



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005**

June 29, 2006

Mr. J. William Vinzant
Regional Environmental Manager
Corporate Environmental Affairs
Kaiser Aluminum and Chemical Corporation
9141 Interline Avenue, Suite 1A
Baton Rouge, Louisiana 70809-1957

SUBJECT: NRC INSPECTION REPORT 040-02377/06-003

Dear Mr. Vinzant:

On June 6-8, 2006, an NRC inspection was conducted at the former Kaiser Aluminum Specialty Products facility in Tulsa, Oklahoma. The preliminary inspection findings were discussed with you and members of your staff during the exit briefing conducted at the conclusion of the onsite inspection. Following receipt of the remaining confirmatory sample results on June 27, 2006, the final inspection findings were discussed by telephone with the Site Administrator on June 28, 2006. The enclosed report presents the scope and results of the inspection.

The purpose of the inspection was to determine whether decommissioning and remediation activities were being conducted in accordance with the NRC-approved Decommissioning Plan for Phase II Remediation. Within these areas, the inspection consisted of selected examination of procedures, work plans, representative records, and interviews with personnel as they related to safety and compliance with the Commission's rules and regulations. This inspection consisted of confirmatory surveys of a backfilled survey unit in the pond parcel area and a discussion of pending project completion. The results of the confirmatory surveys are provided in the enclosed inspection report. No deviations from NRC commitments were identified, and no response to this letter is required.

This was the final scheduled Region IV inspection of the facility during decommissioning. Radiological-related decommissioning activities are expected to be completed by the end of July 2006.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

Kaiser Aluminum and Chemical Corp.

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Should you have any questions concerning this inspection, please contact Ms. Beth Alferink at (817) 860-8169 or the undersigned at (817) 860-8191.

Sincerely,

/RA/ J. V. Everett for

D. Blair Spitzberg, Ph.D., Chief
Fuel Cycle and Decommissioning Branch

Docket No.: 040-02377

License No.: STB-472 (terminated)

Enclosure:

NRC Inspection Report

040-02377/06-003

cc w/enclosure:

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SUNSI Review Completed: X ADAMS: ☒ Yes ☐ No Initials: BAS

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ENCLOSURE

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.: 040-02377

License No.: STB-472 (Terminated in March 1971)

Report No.: 040-02377/06-003

Property Owner: Kaiser Aluminum & Chemical Corporation

Facility: Former Kaiser Aluminum Specialty Products Facility

Location: 7311 East 41st Street
Tulsa, Oklahoma 74145

Inspection Dates: June 6 - 8, 2006

Inspectors: Beth (Schlapper) Alferink, Health Physicist
Fuel Cycle & Decommissioning Branch

Approved By: D. Blair Spitzberg, Ph.D., Chief
Fuel Cycle & Decommissioning Branch

Attachment: Supplemental Inspection Information

EXECUTIVE SUMMARY

Former Kaiser Aluminum Specialty Products Plant NRC Inspection Report 040-02377/06-003

This was an inspection of the Kaiser Aluminum Specialty Products facility, formerly occupied by Standard Magnesium Company. The inspection consisted of a closeout inspection and survey of a backfilled final status survey unit in the former pond parcel area and a review of changes to the management organization and controls expected during the final stages of site decommissioning. In summary, Kaiser was conducting decommissioning in accordance with the NRC-approved Decommissioning Plan.

Closeout Inspection and Survey

- Independent confirmatory radiological surveys were conducted in one final status survey unit. Results of the confirmatory surveys were generally consistent with measurements taken by Kaiser. Five soil samples were collected and analyzed for uranium and thorium concentrations. The results of both Kaiser's and NRC's samples were below the NRC-approved wide range derived concentration guideline level for thorium-232 (Section 1).

Management Organization and Controls

- Kaiser was implementing the organizational structure consistent with the Decommissioning Plan (Section 2).

Report Details

Summary of Site Status

Since the previous inspection, Kaiser continued to conduct Phase II decommissioning of the site in accordance with the NRC-approved Decommissioning Plan (DP). Kaiser was in the process of performing equipment unrestricted release surveys as the site decommissioning work decreased. The main equipment being surveyed during the inspection was the soil sorting equipment and the associated work trailer. Excavation activities were in progress in the western grids (the location used for soil sorting). The excavation is limited by the plastic liner used to mark the location of previous subsurface remediation. The soil excavated from the western grids will be placed as backfill in Final Status Survey Unit (FSS) FSS-025 located to the west of Unit FSS-026. The coring of FSS-025 is planned for the end of June 2006. FSS-026 had been backfilled and was core sampled during the inspection (FSSB-014).

As of June 5, 2006, Kaiser had shipped 909 rail gondola cars containing more than 89,800 tons of material to an offsite disposal site. Kaiser has one additional rail car loaded with two railcars on standby for debris through project completion. Kaiser expects to ship a total of 912 rail cars by the completion of site decommissioning. The final rail car is expected to ship no later than July 21, 2006. Site decommissioning is expected to be complete in July 2006.

1 Closeout Inspection and Survey (83890)

1.1 Scope

The inspector performed confirmatory surveys to determine if Kaiser was remediating and decontaminating the site to acceptable radiological levels for unrestricted release.

1.2 Observations and Findings

As part of reclamation, Kaiser excavated the contaminated soil, then sorted the soil for either off-site disposal or on-site backfill. On-site backfill, otherwise known as "below criteria material," was used to backfill the excavated areas to a specified depth. To reduce potential occupational exposures and to avoid cross-contamination during soil core borings, 1-foot of clean off-site soil backfill is placed on the backfilled survey unit. Following soil core boring, the below criteria material is then covered with a minimum of 10-feet of clean soil. Soil core boring was performed in the backfilled areas to determine the "as-left" site conditions for final site dose modeling. The inspector observed core borings of soil in survey unit FSSB-014 and conducted confirmatory sampling of these core samples. Survey unit FSSB-014 was located in the central portion of the property, west of FSSB-013 and south of FSSB-011.

The soil core is a soil sample obtained by boring down vertically through previously backfilled and compacted soil resulting in a 1-meter sample with a cylindrical shape and constant diameter. A radiation detection scan is performed on each 1-meter section by moving the sodium iodide detector at a rate of no greater than 1-inch per second while keeping the detector close to the soil core. In addition, Kaiser collected a 2-minute static count of each one-foot interval. The 1-meter soil core is then placed into a bucket

and mixed thoroughly. A soil sample is taken for analysis, and the remaining composite core sample is archived.

Kaiser representatives and the NRC inspector scanned the soil corings as the soil samples were being collected. The NRC inspector conducted radiological surveys using a Ludlum Model 18 survey meter (NRC No. 012778, calibration due date of 11/03/06) connected to a SPA-3 sodium iodide detector. The inspector conducted the scan for comparison to Kaiser's results for soil samples selected for split sampling. The inspector's scan measurements (including background) ranged from 15,000 to 23,000 cpm. The background in this survey unit varied from 8,000 to 9,000 cpm. For comparison, Kaiser's fixed point measurements (including background) for the samples ranged from 20,500 to 28,000 cpm with a background of 17,205 to 18,006 cpm. The two sets of results cannot be directly compared to each other because Kaiser used a different model of detector than the inspector.

Kaiser conducted nine soil core borings in survey unit FSSB-014 and collected 37 soil samples. The inspector collected five split samples, one from each 0-3, 3-6, 6-9, 9-12 and 12-15 (12-14 foot actual depth) foot depth intervals. The NRC's soil samples were transferred through chain-of-custody records to Oak Ridge Institute for Science and Education (ORISE) for analysis. The samples were analyzed by gamma spectroscopy for uranium and thorium concentrations as shown in Table 1.

Table 1
Concentrations of Uranium and Thorium Isotopes
In Survey Unit FSSB-014 Soil Samples

NRC Region IV Sample ID	Radionuclide Concentrations ^{a,d} (pCi/g wet weight)						
	U-238	U-235	Total U ^b	Th-230	Th-228	Th-232	Total Th ^c
NRC-06-03-01	2.4 ± 1.8	0.38 ± 0.45	5.2 ± 2.6	44 ± 17	19.7 ± 1.8	19.5 ± 1.6	39.2 ± 2.4
NRC-06-03-02	1.4 ± 1.2	0.18 ± 0.29	3.0 ± 1.7	37 ± 15	11.26 ± 1.0	12.0 ± 1.0	23.3 ± 1.4
NRC-06-03-03	0.6 ± 1.3	0.38 ± 0.31	1.6 ± 1.9	70 ± 20	17.0 ± 1.5	17.0 ± 1.4	34.0 ± 2.1
NRC-06-03-04	1.1 ± 1.4	-0.06 ± 0.30	2.1 ± 2.0	76 ± 19	13.6 ± 1.1	14.0 ± 1.2	27.6 ± 1.6
NRC-06-03-05	1.9 ± 1.7	0.37 ± 0.33	4.2 ± 2.4	93 ± 21	17.7 ± 1.2	17.2 ± 1.5	34.9 ± 1.9

^a The average MDCs for these radionuclides ranges from 0.12 pCi/g for Th-228 by Pb-212 to 21 pCi/g for Th-230

^b Total uranium is the sum of (2*U-238) + U-235, Doubling the U-238 value accounts for secular equilibrium of the U-234 with the U-238 when there is no enrichment of the U-235

^c Total Thorium is the sum of Th-228 and Th-232

^d Uncertainties represent the 95 percent confidence level, based on total propagated uncertainties

The NRC-approved wide-range derived concentration guideline level (DCGL_w) for thorium-232 in soil used as backfill is 31.1 pCi/g with a background of 1.1 pCi/g. The three sample results were less than the NRC approved DCGL_w of 32.2 pCi/g. There is no DCGL for uranium isotopes for the Kaiser site. The uranium concentration data is presented for consistency and reference purposes only.

During the confirmatory survey of FSSB-014, Kaiser split the five samples with the NRC. The samples were analyzed by Kaiser's contract laboratory. The comparison of the thorium-232 sample results and moisture content are shown in Table 2.

Table 2
Comparison Of Split Soil Samples In Survey Unit FSSB-014 for Thorium-232

Sample ID		Survey Unit	Core Depth (ft)	NRC Analysis (Wet) pCi/g	NRC (Wet) % Moisture	Kaiser Analysis (Wet) pCi/g	Kaiser % Moisture
NRC - RIV	Kaiser						
NRC-06-03-01	K-1735	FSSB-014	0-3	19.5 ± 1.6	19	16.0 ± 0.836	18.9
NRC-06-03-02	K-1754	FSSB-014	3-6	12.0 ± 1.0	16	11.30 ± 0.704	14.7
NRC-06-03-03	K-1729	FSSB-014	6-9	17.0 ± 1.4	20	13.90 ± 0.653	19.7
NRC-06-03-04	K-1734	FSSB-014	9-12	14.0 ± 1.2	20	10.50 ± 0.641	21.0
NRC-06-03-05	K-1747	FSSB-014	12-14	17.2 ± 1.5	17	15.10 ± 0.729	16.1

*Uncertainties represent the 95 percent confidence level, based on total propagated uncertainties

Both Kaiser's and NRC's sample results were below the DCGL_w of 32.2 pCi/g for thorium-232 concentrations in soil.

1.3 Conclusion

Independent confirmatory radiological surveys were conducted in one final status survey unit. Results of the confirmatory surveys were generally consistent with measurements taken by Kaiser. Five soil samples were collected and analyzed for uranium and thorium concentrations. The results of both Kaiser's and NRC's samples were below the NRC-approved DCGL_w for thorium-232.

2 **Management Organization and Controls (88005)**

2.1 Scope

The inspector reviewed Kaiser's management organization to ensure that it was in accordance with the Decommissioning Plan.

2.2 Observations and Findings

Organization

The inspectors reviewed the current organization and proposed changes to the organization in the upcoming months through project completion. The Site Administrator is retiring June 30, 2006, and the Project Manager will assume the related duties through project completion. When the Project Manager is not on-site, he will delegate, by letter, an acting Site Administrator. The inspectors reviewed Kaiser's planned organizational structure, and determined that it was consistent with the organization as described in Section 9.0 of the Decommissioning Plan.

2.3 Conclusions

Kaiser was implementing the organizational structure consistent with the Decommissioning Plan.

3 Exit Meeting Summary

The inspectors reviewed the scope and findings of the inspection during a preliminary exit briefing that was conducted on June 8, 2006, at the conclusion of the onsite inspection. A discussion of the confirmatory survey results and a final exit briefing was conducted via telephone with the Site Administrator on June 28, 2006, following receipt of all laboratory sample results. Kaiser did not identify as proprietary any information provided to, or reviewed by the inspectors.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Kaiser Aluminum & Chemical Corp.

B. Vinzant, Project Manager
P. Handa, Site Administrator
L. Max Scott, Radiation Safety Officer

Penn E&R

David Duffey, Health Physics Technician

INSPECTION PROCEDURES USED

IP 83890	Closeout Inspection and Survey
IP 88005	Management Organization and Controls

ITEMS OPENED, CLOSED AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
DCGL _w	wide area derived concentration guideline level
DP	NRC-Approved Decommissioning Plan
IP	Inspection Procedure
pCi/g	picocuries per gram
m ²	square meters
MDC	minimum detectable concentration
ORISE	Oak Ridge Institute for Science and Education
FSSB	Final Status Survey - Backfilled