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9.0 Project Management and Organization

A description of the decommissioning project management and organization for the Kaiser Tulsa facility was provided in the June 2001 Decommissioning Plan (Revised May 2003). Appropriate sections of the June 2001 Decommissioning Plan (Revised May 2003) are referenced below.

9.1 Decommissioning Management Organization

Refer to Section 9.1 of the June 2001 Decommissioning Plan (Revised May 2003) for an outline of the decommissioning organization. Figure 9-1 of the June 2001 Decommissioning Plan (Revised May 2003) depicts the Decommissioning Management Organization and reporting hierarchy.

9.2 Decommissioning Task Management

Refer to Section 9.2 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility relative to written plans and procedures that will be established for the decommissioning.

9.3 Decommissioning Management Positions and Qualifications

Duties and reporting responsibilities of each person in the management organization are described in Section 9.1 of the June 2001 Decommissioning Plan (Revised May 2003). The minimum qualifications for each position are described in Sections 9.1 and 9.3 of the June 2001 Decommissioning Plan (Revised May 2003).

9.4 Training

A training program will be established to meet the following goals:

- Meet or exceed the applicable training requirements specified by the NRC, OSHA, and the U.S. Environmental Protection Agency .
- Ensure that all personnel are knowledgeable of job requirements and are competent in the operation of the equipment they use, are safe in their work practices, and understand the risks associated with their work environment.
- Ensure that personnel meet the requirements of Kaiser to work at the Tulsa site.
- Indoctrinate new employees to ensure that they understand all requirements they are expected to meet.

The training program will include general radiation safety training/monitoring, site orientation, site-specific training, and training verification and documentation. These aspects of the training program are discussed in Section 9.4 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

9.5 Contractor Support

Kaiser will utilize qualified contractors and consultants to implement this DPA in accordance with the written plans and procedures. Depending on the purpose and objective of off-site lab support, an individual from Kaiser's management team (Project Manager, Health Physics Advisor/Radiation Safety Officer (RSO), and Site Administrator) or a Kaiser designated contractor will coordinate and direct activities associated with off-site analytical support. Specific roles and responsibilities will be detailed in site documents or procedures prior to the start of work.

Reference

1. Earth Sciences, June 2001, May 2003, Decommissioning Plan, Tulsa Facility, Tulsa, Oklahoma, Kaiser Aluminum & Chemical Corporation, Baton Rouge, Louisiana.

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10.0 Health and Safety Plan

Chapter 10.0 of the June 2001 Decommissioning Plan (Revised May 2003) provides the general framework and guidance for Health and Safety (H&S) policies, programs, procedures, and practices to be followed during decommissioning activities at the Kaiser Tulsa site. It is the intent of Kaiser to revise the Radiological Control Program Plan that was approved for the ALRP with the necessary revisions. In addition, contractors engaged to perform work related to site remediation will be required to prepare and submit H&S plans of their own that will be specific to activities and services they are to provide or will be required to comply with the Kaiser H&S Plan. Appropriate sections of the June 2001 Decommissioning Plan (Revised May 2003) are referenced below.

10.1 Radiation Safety Controls and Monitoring for Workers

Refer to Section 10.1 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

10.1.1 Workplace Air Sampling Program

Refer to Section 10.1.1 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

10.1.2 Respiratory Protection Program

Refer to Section 10.1.2 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

10.1.3 Internal Exposure Determination

Refer to Section 10.1.3 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

10.1.4 External Exposure Determination

Refer to Section 10.1.4 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

10.1.5 Summation of Internal and External Exposures

Refer to Section 10.1.5 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

10.1.6 Contamination Control Program

Refer to Section 10.1.6 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

10.1.7 Instrumentation Program

Refer to Section 10.1.7 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

10.1.8 Nuclear Criticality Safety

Protection of public H&S from the risk of nuclear criticality during decommissioning is not required at the Tulsa, Oklahoma site since source materials requiring nuclear criticality safety controls do not exist.

10.1.9 Health Physics Audits, Inspections, and Record Keeping Program

Refer to Section 10.1.9 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

Reference

1. Earth Sciences, June 2001, Revised May 2003, Decommissioning Plan, Tulsa Facility, Tulsa, Oklahoma, Kaiser Aluminum & Chemical Corporation, Baton Rouge, Louisiana.

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11.0 Environmental Monitoring and Control Program

Kaiser will implement an Environmental Monitoring Program (EMP) during site decommissioning activities for the specific purpose of evaluating whether the decommissioning activities comply with the regulatory requirements in 10 CFR Part 20 and are adequate to protect workers, the public, and the environment from radiation during decommissioning activities.

The following items must be addressed prior to excavation of affected material:

- Management of water encountered in excavations.
- Management of surface water to minimize contact of water with contaminants and minimize erosion.
- Construction of safe stable excavations, particularly deep excavations where water may be encountered.
- Preparation and implementation of a Dust Control Plan to prevent migration of wind-borne contaminants.
- Identification and protection of existing underground and overhead utilities.
- Implementation of site access controls.
- Implementation of internal traffic controls.
- Management of wastewater as a result of remediation activities.

ALARA reviews will be included in regularly scheduled job meetings. The minutes of these meetings will be distributed to the attendees, the PM, and the RSO. A description of the environmental monitoring and control program for the Kaiser Tulsa facility was provided in the June 2001 Decommissioning Plan (Revised May 2003). Appropriate sections of the June 2001 Decommissioning Plan (Revised May 2003) are referenced below.

11.1 Environmental ALARA Evaluation Program

Refer to Section 11.1 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

11.2 Effluent Monitoring Program

Refer to Section 11.2 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

11.3 Effluent Control Program

Refer to Section 11.3 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

Reference

1. Earth Sciences, June 2001, Revised May 2003, Decommissioning Plan, Tulsa Facility, Tulsa, Oklahoma, Kaiser Aluminum & Chemical Corporation, Baton Rouge, Louisiana.

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12.0 Radioactive Waste Management

A description of the radioactive waste management approach for the Kaiser Tulsa facility was provided in the June 2001 Decommissioning Plan (Revised May 2003). Appropriate sections of the June 2001 Decommissioning Plan (Revised May 2003) are referenced below.

Solid and liquid materials will be generated during the implementation of the planned decommissioning activities in the former operational area of the facility. Kaiser will manage the solid and liquid materials generated from the decommissioning effort in a controlled manner in accordance with applicable NRC, Department of Transportation, and state regulatory requirements. The management approach is based upon minimizing secondary wastes and radiation exposure.

12.1 Solid Material

Two types of solid materials are expected to be generated during the implementation of the DPA: Dry Active Waste (DAW) – Thorium-Containing Soil/Dross and Other Incidental DAW.

12.1.1 Volume Estimate of Thorium-Containing Soil/Dross – Former Operational Area

As discussed in Chapter 8.0 of this DPA, approximately 60,000 ft^3 of solid material (soil/dross), with a Th-232 activity concentration of greater than 3.0 pCi/g, will be handled during the remediation of the former operational area of the facility.

12.1.2 Th-232 Activity Concentrations

The quantity of material SMC and later Kaiser were authorized to possess at one time was amended from time to time, but generally was limited to 30,000 pounds of magnesium-thorium alloy containing no more than 4 percent thorium. This thorium percentage by weight would equal approximately 4,400 pCi/g.

Th-232 activity concentrations for the soil/dross materials relative to the former operational area are discussed in Chapter 4.0 of this DPA. Recent soil characterization activities indicated gross Th-232 activity concentrations in soils ranging from approximately 0.128 to 145 pCi/g. One biased sample of a unique dross material (wrapped in plastic) taken in the area of the original Smelter Building during radiological characterization survey activities in February 2002 contained a Th-232 concentration of 6,429 pCi/g. This elevated concentration is most likely the result of the magnesium recovery process, which removed magnesium mass from the scrap feed material. The removal of magnesium during the process would have decreased the mass of the material, thereby increasing the concentration of Th-232 in the dross

residue. Consequently, Th-232 concentrations in dross could have been increased above the 4 percent by weight limit for the scrap feed material. However, since thorium alloy material only comprised a small fraction of the total magnesium refined and records indicate that thorium-bearing materials were generally only a small fraction (5 percent) of each production batch, it is not surprising that most samples were found to have concentrations well below 4 percent by weight.

12.1.3 Management of Thorium-Containing Soil/Dross

Soil/dross materials with net Th-232 activity concentrations of greater than the $DCGL_w$ (3.0 pCi/g) will be excavated during remediation efforts for the former operational area of the facility. During the site preparation phase of the decommissioning, a controlled stockpile and material handling/ processing/storage area will be constructed in the northwestern part of the property (former Freshwater Pond area). Excavated materials will be transported to the stockpile area for segregation into above- and below-criteria materials. Refer to Section 12.1.3 of the June 2001 Decommissioning Plan (Revised May 2003) for additional information regarding the management of the excavated materials once they reach the stockpile area.

12.1.4 Management of Other Dry Active Waste

Refer to Section 12.1.4 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

12.2 Liquid Material Management

Refer to Section 12.2 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

12.3 Radioactive Waste Disposal

12.3.1 Waste Classification

All radioactive waste materials are expected to be exempt quantities and will be disposed using procedures that follow the applicable requirements of federal regulations (10 CFR 61) and the receiving disposal facility requirements. Refer to Section 12.3.1 of the June 2001 Decommissioning Plan (Revised May 2003) for the basic methods that may be used to ensure accurate profiling of the waste materials.

The volume of the solid material (soil/dross) to be removed during remediation of the former operational area soils was estimated to be 60,000 ft^3. Approximately 50 percent of the volume of soil/dross material

may require off-site disposal. It is anticipated that this material will be exempt, based on the available characterization survey data for the former operational area land areas (see Chapter 4.0).

12.3.2 Waste Packaging, Transfer, and Storage

Refer to Section 12.3.2 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

12.3.3 Waste Transportation

Refer to Section 12.3.3 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

12.3.4 Waste Disposal

Refer to Section 12.3.4 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

12.3.5 Material Segregation

Material segregation activities that will be conducted that during the Kaiser Tulsa site remediation are described in Chapter 8.0 of the June 2001 Decommissioning Plan (Revised May 2003). Chapter 14.0 of the June 2001 Decommissioning Plan (Revised May 2003) contains a description of the techniques and instrumentation that will be used to conduct segregation and clearance activities. All waste management and material segregation activities will be performed in accordance with the QA Program described in Chapter 13.0 of the June 2001 Decommissioning Plan (Revised May 2003).

12.4 Mixed Waste

Based on recent ASCA efforts, solid and liquid mixed waste are not expected to be generated during decommissioning operations. However, should mixed waste be identified during remediation activities, Kaiser will notify the NRC and provide a characterization of such wastes, identify alternate disposal methods to accommodate such wastes, and assess all additional treatment and disposal costs, as needed.

References

1. Earth Sciences, October 2001, Additional Site Characterization Activities, Former Kaiser Aluminum Specialty Products Facility, Tulsa, Oklahoma, Kaiser Aluminum & Chemical Corporation, Baton Rouge, Louisiana.

2. Earth Sciences, June 2001, Revised May 2003, Decommissioning Plan, Tulsa Facility, Tulsa, Oklahoma, Kaiser Aluminum & Chemical Corporation, Baton Rouge, Louisiana.

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13.0 QA Program

A description of the QA program for the decommissioning of the former Kaiser Tulsa facility was provided in the June 2001 Decommissioning Plan (Revised May 2003). Appropriate sections of the June 2001 Decommissioning Plan (Revised May 2003) are referenced below.

13.1 Organization

Refer to Section 13.1 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

13.2 QA Program

Refer to Section 13.2 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

13.3 QC Requirements

Refer to Section 13.3 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

13.4 Document Control

Refer to Section 13.4 of the June 2001 Decommissioning Plan (Revised May 2003) for a description of the document control procedures.

13.5 Control of Measuring and Testing Equipment

Refer to Section 13.5 of the June 2001 Decommissioning Plan (Revised May 2003) for a description of the QA/QC principals to be applied for counting systems and analytical instruments.

13.6 Corrective Action

Refer to Section 13.6 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

13.7 QA Records

Refer to Section 13.7 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

13.8 Audits and Surveillance

Refer to Section 13.8 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

Reference

1. Earth Sciences, June 2001, Revised May 2003, Decommissioning Plan, Tulsa Facility, Tulsa, Oklahoma, Kaiser Aluminum & Chemical Corporation, Baton Rouge, Louisiana.

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14.0 Facility Radiation Surveys

Information regarding the general framework for facility radiation surveys was provided in the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility. This framework is applicable to the former operational area of the facility with the exception of the threshold land area concentration criteria. The land area release criterion for the former operational area of the facility is the adjusted $DCGL_w$ value of 3.0 pCi/g net Th-232. The derivation of this threshold concentration criterion was presented in Chapter 5.0 of the June 2001 Decommissioning Plan (Revised May 2003).

The planned remediation for the former operational area requires excavating material with a net Th-232 activity concentration greater than the $DCGL_w$. The excavated material will be transported to the pond parcel. Material with Th-232 activity concentrations greater than 31.1 pCi/g will be segregated on site and disposed off site as either exempt or nonexempt material at a permitted facility. Material with activity concentrations less than 31.1 pCi/g Th-232 will be placed in the pond parcel excavation as backfill. An automated system such as the Segmented Gate System most likely will be used to segregate the material based on activity concentrations. The former operational area excavations will be backfilled with clean off-site borrow material.

Appropriate sections of the June 2001 Decommissioning Plan (Revised May 2003) are referenced or summarized below. Supplemental information relative to facility radiation surveys for the former operational area of the facility is provided in the following sections, where appropriate.

14.1 Release Criteria

Extensive characterization activities conducted since 1994 have established that Th-228, Th-230, and Th-232 are present in dross/soil residues on the Kaiser property. No elevated uranium has been detected. In 1999, 24 samples were selected (on site) to confirm the Th-232 to Th-230 ratio in the dross. The samples were selected based on geographical distribution and included both the Retention and Reserve ponds and a range of depths. Th-228 and Th-232 have been determined to be in secular equilibrium. In addition, a ratio of Th-230 to (Th228 + Th232)/2 of 3.5 has been calculated from characterization data. Supporting documentation for the ratio determination is provided in an appendix to the June 2001 Decommissioning Plan (Revised May 2003).

The acceptance criteria for land areas are the average activity concentration in soil (pCi/g) that correspond to the dose-based radiological criteria of 10 CFR 20 Subpart E. The acceptance criteria for structures are

the average total surface contamination and the average removable surface contamination levels that correspond to the dose-based radiological criteria of 10 CFR 20 Subpart E. The limits are radionuclide specific and the sum of fractions (unity rule) must be applied to show compliance with the acceptance criteria.

Table 14-1
Radionuclide-Specific Acceptance Criteria

Radionuclide	Land Areas Single Radionuclide $DCGL_W$ (pCi/g)	Structures Total Contamination (dpm/100 cm^2)	Structures Removable Contamination (dpm/100 cm^2)
Th-228	3.4	41.1	4.11
Th-230	102	36.9	3.69
Th-232	3.4	7.31	0.731

14.1.1 Land Areas

Radionuclide-specific $DCGL_W$ values corresponding to the radiological criteria of 10 CFR 20 Subpart E have been derived for soil using the computer code RESRAD. The derivation is documented in the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility. From the radionuclide specific values and the established activity ratios for the site, a value for Th-232 as a surrogate was also calculated and documented in the June 2001 Decommissioning Plan (Revised May 2003). The value is 3 pCi/g.

Table 14-2 presents area factors (based on MARSSIM guidance) to be used for elevated measurement comparisons (EMC) and to determine sampling requirements in situations where the scan instrument's MDC is greater than the appropriate $DCGL_w$. The appropriate $DCGL_{EMC}$ values are calculated by multiplying the appropriate $DCGL_w$ by the area factors in Table 14-2. Those for the former operational area and the processing area (area where material will be separated into above- and below-criteria material) were estimated based on the $DCGL_w$ and are presented in Table 14-3.

$$DCGL_{EMC} = \text{Area Factor} * DCGL_W$$

Table 14-2
Area Factors

Area Factors									
Radio-nuclide	1 m^2 (11 ft^2)	3 m^2 (32 ft^2)	10 m^2 (108 ft^2)	30 m^2 (323 ft^2)	100 m^2 (1,076 ft^2)	300 m^2 (3,229 ft^2)	1,000 m^2 (10,764 ft^2)	3,000 m^2 (32,292 ft^2)	10,000 m^2 (107,639 ft^2)
Th-232	12.5	6.2	3.2	2.3	1.8	1.5	1.1	1.0	1.0

Table 14-3
$DCGL_{EMC}$ Values for Processing Area/Former Operational Area

$DCGL_{EMC}$ (pCi/g)									
Radio-nuclide	1 m^2 (11 ft^2)	3 m^2 (32 ft^2)	10 m^2 (108 ft^2)	30 m^2 (323 ft^2)	100 m^2 (1,076 ft^2)	300 m^2 (3,229 ft^2)	1,000 m^2 (10,764 ft^2)	3,000 m^2 (32,292 ft^2)	10,000 m^2 (107,639 ft^2)
Th-232	37.5	18.6	9.6	6.9	5.4	4.5	3.3	3.0	3.0

14.1.2 Structures

The radionuclide-specific average total contamination acceptance criteria were derived using the DandD code and default parameters. Values calculated using DandD and default parameters are referred to as screening values by the NRC. The NRC allows use of these screening values in lieu of site-specific DCGL values that must be submitted to the NRC for approval. (Refer to Federal Register Volume 63, Number 222, Page 64132-64134, November 18, 1998). The NRC screening values assume that removable contamination is not more than 10 percent of the total contamination screening value.

From the radionuclide-specific values and the activity ratios of the radionuclides established for the site, a Gross Activity DCGL (GA-DCGL) was calculated using formula Number 4-4 provided in MARSSIM. The calculated GA-DCGL value is 21.5 dpm/100 cm^2 for average total surface contamination and 2.15 dpm/100 cm^2 for removable contamination. Refer to the calculation brief contained in Appendix D for a derivation of these GA-DCGL values. The calculation brief also presents area factors (based upon default DandD code) to be used for EMC and to determine sampling requirements in situations where the scan instruments' MDC is greater than the GA-DCGL.

Additional information regarding the release of criteria for the Tulsa facility is provided in Section 14.1 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

14.2 Characterization Surveys

Results of the characterization surveys performed for the impacted land areas of the former operational area of the facility are presented in Chapter 4.0 of this DPA.

14.3 Remedial Action Support Surveys

Remedial action support surveys will be performed while remediation is being conducted and will guide the remedial action in a real-time mode. These surveys will be used to determine when a survey unit is ready for the final status survey. The remedial action surveys will rely principally on direct radiation measurement using gamma-sensitive instrumentation. The determination of a survey unit's readiness for a final status survey will rely on the results from the survey instrumentation.

Instrumentation will consist of portable survey rate meters equipped with sodium iodide (NaI) detectors. This detection method has the sensitivity to detect Th-232 (surrogate radionuclide) below the $DCGL_w$ threshold value of 3.0 pCi/g above background. Table 14-6 of the June 2001 Decommissioning Plan (Revised May 2003) provides MDC values calculated using the guidance provided in NUREG-1575, MARSSIM, for increasing background values relative to a 2-inch-by-2-inch NaI detector.

14.4 Final Status Survey Design

The final status survey design for the impacted land areas and structures of the Kaiser Tulsa facility is presented in Section 14.4 of the June 2001 Decommissioning Plan (Revised May 2003). The impacted land areas and structure (Flux Building) located within the former operational area of the facility were depicted as Class 1 for purposes of classification and survey.

14.5 Final Status Survey Report

Refer to Section 14.14 of the June 2001 Decommissioning Plan (Revised May 2003) for the Tulsa facility.

References

1. Earth Sciences, June 2001, Revised May 2003, Decommissioning Plan, Tulsa Facility, Tulsa, Oklahoma, Kaiser Aluminum & Chemical Corporation, Baton Rouge, Louisiana.

2. Earth Sciences, October 2001, Additional Site Characterization Activities, Former Kaiser Aluminum Specialty Products Facility, Tulsa, Oklahoma, Kaiser Aluminum & Chemical Corporation, Baton Rouge, Louisiana.

3. Earth Sciences, December 2001, Historical Site Assessment, Operational Area, Former Kaiser Aluminum Specialty Products Facility, Tulsa, Oklahoma, Kaiser Aluminum & Chemical Corporation, Baton Rouge, Louisiana.

4. Earth Sciences, December 2001, Work Plan, Characterization Survey of the Operational Area, Former Kaiser Aluminum Specialty Products Facility, Tulsa, Oklahoma, Kaiser Aluminum & Chemical Corporation, Baton Rouge, Louisiana.

5. NUREG/CR-1575, August 2000, MARSSIM, Rev. 1.

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Chapter 15.0 is considered Privileged and Confidential and is being submitted under separate cover.