed from analytical results (Attachment A) of uranium ore are in fact native constituents of the ore deposits themselves. Process knowledge indicates that native constituents (impurities) of the ore varied in composition due to the different geological regions (e.g. the Belgian Congo and Australia) that supplied uranium ore to the FEMP. When the uranium ore was processed, these impurities were liberated from the uranium ore matrix and collected as a cold metal oxide residue. The cold metal oxide residues that were removed from the dust collector are (based on process knowledge) the same as those found in the contents of Silo 3. Therefore, since the dust collector residue is a by-product material, then the waste generated by the Silo 3 Removal Action is also categorically excluded from RCRA regulations under 40 CFR 261.4(a)(4).

Concerned about a potential release of cold metal oxide dust, a Removal Site Evaluation (RSE) was prepared to support DOE-FN in making an assessment of the potential threat of release of Silo 3 contents. The DOE-FN judged that a removal action was unnecessary prior to final remediation. However, DOE-FN did determine that there were sufficient radiological concerns from an ALARA and DOE Best Management Practices (BMP) standpoint to warrant the implementation of limited additional preventative measures at the silo which included removing the dust collector to reduce the potential for silo dome failure.

During the preparation of the BMP Work Plan, a visual inspection of the dust collector was made. Upon the identification of the deteriorating condition of the dust collector itself, DOE-FN deemed that a removal action to remove the dust collector and to seal the resultant openings was imperative. As a result, DOE-FN issued an Action Memorandum on December 13, 1991 to the operating contractor to immediately expedite the Silo 3 Removal Action.

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The Silo 3 Removal Action Work Scope for the construction contractor (Attachment B) identified the Removal Action objectives. On completion of Safety and Risk Assessments, a task-specific Health and Safety Plan was prepared to protect personnel during the implementation of the Removal Action. The U.S. EPA conditionally approved the implementation of the Silo 3 Removal Action on December 20, 1991. The BMP Work Plan for Silo 3 was prepared in parallel with the Silo 3 Removal Action Work Scope and in accordance with the Amended Consent Agreement. The BMP Work Plan was submitted to DOE-FN on January 6, 1992 and subsequently approved.

All waste generated by the Removal Action was handled and managed in a manner consistent with RCRA regulations as relevant and appropriate requirements and in accordance with project management procedures. The loose material in the dust collector was removed by High Efficiency Particulate Air (HEPA) vacuuming, and then placed in DOT 7A, Type A shipping containers (a.k.a. white metal boxes). The dust collector itself was stabilized, removed as a single unit, and placed in an Ocean Cargo (a.k.a. Sea-land) container. All of the remaining dust collector components and miscellaneous materials were removed and placed in the white metal boxes.

A characterization of the waste generated by this Removal Action was performed prior to shipment for off-site disposal. A hazardous waste determination was made using sampling and analysis data and process knowledge. The results of the RCRA waste determination characterized this waste as non-hazardous.

SILO 3 REMOVAL ACTION IMPLEMENTATION

This Removal Action was conducted pursuant to the Amended Consent Agreement, under CERCLA 120 and 106(a), between the DOE and the U.S. EPA. Though this Removal Action was not formally called an emergency removal action, it was implemented as an emergency and was informally referred to as an "expedited" Removal Action.

Initially, after reviewing the Silo-3 RSE, DOE-FN, as the lead agency, issued an Action Memorandum on October 3, 1991 requesting implementation of the following DOE BMP steps:

- dust collector removal to reduce potential for structural failure and subsequent fugitive dust emission;
- silo weatherproofing;
- structural monitoring for silo stability; and
- seal obvious pathways of potential radon release.

However, once the dust collector deterioration was observed and the urgency of a removal action was identified, the Silo 3 Removal Action Work Scope (Attachment B) was prepared and immediately approved by DOE-FN. As a result of the implementation of the Silo 3 Removal Action, the scope of the BMP Work Plan was revised to exclude the work identified to be performed under the Silo 3 Removal Action. Due to the expediency of this Removal Action, a specific Applicable or Relevant and Appropriate Requirements (ARARs) list was not produced for the Silo 3 Removal Action, however, draft ARARs do exist for OU 4 and were used to the fullest extent practical as a guidance for waste management practices.

Management and control of the waste generated was implemented in accordance with the FEMP radiological and RCRA waste management practices. RCRA waste management practices included the following: waste handling and collection, containerization, labeling, and temporary storage in a controlled holding area until a hazardous waste determination was made; use of personnel protective equipment; adherence to ALARA practices; HEPA-filtration of dust and residues that contain radionuclides; spill protection around the containers used for disposal; use of DOT approved containers (e.g. white metal boxes and Sea-land containers); waste identification as non-hazardous prior to off-site disposal; and off-site disposal of waste according to site disposal procedures, as well as, federal and state regulations.

Project management procedures included the adherence to the Silo 3 Removal Action Work Scope, project scheduling and planning, verification and site safety requirements. Due to ALARA concerns over excessive handling,

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personnel exposure, and rinseate generation from the decontamination process, the dust collector was placed entirely intact within a Sea-land container in preparation for shipment off-site. Regulatory concerns were considered by following or implementing the following: RCRA waste management procedures, the Safety Assessment, the draft OU 4 ARAR list as guidance, the Risk Assessment, the Operational Readiness Review (ORR), a NEPA document, a task-specific Health and Safety Plan, and the training requirements that were required to perform the activities outlined in the work scope of the Silo 3 Removal Action.

A Material Evaluation Form (MEF) (Attachment C) was generated to support the characterization of the waste. Actual field activities of the Silo 3 Removal Action included removing the loose residue inside the Silo 3 dust collector by HEPA vacuuming, encapsulating the exterior of the dust collector with foam insulation for stability, removing the dust collector structure and remaining components (e.g. electrical conduit), sealing of silo penetrations to prevent airborne release, and RCRA approved storage of the generated waste until final disposition was determined.

Field actions performed under the Silo 3 Removal Action were completed prior to issuing the BMP Work Plan, and therefore, are not included in the BMP Work Plan. Note that the BMP Work Plan was conditionally approved by DOE-FN in mid January 1992, subsequent to the completion of the Removal Action.

SAMPLING AND ANALYSIS

The heavy metals observed in uranium ore are the native constituents of the ore deposits themselves. These impurities are the naturally-occurring heavy metal components (observed by the 1989 sampling activities) that were removed during the processing of uranium ore and collected in Silo 3 as cold metal oxide residue. Silo 3 contents are defined as by-product material and excluded from RCRA regulations under 40 CFR 261.4(a)(4). These same residues were removed from the dust collector during the Silo 3 Removal Action. Thus, the dust collector residues are considered by-product material and excluded from RCRA regulations under 40 CFR 261.4(a)(4) as well.

Process knowledge and analytical data were used to characterize the waste generated by the Removal Action. A NON-RCRA determination was made on the generated waste, which based on visual observation and process knowledge, is contaminated with Silo 3 residue. Analytical results of Silo 3 residue yielded results with measurable concentrations of heavy metals (see Attachment A). Measurable concentrations of uranium, radium, thorium, and lead (Pb-210) were also observed in the samples. Note that the presence of radioactive lead (Pb 210) and stable lead (Pb-206), by-products of uranium decay, are indicative of the naturally-occurring constituents that were liberated from the uranium ore by processing and measured analytically during the sampling activities.

All sampling and analyses were performed in accordance with FEMP policy and procedures, in compliance with the Proposed Amended Consent Decree with OEPA and the FEMP Federal Facilities Compliance Agreement.

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HEALTH AND SAFETY PLAN

Based on the results of Safety and Risk Assessments, a task-specific Health and Safety Plan was designed to prepare and protect personnel from excessive exposure to both the penetrating radiation and any air borne particulate found in the vicinity of Silo 3. All work was governed by a Radiation Work Permit that defines the allowable conditions.

An Exclusion Zone was established to demark the area of high potential hazard from physical or chemical dangers. As regulated by OSHA 29 CFR 1910.120, access to the Exclusion Zone was restricted by Radiological Safety to trained and certified employees. Personnel stay-times in the Exclusion Zone were controlled by radiological safety procedures to ensure that personnel did not exceed the site administrative exposure control level of 150 mrem/week.

Contamination surveys were also performed on potentially contaminated systems to confirm that proper radiological postings and proper protective clothing was specified. Radiation surveys were conducted at the beginning of the work and intermittently on the dust collector during the Silo 3 Removal Action. Personnel were required to wear direct reading dosimeters and to monitor radiation exposure periodically. Particulate radionuclides from the dust collector residue were prevented from becoming airborne by use of a HEPA-filtered portable vacuum.

All field personnel involved in the actual work were trained in accordance with the general requirements of OSHA 29 CFR 1910.120 and the operating contractor, as well as, DOE-FN site requirements.

QUALITY ASSURANCE PLAN

The work activities associated with the Silo 3 Removal Action were verified in accordance with the ORR checklist. The Silo 3 Removal Action followed the overall quality assurance program at the FEMP 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. Periodic surveillance reports performed by the FEMP Quality Assurance Department verified that implementation of the Silo 3 Removal Action complied with the Quality Assurance Plan.

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REGULATORY CONCERNS

The contents of Silo 3 are exempt from RCRA regulation by the U.S. EPA in 40 CFR 261.4(a)(4), which exclude by-product or source material as defined by the Atomic Energy Act of 1954, as amended, 42 USC 2011 et seq. (AEA), and clarified by 10 CFR 962, 52 FR 15937. The material stored in Silo 3 is a calcined metal oxide residue, produced by the extraction of uranium from ore, and therefore, meets the exclusion by definition. Based on visual observation and process knowledge, the dust collector is contaminated with Silo 3 residue. Therefore, since no other waste was disposed of in this silo, the waste that was generated from the Removal Action (i.e. the dust collector and associated components) was determined to be exempt from RCRA regulation as well.

According to OAC 3745-51-03(A)(2)(d), waste that are mixtures of source material, special nuclear material or by-product material and hazardous waste are regulated by OEPA for the hazardous portion only. Since the material stored in Silo 3 are residues resulting from the processing of uranium ores, and not mixtures of hazardous waste and process ores, they are excluded from regulation as hazardous waste.

While the Ohio Environmental Protection Agency (OEPA) exempts by-product material as defined by the AEA from regulation as a hazardous waste, they do not exclude it from the definition of a solid waste. By-product material is expressly excluded from the definition of solid waste under federal law [40 USC 6903 (27)], however, under OEPA these materials are regulated as a solid waste. Since the OEPA does not exclude this waste from the definition of solid waste, the Ohio Solid Waste rules are considered applicable ARARs governing solid waste disposal and long-term storage.

Solid and RCRA waste management practices were implemented throughout the activities associated with this Removal Action. Prior to off-site disposal, the waste was characterized as non-hazardous by a RCRA waste determination.

NEPA DOCUMENTATION

The amendments to Section D of DOE's NEPA Guidelines, published in the Federal Register on September 7, 1990, add classes of actions generally applicable to all DOE actions that normally do not require Environmental Assessments or Environmental Impact Statements.

The amendments specifically list the following as types of actions that are included:

Removal actions under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (including those taken as final response actions and those taken before remedial action) and actions similar in scope under Resource Conservation and Recovery Act (RCRA) (including those taken as partial closure actions and those taken before corrective action). These activities could include, but are not limited to, the following:

- Removal of drums, barrels, tanks, or other bulk containers that contain or may contain substances identified within the definition of hazardous substances under section 101(14) of CERCLA, or pollutants or contaminants as defined by section 101(33) of CERCLA, or hazardous wastes under 40 CFR part 261 where such actions would reduce the likelihood of spoilage, leakage, fire, explosion, or exposure to humans, animals, or the food chain.
- Use of chemicals and other materials to retard the spread of the release or to mitigate its effects, where the use of such chemicals would reduce the spread of, or direct contact with, the contamination.

The Silo 3 Removal Action was determined by DOE-FN to meet the requirements of a categorical exclusion from further NEPA review and documentation.

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FUTURE ACTIVITIES

The Best Management Plan for Silo 3 includes future planned work activities including monitoring the Silo 3 for structural stability, weatherproofing to retard further deterioration of the dome structure (to be performed if deemed necessary as a result of structural analysis), erection of fencing around the silo to restrict personnel access (completed November 20, 1992). In addition, shipments of the waste resulting from the Removal Action to an approved off-site disposal facility will continue until completed.

CONCLUSION

The "expedited" Silo 3 Removal Action successfully implemented an action to protect human health and the environment from a potential airborne release of radiologically contaminated material from a deteriorating dust collector in a timely manner. Project management procedures were followed and checklists were developed to aid the implementation of the Removal Action. These procedures included planning and design requirements, health and safety requirements, and quality assurance objectives.

The waste generated from the Removal Action was containerized and managed in a manner consistent with RCRA regulations, which were determined to be relevant and appropriate requirements. Prior to waste characterization being completed, the waste was stored in a RCRA-approved controlled holding area. The waste generated from this Removal Action was determined to be NON-RCRA. The Silo 3 Removal Action is considered complete. In accordance with all applicable regulations, waste shipments of the material generated from the Silo 3 Removal Action were initiated on October 9, 1992. The remaining waste will be shipped offsite for disposal in accordance with the offsite shipment schedule, which is based on site priorities.

Future planned work activities include monitoring Silo 3 for structural stability, weatherproofing the silo to retard further deterioration of the concrete structure (to be performed if deemed necessary as a result of structural analysis), erection of fencing around the silo to restrict personnel access (completed on November 20, 1992), and completion of the shipment of waste resulting from the Removal Action to an off-site disposal location. The remaining Silo 3 structure, contents and any associated equipment will be dispositioned later, as part of the final remediation of OU4.

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REFERENCES

Copies of the documents associated with the Silo 3 Removal Action have been placed in the FEMP Administrative Record. Attachment D lists these documents by title and date.

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ATTACHMENT A - ANALYTICAL RESULTS FOR SILO 3 RESIDUE

Note: The analytical data that follows is from the DOE-FN Internal Draft CERCLA/RCRA UNIT 4 Remedial Investigation (RI) Report, dated November/December 1992. Once approved by the DOE-FN, this document will be submitted to the U.S. EPA and the OEPA for review and approval. At the time of transmittal, a copy will be placed in the FEMP Administrative Record.

RADIOLOGICAL QUALIFIERS

- D = Denotes possible false negative, i.e., the reported non-positive value is greater than the CRDL.
- C = Denotes calculated total uranium value from uranium isotopic results does not agree within 20% of the reported uranium results.
- E = Denotes calculated enrichment of uranium 235 outside of acceptance limits.
- F = Denotes calculated uranium 234/uranium 235 ratio is outside of acceptance limits.
- J = Denotes analyte present, reported value may not be accurate or precise.
- M = Denotes matrix spike recovery out of bounded limit.
- R = Denotes that the results are unusable.
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SAMPLE	SUFFIX	RADIONUCLIDE	RESULTS	2-SIGMA	UNITS	Q5
100097		AC-227	523	± 66	pCi/g	-
100097		PA-231	521	± 88	pCi/g	J
100097		PB-210	2437	± 345	pCi/g	-
100097		RA-224	453	± 40	pCi/g	-
100097		RA-226	2589	± 152	pCi/g	-
100097		RA-228	525	± 36	pCi/g	-
100097		TH-228	907	± 515	pCi/g	J
100097		TH-230	41911	± 13338	pCi/g	J
100097		TH-232	1451	± 685	pCi/g	J
100097		U-234	1935	± 284	pCi/g	J
100097		U-235/236	152	± 56	pCi/g	J
100097		U-238	2043	± 297	pCi/g	CJ
100097		U-TOTAL	4040	± 549	ug/g	-

Radiological Validation Qualifiers for OU4 - 11/25/92

SAMPLE	SUFFIX	RADIONUCLIDE	RESULTS	2-SIGMA	UNITS	Q5
100098		AC-227	566	± 74	pCi/g	-
100098		PA-231	431	± 122	pCi/g	J
100098		PB-210	3674	± 520	pCi/g	-
100098		RA-224	313	± 33	pCi/g	-
100098		RA-226	4451	± 261	pCi/g	-
100098		RA-228	415	± 31	pCi/g	-
100098		TH-228	949	± 555	pCi/g	J
100098		TH-230	65488	± 21564	pCi/g	J
100098		TH-232	672	± 466	pCi/g	J
100098		U-234	1600	± 229	pCi/g	J
100098		U-235/236	118	± 44	pCi/g	J
100098		U-238	1878	± 262	pCi/g	CJ
100098		U-TOTAL	3854	± 544	ug/g	-

Radiological Validation Qualifiers for OU4 - 11/25/92

SAMPLE SUFFIX	RADIONUCLIDE	RESULTS	2-SIGMA	UNITS	Q5
100099	AC-227	416	± 53	pCi/g	-
100099	PA-231	401	± 83	pCi/g	J
100099	PB-210	2221	± 268	pCi/g	-
100099	RA-224	451	± 41	pCi/g	-
100099	RA-226	2192	± 291	pCi/g	-
100099	RA-228	559	± 38	pCi/g	-
100099	TH-228	< 754		pCi/g	DJ
100099	TH-230	33881	± 13110	pCi/g	J
100099	TH-232	< 754		pCi/g	DJ
100099	U-234	1618	± 242	pCi/g	J
100099	U-235/236	117	± 48	pCi/g	J
100099	U-238	1649	± 246	pCi/g	J
100099	U-TOTAL	4305	± 557	ug/g	-

Radiological Validation Qualifiers for OU4 - 11/25/92

SAMPLE SUFFIX	RADIONUCLIDE	RESULTS	2-SIGMA	UNITS	Q5
100100	AC-227	234	± 29	pCi/g	-
100100	PA-231	266	± 38	pCi/g	J
100100	PB-210	454	± 65	pCi/g	-
100100	RA-224	64	± 7	pCi/g	-
100100	RA-226	467	± 28	pCi/g	-
100100	RA-228	82	± 6	pCi/g	-
100100	TH-228	554	± 375	pCi/g	J
100100	TH-230	21010	± 2823	pCi/g	J
100100	TH-232	815	± 452	pCi/g	J
100100	U-234	348	± 96	pCi/g	J
100100	U-235/236	< 63		pCi/g	DJ
100100	U-238	320	± 92	pCi/g	J
100100	U-TOTAL	738	± 108	ug/g	-

Radiological Validation Qualifiers for OU4 - 11/25/92

SAMPLE	SUFFIX	RADIONUCLIDE	RESULTS	2-SIGMA	UNITS	Q5
100101		AC-227	1363	± 182	pCi/g	-
100101		PA-231	< 547		pCi/g	DJ
100101		PB-210	6427	± 918	pCi/g	-
100101		RA-224	213	± 32	pCi/g	-
100101		RA-226	6435	± 381	pCi/g	-
100101		RA-228	< 77		pCi/g	D
100101		TH-228	< 718		pCi/g	DJ
100101		TH-230	71650	± 27375	pCi/g	J
100101		TH-232	911	± 655	pCi/g	J
100101		U-234	1524	± 229	pCi/g	J
100101		U-235/236	127	± 49	pCi/g	J
100101		U-238	1600	± 238	pCi/g	CJ
100101		U-TOTAL	2595	± 600	ug/g	-

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SAMPLE SUFFIX	RADIONUCLIDE	RESULTS	2-SIGMA	UNITS	Q5
100102	AC-227	534	± 68	pCi/g	-
100102	PA-231	556	± 111	pCi/g	J
100102	PB-210	2493	± 354	pCi/g	-
100102	RA-224	295	± 32	pCi/g	-
100102	RA-226	3073	± 180	pCi/g	-
100102	RA-228	392	± 29	pCi/g	-
100102	TH-228	459	± 286	pCi/g	J
100102	TH-230	40968	± 10732	pCi/g	J
100102	TH-232	411	± 272	pCi/g	J
100102	U-234	1467	± 216	pCi/g	J
100102	U-235/236	54	± 33	pCi/g	J
100102	U-238	1392	± 207	pCi/g	CJ
100102	U-TOTAL	3064	± 436	ug/g	-

Radiological Validation Qualifiers for OU4 - 11/25/92

SAMPLE	SUFFIX	RADIONUCLIDE	RESULTS	2-SIGMA	UNITS	Q5
100103		AC-227	706	± 89	pCi/g	-
100103		PA-231	889	± 129	pCi/g	J
100103		PB-210	1910	± 272	pCi/g	-
100103		RA-224	335	± 34	pCi/g	-
100103		RA-226	1862	± 110	pCi/g	-
100103		RA-228	441	± 32	pCi/g	-
100103		TH-228	859	± 637	pCi/g	J
100103		TH-230	41555	± 15997	pCi/g	J
100103		TH-232	< 719		pCi/g	DJ
100103		U-234	1910	± 295	pCi/g	J
100103		U-235/236	76	± 47	pCi/g	J
100103		U-238	1860	± 289	pCi/g	J
100103		U-TOTAL	4554	± 626	ug/g	-

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SAMPLE	SUFFIX	RADIONUCLIDE	RESULTS	2-SIGMA	UNITS	Q5
100104	AC-227		421	± 53	pCi/g	-
100104	PA-231		458	± 84	pCi/g	J
100104	PB-210		1084	± 133	pCi/g	-
100104	RA-224		370	± 45	pCi/g	-
100104	RA-226		1518	± 88	pCi/g	-
100104	RA-228		325	± 23	pCi/g	-
100104	TH-228		< 429		pCi/g	DJ
100104	TH-230		53227	± 15986	pCi/g	J
100104	TH-232		< 429		pCi/g	DJ
100104	U-234		1317	± 189	pCi/g	J
100104	U-235/236		80	± 34	pCi/g	J
100104	U-238		1243	± 180	pCi/g	CJ
100104	U-TOTAL		2740	± 364	ug/g	-

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SAMPLE	SUFFIX	RADIONUCLIDE	RESULTS	2-SIGMA	UNITS	Q5
100105		AC-227	412	± 54	pCi/g	-
100105		PA-231	< 137		pCi/g	DJ
100105		PB-210	2589	± 314	pCi/g	-
100105		RA-224	106	± 14	pCi/g	-
100105		RA-226	3702	± 214	pCi/g	-
100105		RA-228	< 20		pCi/g	D
100105		TH-228	996	± 523	pCi/g	J
100105		TH-230	63649	± 19413	pCi/g	J
100105		TH-232	755	± 450	pCi/g	J
100105		U-234	1052	± 158	pCi/g	J
100105		U-235/236	42	± 27	pCi/g	J
100105		U-238	994	± 152	pCi/g	CJ
100105		U-TOTAL	1463	± 232	ug/g	-

Radiological Validation Qualifiers for OU4 - 11/25/92

SAMPLE	SUFFIX	RADIONUCLIDE	RESULTS	2-SIGMA	UNITS	Q5
100106		AC-227	443	± 57	pCi/g	-
100106		PA-231	564	± 73	pCi/g	J
100106		PB-210	3553	± 502	pCi/g	-
100106		RA-224	137	± 17	pCi/g	-
100106		RA-226	4169	± 244	pCi/g	-
100106		RA-228	117	± 20	pCi/g	-
100106		TH-228	537	± 377	pCi/g	J
100106		TH-230	61190	± 18206	pCi/g	J
100106		TH-232	672	± 417	pCi/g	J
100106		U-234	1843	± 278	pCi/g	J
100106		U-235/236	158	± 46	pCi/g	J
100106		U-238	1951	± 260	pCi/g	CJ
100106		U-TOTAL	1114	± 192	ug/g	-

Radiological Validation Qualifiers for OU4 - 11/25/92

SAMPLE	SUFFIX	RADIONUCLIDE	RESULTS	2-SIGMA	UNITS	Q5
100107	AC-227		773	± 96	pCi/g	-
100107	AC-227		622	± 79	pCi/g	J
100107	PA-231		606	± 119	pCi/g	J
100107	PA-231		931	± 139	pCi/g	J
100107	PB-210		1942	± 236	pCi/g	-
100107	PB-210		1899	± 232	pCi/g	J
100107	RA-224		449	± 54	pCi/g	-
100107	RA-224		411	± 50	pCi/g	J
100107	RA-226		2240	± 131	pCi/g	-
100107	RA-226		2003	± 117	pCi/g	J
100107	RA-228		360	± 40	pCi/g	-
100107	RA-228		338	± 38	pCi/g	J
100107	TH-228		< 556		pCi/g	DJ
100107	TH-228		1339	± 655	pCi/g	J
100107	TH-230		56851	± 18359	pCi/g	J
100107	TH-230		68759	± 23126	pCi/g	J
100107	TH-232		869	± 505	pCi/g	J
100107	TH-232		581	± 450	pCi/g	J
100107	U-234		1643	± 230	pCi/g	J
100107	U-234		1579	± 237	pCi/g	J
100107	U-235/236		94	± 44	pCi/g	J
100107	U-235/236		75	± 35	pCi/g	J
100107	U-238		1574	± 222	pCi/g	J
100107	U-238		1520	± 230	pCi/g	J
100107	U-TOTAL		4050	± 535	ug/g	-
100107	U-TOTAL		3471	± 467	ug/g	J

INORGANIC QUALIFIERS

- U = Analyte was analyzed for but not detected.
- J = Indicates an estimated value.
- B = Reported value was obtained from a reading that was less than the Contract Required Detection Limit (CRDL) but greater than or equal to the instrument Detection Limit (IDL).
- E = The reported value is estimated because of the presence of interference.
- N = Spiked sample recovery not within control limits.
- S = The reported value was determined by the Method of Standard Additions.
- W = Post-digestion spike for Furnace AA analysis in not out of control limits (85-110%), while sample absorbance is less than 50% of spike absorbance.
- X = Detection limit is higher than normal due to sample matrix interferences.
- * = Duplicate analysis not within control limits.
- R = Denotes that the results are unusable.
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Chemical Validation Qualifiers for OU4 - 11/25/92

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100097		7429905	Aluminum	21300	MG/KG		4	J
100097		7440360	Antimony	5.2	MG/KG	N	4	R
100097		7440382	Arsenic	1380	MG/KG		4	J
100097		7440393	Barium	297	MG/KG		4	J
100097		7440417	Beryllium	20.8	MG/KG		4	J
100097		7440439	Cadmium	41.7	MG/KG		4	J
100097		7440702	Calcium	39500	MG/KG	*	4	J
100097		7440473	Chromium	260	MG/KG		4	J
100097		7440484	Cobalt	2580	MG/KG		4	J
100097		7440508	Copper	2020	MG/KG		4	J
100097		7439896	Iron	41700	MG/KG		4	J
100097		7439921	Lead	1700	MG/KG		4	J
100097		7439954	Magnesium	74400	MG/KG		4	J
100097		7439965	Manganese	5200	MG/KG		4	J
100097		7439976	Mercury	0.10	MG/KG		4	R
100097		7440020	Nickel	3280	MG/KG		4	J
100097		7440097	Potassium	5310	MG/KG		4	J
100097		7782492	Selenium	159	MG/KG		4	J
100097		7440224	Silver	23.8	MG/KG		4	J
100097		7440235	Sodium	30100	MG/KG		4	J
100097		7440280	Thallium	10.0	MG/KG		4	J
100097		7440622	Vanadium	1180	MG/KG	E	4	J
100097		7440666	Zinc	497	MG/KG	E	4	J
100097		57125	Cyanide	0.55	MG/KG		4	R

Chemical Validation Qualifiers for O4 - 11/25/92

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100098		7429905	Aluminum	17500	MG/KG		4	J
100098		7440360	Antimony	4.0	MG/KG	N	4	R
100098		7440382	Arsenic	1980	MG/KG		4	J
100098		7440393	Barium	185	MG/KG		4	J
100098		7440417	Beryllium	26.4	MG/KG		4	J
100098		7440439	Cadmium	52.7	MG/KG		4	J
100098		7440702	Calcium	25900	MG/KG	*	4	J
100098		7440473	Chromium	221	MG/KG		4	J
100098		7440484	Cobalt	1350	MG/KG		4	J
100098		7440508	Copper	2280	MG/KG		4	J
100098		7439896	Iron	23800	MG/KG		4	J
100098		7439921	Lead	1750	MG/KG		4	J
100098		7439954	Magnesium	52800	MG/KG		4	J
100098		7439965	Manganese	2780	MG/KG		4	J
100098		7439976	Mercury	0.08	MG/KG		4	R
100098		7440020	Nickel	1970	MG/KG		4	J
100098		7440097	Potassium	7340	MG/KG		4	J
100098		7782492	Selenium	101	MG/KG		4	J
100098		7440224	Silver	16.1	MG/KG		4	J
100098		7440235	Sodium	39000	MG/KG		4	J
100098		7440280	Thallium	3.1	MG/KG	E	4	R
100098		7440622	Vanadium	3040	MG/KG	E	4	J
100098		7440666	Zinc	306	MG/KG	E	4	J
100098		57125	Cyanide	0.46	MG/KG		4	R

Chemical Validation Qualifiers for OU4 - 11/25/92

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100099		7429905	Aluminum	18000	MG/KG		4	J
100099		7440360	Antimony	4.7	MG/KG	N	4	R
100099		7440382	Arsenic	2450	MG/KG		4	J
100099		7440393	Barium	253	MG/KG		4	J
100099		7440417	Beryllium	20.6	MG/KG		4	J
100099		7440439	Cadmium	60.3	MG/KG		4	J
100099		7440702	Calcium	33100	MG/KG	*	4	J
100099		7440473	Chromium	171	MG/KG		4	J
100099		7440484	Cobalt	1100	MG/KG		4	J
100099		7440508	Copper	2430	MG/KG		4	J
100099		7439896	Iron	26200	MG/KG		4	J
100099		7439921	Lead	1440	MG/KG		4	J
100099		7439954	Magnesium	62400	MG/KG		4	J
100099		7439965	Manganese	3610	MG/KG		4	J
100099		7439976	Mercury	0.10	MG/KG		4	R
100099		7440020	Nickel	1200	MG/KG		4	R
100099		7440097	Potassium	3880	MG/KG		4	J
100099		7782492	Selenium	108	MG/KG		4	J
100099		7440224	Silver	21.5	MG/KG		4	J
100099		7440235	Sodium	43100	MG/KG		4	J
100099		7440280	Thallium	37.6	MG/KG		4	J
100099		7440622	Vanadium	2030	MG/KG	E	4	J
100099		7440666	Zinc	361	MG/KG	E	4	J
100099		57125	Cyanide	0.52	MG/KG		4	R

Chemical Validation Qualifiers for OU4 - 11/25/92

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100100		7429905	Aluminum	18000	MG/KG		4	J
100100		7440360	Antimony	5.7	MG/KG	N	4	R
100100		7440382	Arsenic	1610	MG/KG		4	J
100100		7440393	Barium	332	MG/KG		4	J
100100		7440417	Beryllium	39.9	MG/KG		4	J
100100		7440439	Cadmium	40.1	MG/KG		4	J
100100		7440702	Calcium	32600	MG/KG	*	4	J
100100		7440473	Chromium	421	MG/KG		4	J
100100		7440484	Cobalt	1340	MG/KG		4	J
100100		7440508	Copper	1610	MG/KG		4	J
100100		7439896	Iron	60400	MG/KG		4	J
100100		7439921	Lead	646	MG/KG		4	J
100100		7439954	Magnesium	44900	MG/KG		4	J
100100		7439965	Manganese	6500	MG/KG		4	J
100100		7439976	Mercury	0.10	MG/KG		4	R
100100		7440020	Nickel	1810	MG/KG		4	J
100100		7440097	Potassium	22800	MG/KG		4	J
100100		7782492	Selenium	129	MG/KG		4	J
100100		7440224	Silver	9.2	MG/KG		4	J
100100		7440235	Sodium	44100	MG/KG		4	J
100100		7440280	Thallium	6.5	MG/KG		4	J
100100		7440622	Vanadium	1420	MG/KG	E	4	J
100100		7440666	Zinc	637	MG/KG	E	4	J
100100		57125	Cyanide	0.55	MG/KG		4	R

Chemical Validation Qualifiers for OU4 - 11/25/92

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100101		7429905	Aluminum	23700	MG/KG		4	J
100101		7440360	Antimony	5.9	MG/KG	N	4	R
100101		7440382	Arsenic	6380	MG/KG		4	J
100101		7440393	Barium	194	MG/KG		4	J
100101		7440417	Beryllium	35.1	MG/KG		4	J
100101		7440439	Cadmium	204	MG/KG		4	J
100101		7440702	Calcium	23300	MG/KG	*	4	J
100101		7440473	Chromium	139	MG/KG		4	J
100101		7440484	Cobalt	1870	MG/KG		4	J
100101		7440508	Copper	7060	MG/KG		4	J
100101		7439896	Iron	13900	MG/KG		4	J
100101		7439921	Lead	4430	MG/KG		4	J
100101		7439954	Magnesium	38200	MG/KG		4	J
100101		7439965	Manganese	2420	MG/KG		4	J
100101		7439976	Mercury	0.30	MG/KG		4	J
100101		7440020	Nickel	2280	MG/KG		4	J
100101		7440097	Potassium	4520	MG/KG		4	J
100101		7782492	Selenium	122	MG/KG		4	J
100101		7440224	Silver	14.8	MG/KG		4	J
100101		7440235	Sodium	38100	MG/KG		4	J
100101		7440280	Thallium	73.9	MG/KG		4	J
100101		7440622	Vanadium	4550	MG/KG	E	4	J
100101		7440666	Zinc	387	MG/KG	E	4	J
100101		57125	Cyanide	0.53	MG/KG		4	R

Chemical Validation Qualifiers for OU4 - 11/25/92

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100102		7429905	Aluminum	15800	MG/KG		4	J
100102		7440360	Antimony	4.7	MG/KG	N	4	R
100102		7440382	Arsenic	2200	MG/KG		4	J
100102		7440393	Barium	210	MG/KG		4	J
100102		7440417	Beryllium	26.5	MG/KG		4	J
100102		7440439	Cadmium	62.4	MG/KG		4	J
100102		7440702	Calcium	25800	MG/KG	*	4	J
100102		7440773	Chromium	213	MG/KG		4	J
100102		7440484	Cobalt	1340	MG/KG		4	J
100102		7440508	Copper	2440	MG/KG		4	J
100102		7439896	Iron	31200	MG/KG		4	J
100102		7439921	Lead	1310	MG/KG		4	J
100102		7439954	Magnesium	44100	MG/KG		4	J
100102		7439965	Manganese	3980	MG/KG		4	J
100102		7439976	Mercury	0.10	MG/KG		4	R
100102		7440020	Nickel	1760	MG/KG		4	J
100102		7440097	Potassium	7360	MG/KG		4	J
100102		7782492	Selenium	105	MG/KG		4	J
100102		7440224	Silver	14.3	MG/KG		4	J
100102		7440235	Sodium	31200	MG/KG		4	J
100102		7440280	Thallium	35.8	MG/KG		4	J
100102		7440622	Vanadium	2030	MG/KG	E	4	J
100102		7440666	Zinc	380	MG/KG	E	4	J
100102		57125	Cyanide	0.53	MG/KG		4	R

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100107		7429905	Aluminum	15300	MG/KG		4	J
100107		7440360	Antimony	5.5	MG/KG	N	4	J
100107		7440382	Arsenic	1060	MG/KG		4	J
100107		7440393	Barium	215	MG/KG		4	J
100107		7440417	Beryllium	16.6	MG/KG		4	J
100107		7440439	Cadmium	35.1	MG/KG		4	J
100107		7440702	Calcium	29900	MG/KG	*	4	J
100107		7440473	Chromium	236	MG/KG		4	J
100107		7440484	Cobalt	2950	MG/KG		4	J
100107		7440508	Copper	2010	MG/KG		4	J
100107		7439896	Iron	37800	MG/KG		4	J
100107		7439921	Lead	1330	MG/KG		4	J
100107		7439954	Magnesium	58100	MG/KG		4	J
100107		7439965	Manganese	3970	MG/KG		4	J
100107		7439976	Mercury	0.30	MG/KG		4	J
100107		7440020	Nickel	4230	MG/KG		4	J
100107		7440097	Potassium	6690	MG/KG		4	J
100107		7782492	Selenium	254	MG/KG		4	J
100107		7440224	Silver	17.4	MG/KG		4	J
100107		7440235	Sodium	30400	MG/KG		4	J
100107		7440280	Thallium	13.7	MG/KG		4	J
100107		7440622	Vanadium	1040	MG/KG	E	4	J
100107		7440666	Zinc	397	MG/KG	E	4	J
100107		57125	Cyanide	0.51	MG/KG		4	R

ORGANIC QUALIFIERS

- U = Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture.
- J = Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.
- E = This flag identifies compounds whose concentrations exceed the calibration range for the GC/MS instrument for that specific analysis.
- D = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- F = Estimated value due to a confirmed compound which is off-scale in both columns.
- X = A flag that FORMASTER III CLP software automatically inserts to indicate that the data was entered manually.
- * = Values outside of contract required QC limits.
- R = Denotes that the results are unusable.

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100103		11104282	Aroclor-1221	82	UG/KG	U	4	R
100103		11141165	Aroclor-1232	82	UG/KG	U	4	R
100103		53469219	Aroclor-1242	82	UG/KG	U	4	R
100103		12672296	Aroclor-1248	82	UG/KG	U	4	R
100103		11097691	Aroclor-1254	160	UG/KG	U	4	R
100103		11096825	Aroclor-1260	160	UG/KG	U	4	R
100103		108952	Phenol	54	UG/KG	J	4	R
100103		111444	bis(2-Chloroethyl)ether	340	UG/KG	U	4	R
100103		95578	2-Chlorophenol	340	UG/KG	U	4	R
100103		541731	1,3-Dichlorobenzene	340	UG/KG	U	4	R
100103		106467	1,4-Dichlorobenzene	340	UG/KG	U	4	R
100103		100516	Benzyl alcohol	340	UG/KG	U	4	R
100103		95501	1,2-Dichlorobenzene	340	UG/KG	U	4	R
100103		95487	2-Methylphenol	340	UG/KG	U	4	R
100103		108601	bis(2-Chloroisopropyl) ether	340	UG/KG	U	4	R
100103		106445	4-Methylphenol	340	UG/KG	U	4	R
100103		621647	N-Nitroso-di-n-propylamine	340	UG/KG	U	4	R
100103		67721	Hexachloroethane	340	UG/KG	U	4	R
100103		98953	Nitrobenzene	340	UG/KG	U	4	R
100103		78591	Isophorone	340	UG/KG	U	4	R
100103		88755	2-Nitrophenol	340	UG/KG	U	4	R
100103		105679	2,4-Dimethylphenol	340	UG/KG	U	4	R
100103		65850	Benzoic acid	1600	UG/KG	U	4	R
100103		111911	bis(2-Chloroethoxy)methane	340	UG/KG	U	4	R
100103		120832	2,4-Dichlorophenol	340	UG/KG	U	4	R
100103		120821	1,2,4-Trichlorobenzene	340	UG/KG	U	4	R
100103		91203	Naphthalene	340	UG/KG	U	4	R
100103		106478	4-Chloroaniline	340	UG/KG	U	4	R
100103		87683	Hexachlorobutadiene	340	UG/KG	U	4	R
100103		59507	4-Chloro-3-methylphenol	340	UG/KG	U	4	R
100103		91576	2-Methylnaphthalene	340	UG/KG	U	4	R
100103		77474	Hexachlorocyclopentadiene	340	UG/KG	U	4	R
100103		88062	2,4,6-Trichlorophenol	340	UG/KG	U	4	R
100103		95954	2,4,5-Trichlorophenol	1600	UG/KG	U	4	R
100103		91587	2-Chloronaphthalene	340	UG/KG	U	4	R
100103		88744	2-Nitroaniline	1600	UG/KG	U	4	R
100103		131113	Dimethyl phthalate	340	UG/KG	U	4	R
100103		208968	Acenaphthylene	340	UG/KG	U	4	R
100103		606202	2,6-Dinitrotoluene	340	UG/KG	U	4	R
100103		99092	3-Nitroaniline	1600	UG/KG	U	4	R
100103		83329	Acenaphthene	340	UG/KG	U	4	R
100103		51285	2,4-Dinitrophenol	1600	UG/KG	U	4	R
100103		100027	4-Nitrophenol	45	UG/KG	J	4	R
100103		132649	Dibenzofuran	340	UG/KG	U	4	R
100103		121142	2,4-Dinitrotoluene	340	UG/KG	U	4	R

Chemical Validation Qualifiers for OU4 - 11/25/92

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100103		7429905	Aluminum	10800	MG/KG		4	J
100103		7440360	Antimony	5.7	MG/KG	N	4	R
100103		7440382	Arsenic	532	MG/KG		4	J
100103		7440393	Barium	118	MG/KG		4	J
100103		7440417	Beryllium	10.0	MG/KG		4	J
100103		7440439	Cadmium	21.5	MG/KG		4	J
100103		7440702	Calcium	21300	MG/KG	*	4	J
100103		7440473	Chromium	170	MG/KG		4	J
100103		7440484	Cobalt	1.9	MG/KG		4	R
100103		7440508	Copper	1620	MG/KG		4	J
100103		7439896	Iron	28200	MG/KG		4	J
100103		7439921	Lead	1510	MG/KG		4	J
100103		7439954	Magnesium	44800	MG/KG		4	J
100103		7439965	Manganese	2700	MG/KG		4	J
100103		7439976	Mercury	0.69	MG/KG		4	J
100103		7440020	Nickel	6170	MG/KG		4	J
100103		7440097	Potassium	3300	MG/KG		4	J
100103		7782492	Selenium	349	MG/KG		4	J
100103		7440224	Silver	14.9	MG/KG		4	J
100103		7440235	Sodium	22900	MG/KG		4	J
100103		7440280	Thallium	7.2	MG/KG		4	J
100103		7440622	Vanadium	499	MG/KG	E	4	J
100103		7440666	Zinc	301	MG/KG	E	4	J
100103		57125	Cyanide	0.49	MG/KG		4	R
100103		319846	alpha-BHC	8.2	UG/KG	U	4	R
100103		319857	beta-BHC	8.2	UG/KG	U	4	R
100103		319868	delta-BHC	8.2	UG/KG	U	4	R
100103		58899	gamma-BHC (Lindane)	8.2	UG/KG	U	4	R
100103		76448	Heptachlor	8.2	UG/KG	U	4	R
100103		309002	Aldrin	8.2	UG/KG	U	4	R
100103		1024573	Heptachlor epoxide	8.2	UG/KG	U	4	R
100103		959988	Endosulfan-I	8.2	UG/KG	U	4	R
100103		60571	Dieldrin	16	UG/KG	U	4	R
100103		72559	4,4'-DDE	16	UG/KG	U	4	R
100103		72208	Endrin	16	UG/KG	U	4	R
100103		33213659	Endosulfan II	16	UG/KG	U	4	R
100103		72548	4,4'-DDD	16	UG/KG	U	4	R
100103		1031078	Endosulfan sulfate	16	UG/KG	U	4	R
100103		50293	4,4'-DDT	16	UG/KG	U	4	R
100103		72435	Methoxychlor	82	UG/KG	U	4	R
100103		53494705	Endrin ketone	16	UG/KG	U	4	R
100103		5103719	alpha-Chlordane	82	UG/KG	U	4	R
100103		5103742	gamma-Chlordane	82	UG/KG	U	4	R
100103		8001352	Toxaphene	160	UG/KG	U	4	R
100103		12674112	Aroclor-1016	82	UG/KG	U	4	R

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100103		79016	Trichloroethene	630	UG/KG	U	4	R
100103		124481	Dibromochloromethane	630	UG/KG	U	4	R
100103		79005	1,1,2-Trichloroethane	630	UG/KG	U	4	R
100103		71432	Benzene	630	UG/KG	U	4	R
100103		10061026	trans-1,3-Dichloropropene	630	UG/KG	U	4	R
100103		75252	Bromoforn	630	UG/KG	U	4	R
100103		108101	4-Methyl-2-pentanone	1300	UG/KG	U	4	R
100103		591786	2-Hexanone	1300	UG/KG	U	4	R
100103		127184	Tetrachlorethene	630	UG/KG	U	4	R
100103		79345	1,1,2,2-Tetrachloroethane	630	UG/KG	U	4	R
100103		108883	Toluene	210	UG/KG	J	4	R
100103		108907	Chlorobenzene	630	UG/KG	U	4	R
100103		100414	Ethylbenzene	630	UG/KG	U	4	R
100103		100425	Styrene	630	UG/KG	U	4	R
100103		1330207	Total xylenes	630	UG/KG	U	4	R

Chemical Validation Qualifiers for OU4 - 11/25/92

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100103		84662	Diethyl phthalate	340	UG/KG	U	4	R
100103		7005723	4-Chlorophenylphenyl ether	340	UG/KG	U	4	R
100103		86737	Fluorene	340	UG/KG	U	4	R
100103		100016	4-Nitroaniline	1600	UG/KG	U	4	R
100103		534521	4,6-Dinitro-2-methylphenol	1600	UG/KG	U	4	R
100103		86306	N-Nitrosodiphenylamine	340	UG/KG	U	4	R
100103		101553	4-Bromophenyl phenyl ether	340	UG/KG	U	4	R
100103		118741	Hexachlorobenzene	340	UG/KG	U	4	R
100103		87865	Pentachlorophenol	1600	UG/KG	U	4	R
100103		85018	Phenanthrene	340	UG/KG	U	4	R
100103		120127	Anthracene	340	UG/KG	U	4	R
100103		84742	Di-n-butyl phthalate	340	UG/KG	U	4	R
100103		206440	Fluoranthene	340	UG/KG	U	4	R
100103		129000	Pyrene	340	UG/KG	U	4	R
100103		85687	Butyl benzyl phthalate	340	UG/KG	U	4	R
100103		91941	3,3'-Dichlorobenzidine	680	UG/KG	U	4	R
100103		56553	Benzo(a)anthracene	340	UG/KG	U	4	R
100103		218019	Chrysene	340	UG/KG	U	4	R
100103		117817	bis(2-Ethylhexyl) phthalate	40	UG/KG	J	4	R
100103		117840	Di-n-octyl phthalate	340	UG/KG	U	4	R
100103		205992	Benzo(b)fluoranthene	340	UG/KG	U	4	R
100103		207089	Benzo(k)fluoranthene	340	UG/KG	U	4	R
100103		50328	Benzo(a)pyrene	340	UG/KG	U	4	R
100103		193395	Indeno(1,2,3-cd)pyrene	340	UG/KG	U	4	R
100103		53703	Dibenzo(a,h)anthracene	340	UG/KG	U	4	R
100103		191242	Benzo(g,h,i)perylene	340	UG/KG	U	4	R
100103		74873	Chloromethane	1300	UG/KG	U	4	R
100103		74839	Bromomethane	1300	UG/KG	U	4	R
100103		75014	Vinyl chloride	1300	UG/KG	U	4	R
100103		75003	Chloroethane	1300	UG/KG	U	4	R
100103		75092	Methylene chloride	1800	UG/KG	B	4	R
100103		67641	Acetone	4800	UG/KG		4	R
100103		75150	Carbon disulfide	630	UG/KG	U	4	R
100103		75354	1,1-Dichloroethene	630	UG/KG	U	4	R
100103		75343	1,1-Dichloroethane	630	UG/KG	U	4	R
100103		540590	1,2-Dichloroethylene	630	UG/KG	U	4	R
100103		67663	Chloroform	680	UG/KG	B	4	R
100103		107062	1,2-Dichloroethane	630	UG/KG	U	4	R
100103		78933	2-Butanone	13000	UG/KG	B	4	R
100103		71556	1,1,1-Trichloroethane	630	UG/KG	U	4	R
100103		56235	Carbon Tetrachloride	630	UG/KG	U	4	R
100103		108054	Vinyl Acetate	1300	UG/KG	U	4	R
100103		75274	Bromodichloromethane	630	UG/KG	U	4	R
100103		78875	1,2-Dichloropropane	630	UG/KG	U	4	R
100103		10061015	cis-1,3-Dichloropropene	630	UG/KG	U	4	R

Chemical Validation Qualifiers for O4 - 11/25/92

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100104		11104282	Aroclor-1221	85	UG/KG	U	4	R
100104		11141165	Aroclor-1232	85	UG/KG	U	4	R
100104		53469219	Aroclor-1242	85	UG/KG	U	4	R
100104		12672296	Aroclor-1248	85	UG/KG	U	4	R
100104		11097691	Aroclor-1254	170	UG/KG	U	4	R
100104		11096825	Aroclor-1260	170	UG/KG	U	4	R
100104		108952	Phenol	55	UG/KG	J	4	R
100104		111444	bis(2-Chloroethyl)ether	350	UG/KG	U	4	R
100104		95578	2-Chlorophenol	350	UG/KG	U	4	R
100104		541731	1,3-Dichlorobenzene	350	UG/KG	U	4	R
100104		106467	1,4-Dichlorobenzene	350	UG/KG	U	4	R
100104		100516	Benzyl alcohol	350	UG/KG	U	4	R
100104		95501	1,2-Dichlorobenzene	350	UG/KG	U	4	R
100104		95487	2-Methylphenol	350	UG/KG	U	4	R
100104		108601	bis(2-Chloroisopropyl) ether	350	UG/KG	U	4	R
100104		106445	4-Methylphenol	350	UG/KG	U	4	R
100104		621647	N-Nitroso-di-n-propylamine	350	UG/KG	U	4	R
100104		67721	Hexachloroethane	350	UG/KG	U	4	R
100104		98953	Nitrobenzene	350	UG/KG	U	4	R
100104		78591	Isophorone	350	UG/KG	U	4	R
100104		88755	2-Nitrophenol	52	UG/KG	J	4	R
100104		105679	2,4-Dimethylphenol	350	UG/KG	U	4	R
100104		65850	Benzoic acid	1700	UG/KG	U	4	R
100104		111911	bis(2-Chloroethoxy)methane	350	UG/KG	U	4	R
100104		120832	2,4-Dichlorophenol	350	UG/KG	U	4	R
100104		120821	1,2,4-Trichlorobenzene	350	UG/KG	U	4	R
100104		91203	Naphthalene	350	UG/KG	U	4	R
100104		106478	4-Chloroaniline	350	UG/KG	U	4	R
100104		87683	Hexachlorobutadiene	350	UG/KG	U	4	R
100104		59507	4-Chloro-3-methylphenol	350	UG/KG	U	4	R
100104		91576	2-Methylnaphthalene	350	UG/KG	U	4	R
100104		77474	Hexachlorocyclopentadiene	350	UG/KG	U	4	R
100104		88062	2,4,6-Trichlorophenol	350	UG/KG	U	4	R
100104		95954	2,4,5-Trichlorophenol	1700	UG/KG	U	4	R
100104		91587	2-Chloronaphthalene	350	UG/KG	U	4	R
100104		88744	2-Nitroaniline	1700	UG/KG	U	4	R
100104		131113	Dimethyl phthalate	350	UG/KG	U	4	R
100104		208968	Acenaphthylene	350	UG/KG	U	4	R
100104		606202	2,6-Dinitrotoluene	350	UG/KG	U	4	R
100104		99092	3-Nitroaniline	1700	UG/KG	U	4	R
100104		83329	Acenaphthene	350	UG/KG	U	4	R
100104		51285	2,4-Dinitrophenol	1700	UG/KG	U	4	R
100104		100027	4-Nitrophenol	1700	UG/KG	U	4	R
100104		132649	Dibenzofuran	350	UG/KG	U	4	R
100104		121142	2,4-Dinitrotoluene	350	UG/KG	U	4	R

Chemical Validation Qualifiers for OU4 - 11/25/92

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100104		7429905	Aluminum	20800	MG/KG		4	J
100104		7440360	Antimony	5.2	MG/KG	N	4	R
100104		7440382	Arsenic	1460	MG/KG		4	J
100104		7440393	Barium	319	MG/KG		4	J
100104		7440417	Beryllium	25.2	MG/KG		4	J
100104		7440439	Cadmium	45.5	MG/KG		4	J
100104		7440702	Calcium	39900	MG/KG	*	4	J
100104		7440473	Chromium	335	MG/KG		4	J
100104		7440484	Cobalt	2190	MG/KG		4	J
100104		7440508	Copper	2140	MG/KG		4	J
100104		7439896	Iron	67600	MG/KG		4	J
100104		7439921	Lead	1130	MG/KG		4	J
100104		7439954	Magnesium	72400	MG/KG		4	J
100104		7439965	Manganese	5790	MG/KG		4	J
100104		7439976	Mercury	0.10	MG/KG		4	R
100104		7440020	Nickel	3150	MG/KG		4	J
100104		7440097	Potassium	13600	MG/KG		4	J
100104		7782492	Selenium	192	MG/KG		4	J
100104		7440224	Silver	20.2	MG/KG		4	J
100104		7440235	Sodium	39500	MG/KG		4	J
100104		7440280	Thallium	11.9	MG/KG		4	J
100104		7440622	Vanadium	1270	MG/KG	E	4	J
100104		7440666	Zinc	563	MG/KG	E	4	J
100104		57125	Cyanide	0.54	MG/KG		4	R
100104		319846	alpha-BHC	8.5	UG/KG	U	4	R
100104		319857	beta-BHC	8.5	UG/KG	U	4	R
100104		319868	delta-BHC	8.5	UG/KG	U	4	R
100104		58899	gamma-BHC (Lindane)	8.5	UG/KG	U	4	R
100104		76448	Heptachlor	8.5	UG/KG	U	4	R
100104		309002	Aldrin	8.5	UG/KG	U	4	R
100104		1024573	Heptachlor epoxide	8.5	UG/KG	U	4	R
100104		959988	Endosulfan-I	8.5	UG/KG	U	4	R
100104		60571	Dieldrin	17	UG/KG	U	4	R
100104		72559	4,4'-DDE	17	UG/KG	U	4	R
100104		72208	Endrin	17	UG/KG	U	4	R
100104		33213659	Endosulfan II	17	UG/KG	U	4	R
100104		72548	4,4'-DDD	17	UG/KG	U	4	R
100104		1031078	Endosulfan sulfate	17	UG/KG	U	4	R
100104		50293	4,4'-DDT	17	UG/KG	U	4	R
100104		72435	Methoxychlor	85	UG/KG	U	4	R
100104		53494705	Endrin ketone	17	UG/KG	U	4	R
100104		5103719	alpha-Chlordane	85	UG/KG	U	4	R
100104		5103742	gamma-Chlordane	85	UG/KG	U	4	R
100104		8001352	Toxaphene	170	UG/KG	U	4	R
100104		12674112	Aroclor-1016	85	UG/KG	U	4	R

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100104		79016	Trichloroethene	630	UG/KG	U	4	R
100104		124481	Dibromochloromethane	630	UG/KG	U	4	R
100104		79005	1,1,2-Trichloroethane	630	UG/KG	U	4	R
100104		71432	Benzene	630	UG/KG	U	4	R
100104		10061026	trans-1,3-Dichloropropene	630	UG/KG	U	4	R
100104		75252	Bromofom	630	UG/KG	U	4	R
100104		108101	4-Methyl-2-pentanone	1300	UG/KG	U	4	R
100104		591786	2-Hexanone	1300	UG/KG	U	4	R
100104		127184	Tetrachlorethene	630	UG/KG	U	4	R
100104		79345	1,1,2,2-Tetrachloroethane	630	UG/KG	U	4	R
100104		108883	Toluene	6400	UG/KG		4	R
100104		108907	Chlorobenzene	630	UG/KG	U	4	R
100104		100414	Ethylbenzene	630	UG/KG	U	4	R
100104		100425	Styrene	630	UG/KG	U	4	R
100104		1330207	Total xylenes	630	UG/KG	U	4	R
100104	R	74873	Chloromethane	1300	UG/KG	U	4	R
100104	R	74839	Bromomethane	1300	UG/KG	U	4	R
100104	R	75014	Vinyl chloride	1300	UG/KG	U	4	R
100104	R	75003	Chloroethane	1300	UG/KG	U	4	R
100104	R	75092	Methylene chloride	2800	UG/KG	B	4	R
100104	R	67641	Acetone	5200	UG/KG		4	R
100104	R	75150	Carbon disulfide	630	UG/KG	U	4	R
100104	R	75354	1,1-Dichloroethene	630	UG/KG	U	4	R
100104	R	75343	1,1-Dichloroethane	630	UG/KG	U	4	R
100104	R	540590	1,2-Dichloroethylene	630	UG/KG	U	4	R
100104	R	67663	Chloroform	740	UG/KG	B	4	R
100104	R	107062	1,2-Dichloroethane	630	UG/KG	U	4	R
100104	R	78933	2-Butanone	15000	UG/KG	B	4	R
100104	R	71556	1,1,1-Trichloroethane	630	UG/KG	U	4	R
100104	R	56235	Carbon Tetrachloride	630	UG/KG	U	4	R
100104	R	108054	Vinyl Acetate	1300	UG/KG	U	4	R
100104	R	75274	Bromodichloromethane	630	UG/KG	U	4	R
100104	R	78875	1,2-Dichloropropane	630	UG/KG	U	4	R
100104	R	10061015	cis-1,3-Dichloropropene	630	UG/KG	U	4	R
100104	R	79016	Trichloroethene	630	UG/KG	U	4	R
100104	R	124481	Dibromochloromethane	630	UG/KG	U	4	R
100104	R	79005	1,1,2-Trichloroethane	630	UG/KG	U	4	R
100104	R	71432	Benzene	630	UG/KG	U	4	R
100104	R	10061026	trans-1,3-Dichloropropene	630	UG/KG	U	4	R
100104	R	75252	Bromofom	630	UG/KG	U	4	R
100104	R	108101	4-Methyl-2-pentanone	1300	UG/KG	U	4	R
100104	R	591786	2-Hexanone	1300	UG/KG	U	4	R
100104	R	127184	Tetrachlorethene	630	UG/KG	U	4	R
100104	R	79345	1,1,2,2-Tetrachloroethane	630	UG/KG	U	4	R
100104	R	108883	Toluene	6800	UG/KG		4	R

Chemical Validation Qualifiers for OUA - 11/25/92

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100104		84662	Diethyl phthalate	350	UG/KG	U	4	R
100104		7005723	4-Chlorophenylphenyl ether	350	UG/KG	U	4	R
100104		86737	Fluorene	350	UG/KG	U	4	R
100016		100016	4-Nitroaniline	1700	UG/KG	U	4	R
100104		534521	4,6-Dinitro-2-methylphenol	1700	UG/KG	U	4	R
100104		86306	N-Nitrosodiphenylamine	350	UG/KG	U	4	R
100104		101553	4-Bromophenyl phenyl ether	350	UG/KG	U	4	R
100104		118741	Hexachlorobenzene	350	UG/KG	U	4	R
100104		87865	Pentachlorophenol	1700	UG/KG	U	4	R
100104		85018	Phenanthrene	350	UG/KG	U	4	R
100104		120127	Anthracene	350	UG/KG	U	4	R
100104		84742	Di-n-butyl phthalate	350	UG/KG	U	4	R
100104		206440	Fluoranthene	350	UG/KG	U	4	R
100104		129000	Pyrene	350	UG/KG	U	4	R
100104		85687	Butyl benzyl phthalate	350	UG/KG	U	4	R
100104		91941	3,3'-Dichlorobenzidine	700	UG/KG	U	4	R
100104		56553	Benzo(a)anthracene	350	UG/KG	U	4	R
100104		218019	Chrysene	350	UG/KG	U	4	R
100104		117817	bis(2-Ethylhexyl) phthalate	350	UG/KG	U	4	R
100104		117840	Di-n-octyl phthalate	350	UG/KG	U	4	R
100104		205992	Benzo(b)fluoranthene	350	UG/KG	U	4	R
100104		207089	Benzo(k)fluoranthene	350	UG/KG	U	4	R
100104		50328	Benzo(a)pyrene	350	UG/KG	U	4	R
100104		193395	Indeno(1,2,3-cd)pyrene	350	UG/KG	U	4	R
100104		53703	Dibenzo(a,h)anthracene	350	UG/KG	U	4	R
100104		191242	Benzo(g,h,i)perylene	350	UG/KG	U	4	R
100104		74873	Chloromethane	140	UG/KG	J	4	R
100104		74839	Bromomethane	1300	UG/KG	U	4	R
100104		75014	Vinyl chloride	1300	UG/KG	U	4	R
100104		75003	Chloroethane	1300	UG/KG	U	4	R
100104		75092	Methylene chloride	1200	UG/KG	B	4	R
100104		67641	Acetone	3900	UG/KG		4	R
100104		75150	Carbon disulfide	630	UG/KG	U	4	R
100104		75354	1,1-Dichloroethene	630	UG/KG	U	4	R
100104		75343	1,1-Dichloroethane	630	UG/KG	U	4	R
100104		540590	1,2-Dichloroethylene	630	UG/KG	U	4	R
100104		67663	Chloroform	680	UG/KG	B	4	R
100104		107062	1,2-Dichloroethane	630	UG/KG	U	4	R
100104		78933	2-Butanone	13000	UG/KG	B	4	R
100104		71556	1,1,1-Trichloroethane	630	UG/KG	U	4	R
100104		56235	Carbon Tetrachloride	630	UG/KG	U	4	R
100104		108054	Vinyl Acetate	1300	UG/KG	U	4	R
100104		75274	Bromodichloromethane	630	UG/KG	U	4	R
100104		78875	1,2-Dichloropropane	630	UG/KG	U	4	R
100104		10061015	cis-1,3-Dichloropropene	630	UG/KG	U	4	R

Chemical Validation Qualifiers for O4 - 11/25/92

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SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100105		7429905	Aluminum	14800	MG/KG		4	J
100105		7440360	Antimony	5.5	MG/KG	N	4	R
100105		7440382	Arsenic	1420	MG/KG		4	J
100105		7440393	Barium	142	MG/KG		4	J
100105		7440417	Beryllium	31.2	MG/KG		4	J
100105		7440439	Cadmium	69.8	MG/KG		4	J
100105		7440702	Calcium	26200	MG/KG	*	4	J
100105		7440473	Chromium	560	MG/KG		4	J
100105		7440484	Cobalt	2800	MG/KG		4	J
100105		7440508	Copper	2760	MG/KG		4	J
100105		7439896	Iron	45000	MG/KG		4	J
100105		7439921	Lead	1800	MG/KG		4	J
100105		7439954	Magnesium	71400	MG/KG		4	J
100105		7439965	Manganese	5940	MG/KG		4	J
100105		7439976	Mercury	0.08	MG/KG		4	R
100105		7440020	Nickel	3040	MG/KG		4	J
100105		7440097	Potassium	3740	MG/KG		4	J
100105		7782492	Selenium	204	MG/KG		4	J
100105		7440224	Silver	13.3	MG/KG		4	J
100105		7440235	Sodium	51700	MG/KG		4	J
100105		7440280	Thallium	5.5	MG/KG		4	J
100105		7440622	Vanadium	2540	MG/KG	E	4	J
100105		7440666	Zinc	672	MG/KG	E	4	J
100105		57125	Cyanide	0.50	MG/KG		4	R
100105		319846	alpha-BHC	8.6	UG/KG	U	4	R
100105		319857	beta-BHC	8.6	UG/KG	U	4	R
100105		319868	delta-BHC	8.6	UG/KG	U	4	R
100105		58899	gamma-BHC (Lindane)	8.6	UG/KG	U	4	R
100105		76448	Heptachlor	8.6	UG/KG	U	4	R
100105		309002	Aldrin	8.6	UG/KG	U	4	R
100105		1024573	Heptachlor epoxide	8.6	UG/KG	U	4	R
100105		959988	Endosulfan-I	8.6	UG/KG	U	4	R
100105		60571	Dieldrin	17	UG/KG	U	4	R
100105		72559	4,4'-DDE	17	UG/KG	U	4	R
100105		72208	Endrin	17	UG/KG	U	4	R
100105		33213659	Endosulfan II	17	UG/KG	U	4	R
100105		72548	4,4'-DDD	17	UG/KG	U	4	R
100105		1031078	Endosulfan sulfate	17	UG/KG	U	4	R
100105		50293	4,4'-DDT	17	UG/KG	U	4	R
100105		72435	Methoxychlor	86	UG/KG	U	4	R
100105		53494705	Endrin ketone	17	UG/KG	U	4	R
100105		5103719	alpha-Chlordane	86	UG/KG	U	4	R
100105		5103742	gamma-Chlordane	86	UG/KG	U	4	R
100105		8001352	Toxaphene	170	UG/KG	U	4	R
100105		12674112	Aroclor-1016	86	UG/KG	U	4	R

Chemical Validation Qualifiers for 004 - 11/25/92

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QAL	ASL	QAL
100104	R	108907	Chlorobenzene	630	UG/KG	U	4	R
100104	R	100414	Ethylbenzene	630	UG/KG	U	4	R
100104	R	100425	Styrene	630	UG/KG	U	4	R
100104	R	1330207	Total xylenes	630	UG/KG	U	4	R

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100105		84662	Diethyl phthalate	360	UG/KG	U	4	R
100105		7005723	4-Chlorophenylphenyl ether	360	UG/KG	U	4	R
100105		86737	Fluorene	360	UG/KG	U	4	R
100105		100016	4-Nitroaniline	1700	UG/KG	U	4	R
100105		534521	4,6-Dinitro-2-methylphenol	1700	UG/KG	U	4	R
100105		86306	N-Nitrosodiphenylamine	360	UG/KG	U	4	R
100105		101553	4-Bromophenyl phenyl ether	360	UG/KG	U	4	R
100105		118741	Hexachlorobenzene	360	UG/KG	U	4	R
100105		87865	Pentachlorophenol	1700	UG/KG	U	4	R
100105		85018	Phenanthrene	360	UG/KG	U	4	R
100105		120127	Anthracene	360	UG/KG	U	4	R
100105		84742	Di-n-butyl phthalate	360	UG/KG	U	4	R
100105		206440	Fluoranthene	360	UG/KG	U	4	R
100105		129000	Pyrene	360	UG/KG	U	4	R
100105		85687	Butyl benzyl phthalate	360	UG/KG	U	4	R
100105		91941	3,3'-Dichlorobenzidine	710	UG/KG	U	4	R
100105		56553	Benzo(a)anthracene	360	UG/KG	U	4	R
100105		218019	Chrysene	360	UG/KG	U	4	R
100105		117817	bis(2-Ethylhexyl) phthalate	360	UG/KG	U	4	R
100105		117840	Di-n-octyl phthalate	360	UG/KG	U	4	R
100105		205992	Benzo(b)fluoranthene	360	UG/KG	U	4	R
100105		207089	Benzo(k)fluoranthene	360	UG/KG	U	4	R
100105		50328	Benzo(a)pyrene	360	UG/KG	U	4	R
100105		193395	Indeno(1,2,3-cd)pyrene	360	UG/KG	U	4	R
100105		53703	Dibenzo(a,h)anthracene	360	UG/KG	U	4	R
100105		191242	Benzo(g,h,i)perylene	360	UG/KG	U	4	R
100105	R	74873	Chloromethane	1300	UG/KG	U	4	R
100105	R	74839	Bromomethane	1300	UG/KG	U	4	R
100105	R	75014	Vinyl chloride	1300	UG/KG	U	4	R
100105	R	75003	Chloroethane	1300	UG/KG	U	4	R
100105	R	75092	Methylene chloride	1000	UG/KG	B	4	R
100105	R	67641	Acetone	12000	UG/KG		4	R
100105	R	75150	Carbon disulfide	630	UG/KG	U	4	R
100105	R	75354	1,1-Dichloroethene	630	UG/KG	U	4	R
100105	R	75343	1,1-Dichloroethane	630	UG/KG	U	4	R
100105	R	540590	1,2-Dichloroethylene	630	UG/KG	U	4	R
100105	R	67663	Chloroform	560	UG/KG	BJ	4	R
100105	R	107062	1,2-Dichloroethane	630	UG/KG	U	4	R
100105	R	78933	2-Butanone	16000	UG/KG	B	4	R
100105	R	71556	1,1,1-Trichloroethane	630	UG/KG	U	4	R
100105	R	56235	Carbon Tetrachloride	630	UG/KG	U	4	R
100105	R	108054	Vinyl Acetate	1300	UG/KG	U	4	R
100105	R	75274	Bromodichloromethane	630	UG/KG	U	4	R
100105	R	78875	1,2-Dichloropropane	630	UG/KG	U	4	R
100105	R	10061015	cis-1,3-Dichloropropene	630	UG/KG	U	4	R

Chemical Validation Qualifiers for CU4 - 11/25/92

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100105		11104282	Aroclor-1221	86	UG/KG	U	4	R
100105		11141165	Aroclor-1232	86	UG/KG	U	4	R
100105		53469219	Aroclor-1242	86	UG/KG	U	4	R
100105		12672296	Aroclor-1248	86	UG/KG	U	4	R
100105		11097691	Aroclor-1254	170	UG/KG	U	4	R
100105		11096825	Aroclor-1260	170	UG/KG	U	4	R
100105		108952	Phenol	360	UG/KG	U	4	R
100105		111444	bis(2-Chloroethyl)ether	360	UG/KG	U	4	R
100105		95578	2-Chlorophenol	360	UG/KG	U	4	R
100105		541731	1,3-Dichlorobenzene	360	UG/KG	U	4	R
100105		106467	1,4-Dichlorobenzene	360	UG/KG	U	4	R
100105		100516	Benzyl alcohol	360	UG/KG	U	4	R
100105		95501	1,2-Dichlorobenzene	360	UG/KG	U	4	R
100105		95487	2-Methylphenol	360	UG/KG	U	4	R
100105		108601	bis(2-Chloroisopropyl) ether	360	UG/KG	U	4	R
100105		106445	4-Methylphenol	360	UG/KG	U	4	R
100105		621647	N-Nitroso-di-n-propylamine	360	UG/KG	U	4	R
100105		67721	Hexachloroethane	360	UG/KG	U	4	R
100105		98953	Nitrobenzene	360	UG/KG	U	4	R
100105		78591	Isophorone	360	UG/KG	U	4	R
100105		88755	2-Nitrophenol	360	UG/KG	U	4	R
100105		105679	2,4-Dimethylphenol	360	UG/KG	U	4	R
100105		65850	Benzoic acid	1700	UG/KG	U	4	R
100105		111911	bis(2-Chloroethoxy)methane	360	UG/KG	U	4	R
100105		120832	2,4-Dichlorophenol	360	UG/KG	U	4	R
100105		120821	1,2,4-Trichlorobenzene	360	UG/KG	U	4	R
100105		91203	Naphthalene	360	UG/KG	U	4	R
100105		106478	4-Chloroaniline	360	UG/KG	U	4	R
100105		87683	Hexachlorobutadiene	360	UG/KG	U	4	R
100105		59507	4-Chloro-3-methylphenol	360	UG/KG	U	4	R
100105		91576	2-Methylnaphthalene	360	UG/KG	U	4	R
100105		77474	Hexachlorocyclopentadiene	360	UG/KG	U	4	R
100105		88062	2,4,6-Trichlorophenol	360	UG/KG	U	4	R
100105		95954	2,4,5-Trichlorophenol	1700	UG/KG	U	4	R
100105		91587	2-Chloronaphthalene	360	UG/KG	U	4	R
100105		88744	2-Nitroaniline	1700	UG/KG	U	4	R
100105		131113	Dimethyl phthalate	360	UG/KG	U	4	R
100105		208968	Acenaphthylene	360	UG/KG	U	4	R
100105		606202	2,6-Dinitrotoluene	360	UG/KG	U	4	R
100105		99092	3-Nitroaniline	1700	UG/KG	U	4	R
100105		83329	Acenaphthene	360	UG/KG	U	4	R
100105		51285	2,4-Dinitrophenol	1700	UG/KG	U	4	R
100105		100027	4-Nitrophenol	1700	UG/KG	U	4	R
100105		132649	Dibenzofuran	360	UG/KG	U	4	R
100105		121142	2,4-Dinitrotoluene	360	UG/KG	U	4	R

Chemical Validation Qualifiers for OUA - 11/25/92

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SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100106		7429905	Aluminum	13500	MG/KG		4	J
100106		7440360	Antimony	5.8	MG/KG	N	4	R
100106		7440382	Arsenic	1010	MG/KG		4	J
100106		7440393	Barium	118	MG/KG		4	J
100106		7440417	Beryllium	13.9	MG/KG		4	J
100106		7440439	Cadmium	24.2	MG/KG		4	J
100106		7440702	Calcium	25600	MG/KG	*	4	J
100106		7440473	Chromium	443	MG/KG		4	J
100106		7440484	Cobalt	3520	MG/KG		4	J
100106		7440508	Copper	1640	MG/KG		4	J
100106		7439896	Iron	40000	MG/KG		4	J
100106		7439921	Lead	1960	MG/KG		4	J
100106		7439954	Magnesium	80900	MG/KG		4	J
100106		7439965	Manganese	5290	MG/KG		4	J
100106		7439976	Mercury	0.10	MG/KG		4	R
100106		7440020	Nickel	3830	MG/KG		4	J
100106		7440097	Potassium	1300	MG/KG		4	J
100106		7782492	Selenium	186	MG/KG		4	J
100106		7440224	Silver	9.5	MG/KG		4	J
100106		7440235	Sodium	27000	MG/KG		4	J
100106		7440280	Thallium	4.0	MG/KG		4	J
100106		7440622	Vanadium	418	MG/KG	E	4	J
100106		7440666	Zinc	449	MG/KG	E	4	J
100106		57125	Cyanide	0.52	MG/KG		4	R
100106		319846	alpha-BHC	12	UG/KG	U	4	R
100106		319857	beta-BHC	12	UG/KG	U	4	R
100106		319868	delta-BHC	12	UG/KG	U	4	R
100106		58899	gamma-BHC (Lindane)	12	UG/KG	U	4	R
100106		76448	Heptachlor	12	UG/KG	U	4	R
100106		309002	Aldrin	12	UG/KG	U	4	R
100106		1024573	Heptachlor epoxide	12	UG/KG	U	4	R
100106		959988	Endosulfan-I	12	UG/KG	U	4	R
100106		60571	Dieldrin	23	UG/KG	U	4	R
100106		72559	4,4'-DDE	23	UG/KG	U	4	R
100106		72208	Endrin	23	UG/KG	U	4	R
100106		33213659	Endosulfan II	23	UG/KG	U	4	R
100106		72548	4,4'-DDD	23	UG/KG	U	4	R
100106		1031078	Endosulfan sulfate	23	UG/KG	U	4	R
100106		50293	4,4'-DDT	23	UG/KG	U	4	R
100106		72435	Methoxychlor	120	UG/KG	U	4	R
100106		53494705	Endrin ketone	23	UG/KG	U	4	R
100106		5103719	alpha-Chlordane	120	UG/KG	U	4	R
100106		5103742	gamma-Chlordane	120	UG/KG	U	4	R
100106		8001352	Toxaphene	230	UG/KG	U	4	R
100106		12674112	Aroclor-1016	120	UG/KG	U	4	R

Chemical Validation Qualifiers for OU4 - 11/25/92

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100105	R	79016	Trichloroethene	630	UG/KG	U	4	R
100105	R	124481	Dibromochloromethane	630	UG/KG	U	4	R
100105	R	79005	1,1,2-Trichloroethane	630	UG/KG	U	4	R
100105	R	71432	Benzene	630	UG/KG	U	4	R
100105	R	10061026	trans-1,3-Dichloropropene	630	UG/KG	U	4	R
100105	R	75252	Bromoform	630	UG/KG	U	4	R
100105	R	108101	4-Methyl-2-pentanone	1300	UG/KG	U	4	R
100105	R	591786	2-Hexanone	1300	UG/KG	U	4	R
100105	R	127184	Tetrachloroethene	630	UG/KG	U	4	R
100105	R	79345	1,1,2,2-Tetrachloroethane	630	UG/KG	U	4	R
100105	R	108883	Toluene	3400	UG/KG	B	4	R
100105	R	108907	Chlorobenzene	630	UG/KG	U	4	R
100105	R	100414	Ethylbenzene	630	UG/KG	U	4	R
100105	R	100425	Styrene	630	UG/KG	U	4	R
100105	R	1330207	Total xylenes	630	UG/KG	U	4	R

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100106		11104282	Aroclor-1221	120	UG/KG	U	4	R
100106		11141165	Aroclor-1232	120	UG/KG	U	4	R
100106		53469219	Aroclor-1242	120	UG/KG	U	4	R
100106		12672296	Aroclor-1248	120	UG/KG	U	4	R
100106		11097691	Aroclor-1254	230	UG/KG	U	4	R
100106		11096825	Aroclor-1260	230	UG/KG	U	4	R
100106		108952	Phenol	350	UG/KG	U	4	R
100106		111444	bis(2-Chloroethyl)ether	350	UG/KG	U	4	R
100106		95578	2-Chlorophenol	350	UG/KG	U	4	R
100106		541731	1,3-Dichlorobenzene	350	UG/KG	U	4	R
100106		106467	1,4-Dichlorobenzene	350	UG/KG	U	4	R
100106		100516	Benzyl alcohol	350	UG/KG	U	4	R
100106		95501	1,2-Dichlorobenzene	350	UG/KG	U	4	R
100106		95487	2-Methylphenol	350	UG/KG	U	4	R
100106		108601	bis(2-Chloroisopropyl) ether	350	UG/KG	U	4	R
100106		106445	4-Methylphenol	350	UG/KG	U	4	R
100106		621647	N-Nitroso-di-n-propylamine	350	UG/KG	U	4	R
100106		67721	Hexachloroethane	350	UG/KG	U	4	R
100106		98953	Nitrobenzene	350	UG/KG	U	4	R
100106		78591	Isophorone	350	UG/KG	U	4	R
100106		88755	2-Nitrophenol	350	UG/KG	U	4	R
100106		105679	2,4-Dimethylphenol	350	UG/KG	U	4	R
100106		65850	Benzoic acid	1700	UG/KG	U	4	R
100106		111911	bis(2-Chloroethoxy)methane	350	UG/KG	U	4	R
100106		120832	2,4-Dichlorophenol	350	UG/KG	U	4	R
100106		120821	1,2,4-Trichlorobenzene	350	UG/KG	U	4	R
100106		91203	Naphthalene	350	UG/KG	U	4	R
100106		106478	4-Chloroaniline	350	UG/KG	U	4	R
100106		87683	Hexachlorobutadiene	350	UG/KG	U	4	R
100106		59507	4-Chloro-3-methylphenol	350	UG/KG	U	4	R
100106		91576	2-Methylnaphthalene	350	UG/KG	U	4	R
100106		77474	Hexachlorocyclopentadiene	350	UG/KG	U	4	R
100106		88062	2,4,6-Trichlorophenol	350	UG/KG	U	4	R
100106		95954	2,4,5-Trichlorophenol	340	UG/KG	U	4	R
100106		91587	2-Chloronaphthalene	350	UG/KG	U	4	R
100106		88744	2-Nitroaniline	1700	UG/KG	U	4	R
100106		131113	Dimethyl phthalate	350	UG/KG	U	4	R
100106		208968	Acenaphthylene	350	UG/KG	U	4	R
100106		606202	2,6-Dinitrotoluene	350	UG/KG	U	4	R
100106		99092	3-Nitroaniline	1700	UG/KG	U	4	R
100106		83329	Acenaphthene	350	UG/KG	U	4	R
100106		51285	2,4-Dinitrophenol	1700	UG/KG	U	4	R
100106		100027	4-Nitrophenol	1700	UG/KG	U	4	R
100106		132649	Dibenzofuran	350	UG/KG	U	4	R
100106		121142	2,4-Dinitrotoluene	350	UG/KG	U	4	R

Chemical Validation Qualifiers for U4 - 11/25/92

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100106		84662	Diethyl phthalate	350	UG/KG	U	4	R
100106		7005723	4-Chlorophenylphenyl ether	350	UG/KG	U	4	R
100106		86737	Fluorene	350	UG/KG	U	4	R
100106		100016	4-Nitroaniline	1700	UG/KG	U	4	R
100106		534521	4,6-Dinitro-2-methylphenol	1700	UG/KG	U	4	R
100106		86306	N-Nitrosodiphenylamine	350	UG/KG	U	4	R
100106		101553	4-Bromophenyl phenyl ether	350	UG/KG	U	4	R
100106		118741	Hexachlorobenzene	350	UG/KG	U	4	R
100106		87865	Pentachlorophenol	1700	UG/KG	U	4	R
100106		85018	Phenanthrene	350	UG/KG	U	4	R
100106		120127	Anthracene	350	UG/KG	U	4	R
100106		84742	Di-n-butyl phthalate	350	UG/KG	U	4	R
100106		206440	Fluoranthene	350	UG/KG	U	4	R
100106		129000	Pyrene	350	UG/KG	U	4	R
100106		85687	Butyl benzyl phthalate	350	UG/KG	U	4	R
100106		91941	3,3'-Dichlorobenzidine	690	UG/KG	U	4	R
100106		56553	Benzo(a)anthracene	350	UG/KG	U	4	R
100106		218019	Chrysene	350	UG/KG	U	4	R
100106		117817	bis(2-Ethylhexyl) phthalate	350	UG/KG	U	4	R
100106		117840	Di-n-octyl phthalate	350	UG/KG	U	4	R
100106		205992	Benzo(b)fluoranthene	350	UG/KG	U	4	R
100106		207089	Benzo(k)fluoranthene	350	UG/KG	U	4	R
100106		50328	Benzo(a)pyrene	350	UG/KG	U	4	R
100106		193395	Indeno(1,2,3-cd)pyrene	350	UG/KG	U	4	R
100106		53703	Dibenzo(a,h)anthracene	350	UG/KG	U	4	R
100106		191242	Benzo(g,h,i)perylene	350	UG/KG	U	4	R
100106	R	74873	Chloromethane	1300	UG/KG	U	4	R
100106	R	74839	Bromomethane	1300	UG/KG	U	4	R
100106	R	75014	Vinyl chloride	1300	UG/KG	U	4	R
100106	R	75003	Chloroethane	1300	UG/KG	U	4	R
100106	R	75092	Methylene chloride	1600	UG/KG	B	4	R
100106	R	67641	Acetone	3400	UG/KG	B	4	R
100106	R	75150	Carbon disulfide	630	UG/KG	U	4	R
100106	R	75354	1,1-Dichloroethene	630	UG/KG	U	4	R
100106	R	75343	1,1-Dichloroethane	630	UG/KG	U	4	R
100106	R	540590	1,2-Dichloroethylene	630	UG/KG	U	4	R
100106	R	67663	Chloroform	810	UG/KG	B	4	R
100106	R	107062	1,2-Dichloroethane	630	UG/KG	U	4	R
100106	R	78933	2-Butanone	9700	UG/KG	B	4	R
100106	R	71556	1,1,1-Trichloroethane	630	UG/KG	U	4	R
100106	R	56235	Carbon Tetrachloride	630	UG/KG	U	4	R
100106	R	108054	Vinyl Acetate	1300	UG/KG	U	4	R
100106	R	75274	Bromodichloromethane	630	UG/KG	U	4	R
100106	R	78875	1,2-Dichloropropane	630	UG/KG	U	4	R
100106	R	10061015	cis-1,3-Dichloropropene	630	UG/KG	U	4	R

Chemical Validation Qualifiers for Q04 - 11/25/92

SAMPLE	SUFFIX	CAS NUMBER	CONSTITUENT	RESULT	UNITS	LAB QUAL	ASL	QUAL
100106	R	79016	Trichloroethene	630	UG/KG	U	4	R
100106	R	124481	Dibromochloromethane	630	UG/KG	U	4	R
100106	R	79005	1,1,2-Trichloroethane	630	UG/KG	U	4	R
100106	R	71432	Benzene	630	UG/KG	U	4	R
100106	R	10061026	trans-1,3-Dichloropropene	630	UG/KG	U	4	R
100106	R	75252	Bromoforn	630	UG/KG	U	4	R
100106	R	108101	4-Methyl-2-pentanone	1300	UG/KG	U	4	R
100106	R	591786	2-Hexanone	1300	UG/KG	U	4	R
100106	R	127184	Tetrachlorethene	630	UG/KG	U	4	R
100106	R	79345	1,1,2,2-Tetrachloroethane	630	UG/KG	U	4	R
100106	R	108883	Toluene	180	UG/KG	BJ	4	R
100106	R	108907	Chlorobenzene	630	UG/KG	U	4	R
100106	R	100414	Ethylbenzene	630	UG/KG	U	4	R
100106	R	100425	Styrene	630	UG/KG	U	4	R
100106	R	1330207	Total xylenes	630	UG/KG	U	4	R

FINAL REPORT - REV. 0
SILO 3 REMOVAL ACTION
February 19, 1993

ATTACHMENT B - SILO 3 REMOVAL ACTION
CONSTRUCTION CONTRACTOR'S WORK SCOPE

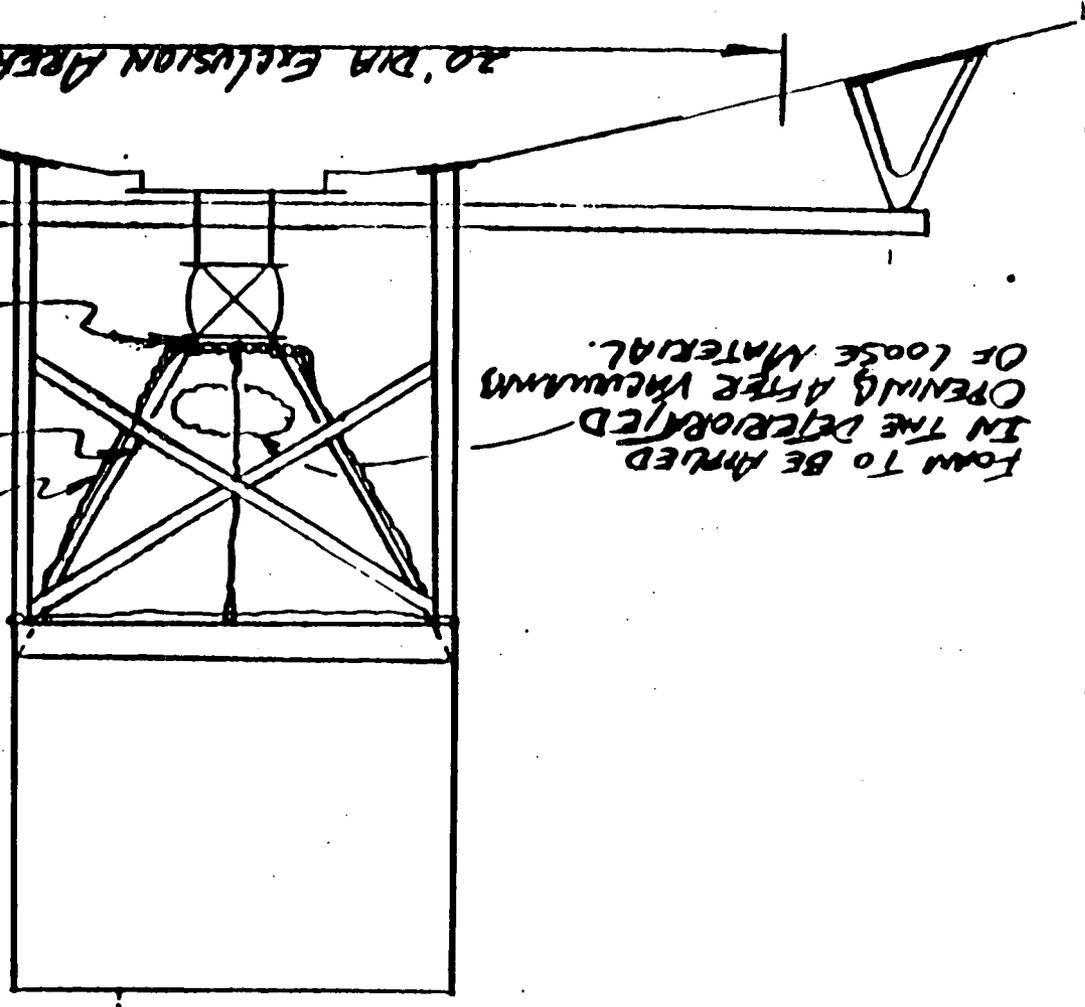
20' DIA EXCLUSION AREA

2 - 24' LONG x 14" WIDE-SINGING BOARD. 500 LB CAPACITY EACH.

4144

CABLE SUSPENSION SYSTEM.
FOAM TO BE APPLIED BETWEEN THE EXPANDED METAL AND THE HOPPER WALL ON ALL FOUR SIDES.
FRONT CUT TO BE MADE JUST ABOVE THE ROTARY VALVE.

FOAM TO BE APPLIED IN THE DEGRADATED OPENINGS AFTER VACUUMING OF LOOSE MATERIAL.



Silo-3 Dust Collector

CONSTRUCTION CONTRACTOR

SILO 3 REMOVAL ACTION WORK SCOPE

The method used to stabilize and contain the hopper section for demolition will incorporate a cable and chain suspension system along with expanded metal and polyurethane foam.

A 1/4" cable will be used from each of the four corner legs down to a chain collar just above the rotary feeder valve. This will naturally hang in the same configuration as the side walls of the hopper walls. A horizontal cable will be connected between the legs, just under the main support steel frame at the top of the hopper. An intermediate cable will be suspended from the mid-point of this horizontal cable down to the chain collar. This will be done on all four sides. Light gauge expanded metal sheeting will be cut to the same configuration as the side wall of the hopper and attached on the inside of the cable suspension system with the use of tie wrap connectors. The expanded metal will have optimal three inch (3") hand holes cut in various location for access for foam application. Once the expanded metal panels have been installed, polyurethane foam will be applied to fill the void between the hopper side wall and the expanded metal/suspension system.

DEMOLITION OF ASSOCIATED PIPING, ELECTRICAL AND STRUCTURAL STEEL

The next step after the hopper section has been stabilized will be to demolish all associated piping, electrical and structural surrounding the dust collector. All components will be size reduced when practiced on top of the silo, wrapped in plastic, lowered by a crane and loaded into white metal boxes at a staging area on the ground.

NOTE: Primary means for cutting will be done by mechanical methods. Burning and welding may only be done if no other means are available and must be approved by RUST Safety and applicable permitting requirements.

REMOVAL AND DEMOLITION OF THE DUST COLLECTOR HOUSING

Once the remainder of the piping, electrical and structural is removed, then the dust collector will be detached from the top of the silo and hoisted down and placed into a temporary enclosure north of Silo 3 where it will be decontaminated, size reduced and loaded into white metal boxes.

A specific hoisting and rigging plan will be developed for the removal of the dust collector from the silo into the temporary enclosure.

All openings on the silo surface will be closed and sealed with gasketed steel plates and C-clamps.

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SILO 3 REMOVAL ACTION
February 19, 1993

ATTACHMENT C - MATERIAL EVALUATION FORM

**FMPC
MATERIAL EVALUATION FORM
(Continued)**

MEF NO: 1747

MEF REV. NO: _____

SECTION II - FACILITY AND MATERIALS EVALUATION			
1. IS MATERIAL A WASTE? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	2. IS IT EXCLUDED UNDER FEDERAL <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	3. IS IT EXCLUDED UNDER RCRA <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	4. DOES IT CONTAIN LISTED WASTE AS PER 261 SUBPART D? <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/> 18 <input type="checkbox"/> 19 <input type="checkbox"/> 20 <input type="checkbox"/> 21 <input type="checkbox"/> 22 <input type="checkbox"/> 23 <input type="checkbox"/> 24 <input type="checkbox"/> 25 <input type="checkbox"/> 26 <input type="checkbox"/> 27 <input type="checkbox"/> 28 <input type="checkbox"/> 29 <input type="checkbox"/> 30 <input type="checkbox"/> 31 <input type="checkbox"/> 32 <input type="checkbox"/> 33 <input type="checkbox"/> 34 <input type="checkbox"/> 35 <input type="checkbox"/> 36 <input type="checkbox"/> 37 <input type="checkbox"/> 38 <input type="checkbox"/> 39 <input type="checkbox"/> 40 <input type="checkbox"/> 41 <input type="checkbox"/> 42 <input type="checkbox"/> 43 <input type="checkbox"/> 44 <input type="checkbox"/> 45 <input type="checkbox"/> 46 <input type="checkbox"/> 47 <input type="checkbox"/> 48 <input type="checkbox"/> 49 <input type="checkbox"/> 50 <input type="checkbox"/> 51 <input type="checkbox"/> 52 <input type="checkbox"/> 53 <input type="checkbox"/> 54 <input type="checkbox"/> 55 <input type="checkbox"/> 56 <input type="checkbox"/> 57 <input type="checkbox"/> 58 <input type="checkbox"/> 59 <input type="checkbox"/> 60 <input type="checkbox"/> 61 <input type="checkbox"/> 62 <input type="checkbox"/> 63 <input type="checkbox"/> 64 <input type="checkbox"/> 65 <input type="checkbox"/> 66 <input type="checkbox"/> 67 <input type="checkbox"/> 68 <input type="checkbox"/> 69 <input type="checkbox"/> 70 <input type="checkbox"/> 71 <input type="checkbox"/> 72 <input type="checkbox"/> 73 <input type="checkbox"/> 74 <input type="checkbox"/> 75 <input type="checkbox"/> 76 <input type="checkbox"/> 77 <input type="checkbox"/> 78 <input type="checkbox"/> 79 <input type="checkbox"/> 80 <input type="checkbox"/> 81 <input type="checkbox"/> 82 <input type="checkbox"/> 83 <input type="checkbox"/> 84 <input type="checkbox"/> 85 <input type="checkbox"/> 86 <input type="checkbox"/> 87 <input type="checkbox"/> 88 <input type="checkbox"/> 89 <input type="checkbox"/> 90 <input type="checkbox"/> 91 <input type="checkbox"/> 92 <input type="checkbox"/> 93 <input type="checkbox"/> 94 <input type="checkbox"/> 95 <input type="checkbox"/> 96 <input type="checkbox"/> 97 <input type="checkbox"/> 98 <input type="checkbox"/> 99 <input type="checkbox"/> 100
5. DOES IT EXHIBIT ANY CHARACTERISTICS AS PER 261 SUBPART C? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		6. IS IT A RCRA HAZARDOUS SUBSTANCE? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
7. CLASSIFICATION AS A WASTE: <input type="checkbox"/> RCRA Hazardous Waste <input type="checkbox"/> Source Material <input checked="" type="checkbox"/> Non-RCRA Waste <input checked="" type="checkbox"/> Radioactive		8. PRIMARY BASIS FOR CLASSIFICATION: <input type="checkbox"/> General Information <input checked="" type="checkbox"/> Prior Material Evaluation	
9. <input type="checkbox"/> Needs Further Action (in summary)		10. IS IT SUBJECT TO LAND BAN RESTRICTIONS? <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES Effective Date: _____	
11. OTHER INFORMATION SOURCES USED: <u>WMCO: EC(SW/ET): 91-034</u>			
12. PRIMARY CONTACT INDIVIDUAL: <u>Larry Honigford</u>		EXTENSION: <u>6910</u>	DATE COMPLETED: <u>8/12/92</u>
13. IS SAMPLING REQUIRED? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		14. IS TRANSFER TO CONTROLLED HOLDING AREA REQUIRED? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	15. INFORMATION ACTION COMPLETION DATE: _____
16. HEALTH AND SAFETY CONCERNS REQUIREMENTS:		17. SIGNATURE AND DATE: _____	
SECTION III - ENVIRONMENTAL ENGINEERING			
1. RECOMMENDED STORAGE CONTAINER MATERIAL: <input type="checkbox"/> Carbon Steel <input type="checkbox"/> Stainless Steel <input type="checkbox"/> Polyethylene <input type="checkbox"/> Other: _____		2. APPLICABLE REACTIVITY GROUP CODES: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/> G <input type="checkbox"/> H	
3. OTHER INFORMATION SOURCES USED: _____			
4. PRIMARY CONTACT INDIVIDUAL: <u>[Signature]</u>		EXTENSION: <u>6148</u>	DATE COMPLETED: <u>8-13-92</u>
SECTION IV - TOXIC AND SOLID WASTE PROGRAMS			
1. PROPER D.O.T. SHIPPING NAME: <u>Radioactive material LSA n.o.s.</u>			
2. D.O.T. HAZARD CLASS: <u>Radioactive material</u>		3. REQUIRED LABELS: <u>Radioactive - LSA</u>	
4. D.O.T. IDENTIFICATION NO.: <u>[UN] [NA] 12912</u>		5. EPA WASTE NO.: <u>None</u>	
6. APPLICABLE REACTIVITY GROUP CODES (COPY FROM SECTION III ITEM 2)		7. FMPC SRC AND MTC (COPY FROM SECTION I ITEM 1)	
8. IS A REVISION TO MEF REQUIRED? <input type="checkbox"/> YES <input type="checkbox"/> NO			
9. DISTRIBUTION:			
MATERIAL GENERATOR:	<u>S.A. RADABAUGH</u>	DATE:	<u>8/13/92</u>
ENVIRONMENTAL ENGINEERING:	<u>[Signature]</u>	DATE:	<u>8-13-92</u>
ENVIRONMENTAL MONITORING:	<u>[Signature]</u>	DATE:	_____
MCRA:	<u>H.J. Knue</u>	DATE:	_____
RS&T:	<u>R.L. Kouchan</u>	DATE:	_____
FACILITIES AND WAREHOUSING:	<u>B.S. Perkins</u>	DATE:	_____
FINE:	<u>L.G. Honigford</u>	DATE:	_____
CONTROLLED HOLDING AREA:	<u>C.J. Stafford</u>	DATE:	_____
10. PRIMARY CONTACT INDIVIDUAL: <u>Betty Bruckner</u>		EXTENSION: <u>9074</u>	DATE COMPLETED: <u>8/11/92</u>

5/19/92

FMPCC MATERIAL EVALUATION FORM

MEF NO: 1747

MEF REV. NO:

SECTION I - MATERIAL GENERATOR			
1. FMPCC SAC: MTC	2. PLANT AND/OR BUILDING NO.: K-65 SILO NO. 3	3. PROCESS AREA: K-65 SILO NO. 3	
4. EQUIPMENT NAME(S): K-65 SILO 3 HOOPER, Dust Collector, Airline, Valves, Steel		5. MEF NO. DATE:	6. MEF REV. DATE:
7. APPROXIMATE NET WEIGHT OF FULL CONTAINER? <input type="checkbox"/> <100 lbs. <input type="checkbox"/> 100 to 1000 lbs. <input checked="" type="checkbox"/> >1000 lbs.		8. DOES MATERIAL CONSIST OF MORE THAN ONE SUBSTANCE? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
9. IS MATERIAL A WASTE? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	10. COMMON NAMES: Metal Oxide, Thorium Uranium	11. CHEMICAL NAMES: See Attached Information	
12. COMMON CHEMICAL NAME SOURCE: <input type="checkbox"/> Process Information <input type="checkbox"/> MSDS <input type="checkbox"/> Container Label <input type="checkbox"/> FMPCC Lot Code	OTHER: Laboratory Analyses	13. SIMILAR MATERIAL NAME: 14. SIMILAR MATERIAL LOT CODE(S):	
15. SUBSTANCES SUSPECTED:			
<input type="checkbox"/> Aerosols	<input type="checkbox"/> Cresol	<input type="checkbox"/> Endrine	<input type="checkbox"/> Methylene Chloride
<input checked="" type="checkbox"/> Arsenic	<input type="checkbox"/> m-Cresol	<input type="checkbox"/> Heptachlor	<input type="checkbox"/> Motor/Engine Oil
<input checked="" type="checkbox"/> Barium	<input type="checkbox"/> o-Cresol	<input type="checkbox"/> Hexachlorobenzene	<input type="checkbox"/> Nitrobenzene
<input type="checkbox"/> Benzene	<input type="checkbox"/> p-Cresol	<input type="checkbox"/> Hexachloroethane	<input type="checkbox"/> Other Organics
<input checked="" type="checkbox"/> Cadmium	<input type="checkbox"/> 2,4-D	<input type="checkbox"/> Hexachloro-1,3-butadiene	<input type="checkbox"/> Paint Stripper
<input type="checkbox"/> Carbon Tetrachloride	<input type="checkbox"/> Degreaser	<input type="checkbox"/> Hydraulic Oil	<input type="checkbox"/> Paint Thinner/Mineral Spirits
<input type="checkbox"/> Chloroform	<input type="checkbox"/> 1,4-Dichlorobenzene	<input type="checkbox"/> Ink	<input type="checkbox"/> Pentachlorophenol
<input type="checkbox"/> Chlorobenzene	<input type="checkbox"/> 1,2-Dichloroethane	<input checked="" type="checkbox"/> Lead	<input type="checkbox"/> Perchloroethylene
<input type="checkbox"/> Chloroform	<input type="checkbox"/> 1,1-Dichloroethylene	<input type="checkbox"/> Lindane	<input type="checkbox"/> Pyridine
<input checked="" type="checkbox"/> Chromium	<input type="checkbox"/> 2,4-Dinitrotoluene	<input checked="" type="checkbox"/> Mercury	<input checked="" type="checkbox"/> Selenium
<input type="checkbox"/> Coolants	<input type="checkbox"/> Enamel	<input type="checkbox"/> Methylchlor	<input checked="" type="checkbox"/> Silver
		<input type="checkbox"/> Methyl ethyl ketone	<input type="checkbox"/> Synthetic oil
16. a. REASON FOR SUSPECTING ALL SUBSTANCES AND QUANTITY: Reference Attached Laboratory Analyses			
16. b. SOURCE FOR REASON AND QUANTITY: (Attach MSDS if Available)			
<input type="checkbox"/> Personnel Interviews	<input type="checkbox"/> AEDO Log	<input type="checkbox"/> MSDS	<input checked="" type="checkbox"/> Prior Evaluation of Similar Material
<input type="checkbox"/> Historical Records	<input checked="" type="checkbox"/> Physical Evidence	<input type="checkbox"/> Container Label	
<input type="checkbox"/> FMPCC Lot Code	<input type="checkbox"/> Process Information	<input type="checkbox"/> Spill Report	What Material: SILO 3 Material Sample & Lab Analyses of 1989
		<input type="checkbox"/> Soil Database	SAC: MTC:
18. c. HEALTH AND SAFETY CONCERNS/ REQUIREMENTS: MINIMUM LEVEL 5 Protection Required		18. d. SIGNATURE AND DATE: Thad Guile 5-17-92	
17. HAS THE "FINGERPRINT" VISUAL INSPECTION BEEN COMPLETED? <input type="checkbox"/> YES <input type="checkbox"/> NO	18. NUMBER OF PHASES:	19. BP (IF KNOWN): (Attach Lab Results) See Analyses	20. FLASH POINT (IF KNOWN): (Attach Lab Results) See Analyses
21. HAS A PAINT FILTER TEST BEEN COMPLETED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	Reference Laboratory Analyses. 1989/1992		
22. IS IT REACTIVE? EXPLAIN: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	Please Reference Laboratory Analyses. 1989/1992		
23. IS IT IGNITABLE? EXPLAIN: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	Please Reference Laboratory Analyses. 1989/1992		
24. OTHER INFORMATION (Example: Is the Material a Product or Waste?)	Please reference attached documentation.		
25. ADDITIONAL SOURCES OF INFORMATION:	RCRA Determinations & Documentation		
26. PRIMARY CONTACT INDIVIDUAL: S.A. RADABAUGH or H.H. GLASSY	EXTENSION: 9016 6971	DATE COMPLETED: 5-15-92	

NOTE: Form shall be completed using ink or a typewriter. NOTE: Only WACCO employees shall sign this form.

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(Continued on Reverse)

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SILO 3 REMOVAL ACTION
February 19, 1993

ATTACHMENT D - FEMP ADMINISTRATIVE RECORD REFERENCES

FEMP ADMINISTRATIVE RECORD
REMOVAL ACTION #20 -- SILO 3 EXPEDITED

<u>Index Number</u>	<u>Document Number</u>	<u>Document Title</u>	<u>Rev. #</u>	<u>Document Date</u>	<u>From To</u>	<u># of Pages</u>	<u>Type of Document</u>	<u>Location Number</u>
R-025-101.1 2539		FACT SHEET SILO 3 REMOVAL ACTION DECEMBER 13, 1991		12/13/91		1	FACT SHEET	RA #20 FILE
R-025-101.2 2677	WEMCO:P:91-957	SILO 3 REMOVAL ACTION SCOPE OF WORK		12/17/91	WEMCO DOE-FO	4	LETTER	RA #20 FILE
R-025-205.1 2676	DOE-515-91	SILO 3 REMOVAL ACTION - ACTION MEMORANDUM		12/13/91	DOE-FO WEMCO	2	LETTER	RA #20 FILE
R-025-205.2 2538	DOE-523-92	SILO 3 REMOVAL ACTION		12/19/91	DOE-FO EPA	2	LETTER	RA #20 FILE
R-025-208.1 2682	WEMCO:EVP:92-014	SILO 3 REMOVAL ACTION		01/23/92	WEMCO DOE-FO	1	LETTER	RA #20 FILE
R-025-1003.1 2678	WEMCO:EM(AR):91-087	APPROVAL OF NOTICE OF AVAILABILITY (NOA) FOR THE SILO 3 EXPEDITED REMOVAL ACTION		01/09/92	WEMCO DOE-FO	1	LETTER	RA #20 FILE
R-025-1003.2 2679		THE USDOE ANNOUNCES THE AVAILABILITY FOR PUBLIC REVIEW OF THE ADMINISTRATIVE RECORD FILE FOR THE SILO 3 EXPEDITED REMOVAL ACTION AT THE DOE FERNALD		/ /		1	ENCLOSURE	RA #20 FILE