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Energy/
Environment
Systems Division

May 14, 1991

Mr. Anthony Huffert
Nuclear Regulatory Commission
Office of Nuclear Material Safety
and Safeguards/Low Level Waste
and Decommissioning
Mail Stop 5E4
Washington, DC 20555

Subject: COMMENTS ON CUSHING CHARACTERIZATION REPORT

Dear Mr. Huffert:

Per your request, I have reviewed Kerr-McGee's May 4, 1991 report on the Radiological Characterization Survey of the Cushing Refinery Site. Because of the short turn-around time requested, and other priorities, I was not able to perform a detailed evaluation to the extent of comparing levels in this report to previous information; my comments are therefore primarily of a general nature.

1. Locations of contamination identified in this report as exceeding guidelines, are essentially as known or anticipated, based on document reviews and earlier limited surveys conducted by Kerr-McGee and ORAU. One location which I recollect as having been informed in October 1990 did not contain contamination above guidelines, but which now is reported as being contaminated, is the content of some burial trenches in the northeast corner of the site.
2. The report includes a good deal of data on external gamma levels and concentrations of thorium and uranium in samples from the trenches and several pits. It is ORAU's opinion that there are insufficient data provided for such areas as:
 - a. surface contamination levels in buildings,
 - b. soil contamination below building floors,
 - c. soil concentrations and gamma levels near the former process buildings.
3. Maps or drawings, indicating the locations of certain sampling locations, should be provided. These include the sampling locations in grid blocks 4, 7, 28, 29, 30, 41, 53, and 65 corresponding to the data in Table 4, and a map of the process building area, showing sampling locations relative to the buildings.
4. Maps or drawings, showing the areas of contamination exceeding NRC guidelines, should be provided for all contaminated locations. These maps would also assist the reader in independently evaluating the estimated volumes of contaminated material listed in the report.

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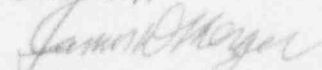
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5. Data tables and text do not indicate whether the reported soil concentrations include background. Typical total U and total Th background concentrations would be expected to each be in the range of 1 to 2 pCi/g. However, many of the reported soil levels are well below those values. What are the measurement sensitivities (MDA's) for the analytical procedures?
6. It is noted that the enrichment level of the uranium is higher for the "trash dump" area samples than for most other samples. The May 29, 1990 Kerr-McGee report (Cleveland to Munson) indicates, "high enriched uranium" at several locations in the building but does not provide data. ORAU analyzed several samples from the trash dump which had relatively high enrichments. ORAU is concerned whether proper calculation factors are being used to convert gamma findings to total uranium for those situations where uranium may not be the typical 1-3% enrichment?
7. The January 1991 ORAU report included recommendations for improving the characterization survey. These included:
 - a. additional closer-spaced, ground-level gamma scans in areas of previously identified or suspected contamination,
 - b. electromagnetic techniques to confirm trench locations,
 - c. measurements of beta contamination levels on building surfaces,
 - d. additional sampling from representative site locations, without elevated gamma levels,
 - e. measurements of beta contamination levels on building surfaces.

Although the ORAU report has been appended to this characterization report, it does not appear that these recommendations were implemented.

Basically it is ORAU's opinion that the report lacks certain information, necessary for a thorough assessment of the site contamination status. If you have any questions regarding this information, I may be reached at FTS 626-3305 or (615) 576-3305.

Sincerely,



James D. Berger, Director
Environmental Survey and
Site Assessment Program

JDB:mp

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Site File: Cushing/155