NRC Form 374
(5-84)

U.S. NUCLEAR REGULATORY COMMISSION

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 40 and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee	
1. Rio Algom Mining Corp.	3. License number: SUA-1119, Amendment No. 16
2. La Sal Route Moab, Utah 84532	4. Expiration date: September 30, 1989
	5. Docket or Reference No.: 40-8084

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
Natural Uranium	Any	Unlimited

9. Authorized place of use: The licensee's uranium milling facilities located in San Juan County, Utah.

10. The licensee is hereby authorized to possess byproduct material in the form of uranium waste tailings generated by the licensee's milling operations authorized by this license.

11. For use in accordance with statements, representations, and conditions contained in Sections 5.1.1, 5.1.3, 5.1.4, 5.2, 5.3, 5.4, 5.5.1, 5.5.2, 5.5.3, 5.5.4, 5.5.5, 5.5.9, and Appendices 5.5.2, 5.5.3.3, and 5.5.5 of the licensee's renewal application dated December, 1982, as modified by the supplements submitted by letters dated May 30, 1984, August and September 1984, December 6, 1985, January 30, July 21, and August 14, 1986, November 20, 1987, and January 12, 1988 except where superseded by license condition below. Reductions in radiation safety program requirements during periods of mill shutdown as authorized by this license shall not be implemented until the licensee has performed and documented cleaning and securing of the mill process building.

In addition, the licensee shall comply with Section 6.0 of the renewal application as modified in the supplement submitted by letter dated May 31, 1985, except that specific names and telephone numbers shall be updated as necessary. Such updates shall not require an amendment to this license.

Whenever the word "will" is used in the above referenced sections, it shall denote a requirement.

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12. The mill production per calendar year shall not exceed 900 metric tons of U_3O_8.

13. Any changes in the mill circuit, as illustrated and described in Figure 3.1-2 of the licensee's renewal application, shall require approval of the USNRC in the form of a license amendment.

14. The licensee is hereby exempted from the requirements of Section 20.203(e)(2) of 10 CFR 20 for areas within the mill, provided that all entrances to the mill are conspicuously posted in accordance with Section 20.203(e)(2) and with the words, "Any area within this mill may contain radioactive material."

15. The results of sampling, analyses, surveys and monitoring, the results of calibration of equipment, reports on audits and inspections; all meetings and trainings courses required by this license; and any subsequent reviews, investigations, and corrective actions, shall be documented. Unless otherwise specified in USNRC regulations, all such documentation shall be maintained for a period of at least five (5) years.

16. The licensee shall maintain effluent control systems as specified in Section 5.5.8 of the licensee's renewal application with the following additions:

    A. Operations shall be immediately suspended in the affected area of the mill if any of the emission control equipment for the yellowcake drying or packaging areas is not operating within specifications for design performance.

    B. The licensee shall, during all periods of yellowcake drying operations, assure that the scrubber is operating within the manufacturer's recommended ranges for water flow and air pressure differential necessary to achieve design performance. This shall be accomplished by either (1) performing and documenting checks of water flow and air pressure differential approximately every four hours during operation or (2) installing instrumentation which will signal an audible alarm if either water flow or air pressure differential fall below the manufacturer's recommended levels. If an audible alarm is used, its operation shall be checked and documented daily.

    C. Air pressure differential gauges for other emission control equipment shall be read and the readings documented once per shift during operations.

17. All liquid effluents from mill process buildings, with the exception of sanitary wastes, shall be returned to the mill circuit or discharged to the tailings impoundment.

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18. Release of equipment or packages from the restricted area shall be in accordance with Attachment No. 1 to SUA-1119, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct or Source Materials," dated September, 1984.

19. Mill tailings other than samples for research shall not be transferred from the site without specific prior approval of the USNRC in the form of a license amendment. The licensee shall maintain a permanent record of all transfers made under the provisions of this condition.

20. In order to ensure that no disturbance of cultural resources occurs in the future, the licensee shall have an archeological and historical artifact survey of areas of its property, not previously surveyed, performed prior to their disturbance, including borrow areas to be used for reclamation cover. These surveys must be submitted to the USNRC and no such disturbance shall occur until the licensee has received authorization from the USNRC to proceed.

    In addition, all work in the immediate vicinity of any buried cultural deposits unearthed during the disturbance of land shall cease until approval to proceed has been granted by the USNRC.

21. The licensee shall conduct an annual survey of land use (private residences, grazing areas, private and public potable water and agricultural wells, and non-residential structures and uses) in the area within five miles (8 km) of any portion of the restricted area boundary and submit a report of this survey to the USNRC, Uranium Recovery Field Office. This report shall indicate any differences in land use from that described in the last report.

22. The results of all effluent and environmental monitoring required by this license shall be reported in accordance with 10 CFR 40, Section 40.65 with copies of the report sent to the USNRC, Uranium Recovery Field Office. Monitoring data shall be reported in the format shown in the Attachment No. 2 to SUA-1119, "Sample Format for Reporting Monitoring Data."

23. The licensee shall have in operation, within four (4) months of issuance of this license, instrumentation to detect ruptures of the tailings discharge and solution return lines when these lines are being utilized. Indications of a possible rupture of these lines shall result in activation of an alarm in an occupied area of the mill. The instrumentation shall be tested daily, and testing documented, to ensure proper operation.

24. The licensee shall immediately notify the USNRC, Uranium Recovery Field Office, by telephone and telegraph, of any failure to the tailings dam or tailings discharge and solution return system which results in a release of radioactive

material and/or of any unusual conditions which if not corrected could lead to such a failure. This requirement is in addition to the requirements of 10 CFR 20.

25. Before engaging in any activity not previously assessed by the USNRC, the licensee shall prepare and record an environmental evaluation of such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not assessed or that is greater than that assessed, the licensee shall provide a written evaluation of such activities and obtain prior approval of the USNRC in the form of a license amendment.

26. The licensee shall implement a program to minimize dispersal of dust from the ore stockpile area(s). This program shall include written operating procedures. The effectiveness of the control method used shall be evaluated weekly by means of a documented inspection.

27. The licensee shall maintain a USNRC approved surety arrangement adequate to cover tailings stabilization and reclamation, mill decommissioning and mill site reclamation. The licensee shall submit for USNRC review and approval a proposed revision to the surety arrangement within six (6) months of USNRC approval of a revised reclamation plan. The revised surety shall be in effect within three (3) months of written USNRC approval. Furthermore, the licensee shall submit for USNRC review any proposed revision or annual update to the surety arrangement at least two (2) months prior to the proposed effective date. Along with each proposed revision or annual update, the licensee shall submit supporting documentation showing a breakdown of the costs and the cost basis for tailings stabilization and reclamation, mill decommissioning, and mill site reclamation.

28. Prior to termination of this license, the licensee shall provide for transfer of title to byproduct material and land, including any interests therein (other than land owned by the United States or the State of Utah), which is used for the disposal of such byproduct material or is essential to ensure the long term stability of such disposal site to the United States or the State of Utah.

29. In addition to the representations contained in Section 5.5.9 of the licensee's renewal application, the licensee shall submit a detailed decommissioning plan to the USNRC at least twelve (12) months prior to planned shutdown of mill operations.

30. Occupational exposure calculations shall be performed and documented within one week of the end of each regulatory compliance period as specified in 10 CFR 20.103 (a)(2) and 10 CFR 20.103 (b)(2). Routine airborne ore dust and yellowcake samples shall be analyzed in a timely manner to allow exposure calculations to be performed in accordance with this condition. Non-routine ore dust and yellowcake samples shall be analyzed and the results reviewed by the RSO within two working days after sample collection.

31. The tailings impoundment area shall not be expanded by raising the heights of the present dams or constructing a new dam except as authorized by this license.

32. The licensee shall implement an interim stabilization program for all tailings not covered by standing water. This program shall include written operating procedures and shall minimize dispersal of blowing tailings. The effectiveness of the control method used shall be evaluated weekly by means of a documented tailings area inspection.

33. Standard written operating procedures (SOP's) shall be established for all operational process activities involving radioactive materials that are handled, processed, or stored. Standard operating procedures for operational activities shall enumerate pertinent radiation safety practices to be followed. Additionally, written procedures shall be established for nonoperational activities to include in-plant and environmental monitoring, bioassay analyses, and instrument calibrations. An up-to-date copy of each written procedure shall be kept in the mill area to which it applies.

    All written procedures for both operational and nonoperational activities shall be reviewed and approved in writing by the RSO before implementation and whenever a change in procedure is proposed to ensure that proper radiation protection principles are being applied. In addition, the RSO shall perform a documented review of all existing operating procedures at least annually.

34. The licensee shall submit to the USNRC, Uranium Recovery Field Office, for review and approval in the form of a license amendment a proposed radiation safety program for the future acid circuit at least three (3) months prior to the planned initiation of operations in the acid circuit.

35. Processing of waste material from the Allied Chemical Company shall be in accordance with the statements, representations and conditions contained in the licensee's submittal dated July 16, 1982. Processing of waste material from Mallinckrodt, Inc. shall be in accordance with the statements, representations and conditions contained in the licensee's submittal dated August 24, 1983. Processing of waste material from the Unical-Molycorp, Louviers, Colorado plant shall be in accordance with the statements, representations and conditions contained in the licensee's submittals dated July 13 and August 19, 1987. Additionally, the licensee shall establish and implement documented in-plant procedures for the handling and slurrying of the alternate feed materials. Radiation safety aspects of the procedures shall be revised and approved by the mill Radiation Safety Officer prior to implementation.

36. Disposal of waste from Westinghouse Electric Corporation's Bingham Canyon ion exchange facility shall be in accordance with the licensee's submittal dated March 20, 1984. The location of the disposal site shall be as shown on Figure 1 submitted by letter dated March 21, 1984. The licensee shall establish and

implement procedures for the handling and disposal of the waste material, and radiation safety aspects of the procedures shall be reviewed and approved by the mill Radiation Safety Officer prior to implementation.

37. The licensee is authorized to release barrels which do not meet the decontamination limits specified in Condition No. 18 of this license to a facility authorized to possess the barrels under a specific source material license issued by the State of Utah. All waste material resulting from decontamination of the barrels shall be returned to the Lisbon Mill for disposal in the tailings ponds.

Prior to releasing contaminated barrels to a facility, the licensee shall provide documentation to the Uranium Recovery Field Office, USNRC, to verify that the facility possesses a source material license authorizing possession of the barrels. In addition, all releases of barrels and receipt of waste material authorized under this condition shall be documented.

38. The licensee shall be required to use a Radiation Work Permit (RWP) issued by the RSO or his designate for work or nonroutine maintenance jobs where the potential for exposure to radioactive material exists and for which no standard written operating procedures exist. The RWP shall at least describe the following:

A. The scope of the work to be performed.

B. Any precautions necessary to reduce exposure to uranium and its daughters.

C. The supplemental radiological monitoring and sampling necessary before, during, and following completion of the work.

39. Notwithstanding the inspection program specified in Section 5.1.3 of the renewal application, the licensee shall comply with the following:

a. The RSO or his designee shall conduct documented walk-through inspections of all work and storage areas on days of mill operations to ensure implementation of good radiation safety practices.

b. The RSO or his designee, if the RSO is unavailable, shall during operational mill periods, conduct weekly documented inspections of all work and storage areas to observe general radiation safety practices, and during a period of mill shutdown shall conduct monthly documented inspections of all work and storage areas to observe general radiation control practices.

A summary of inspection results shall be included in the monthly report prepared by the RSO as discussed in Section 5.1.3 of the renewal application.

40. During mill operational periods the licensee shall submit a copy of the report documenting semiannual ALARA audits committed to in section 5.1.4 of the renewal application. During periods of mill shutdown the licensee shall submit a copy of the report documenting an annual ALARA audit committed to in section 5.1.4 as modified by letter dated November 20, 1987. Submittals required by this condition shall be submitted to the USNRC, Uranium Recovery Field Office, within one (1) month of completion of the report.

41. All mill process workers shall be provided on-the-job training on the radiation safety aspects of the job to be performed prior to beginning work activities and annually thereafter. The on-the-job training, as well as all other training committed to in Section 5.3 of the renewal application, shall be documented.

42. The licensee shall comply with the following additions to the bioassay program committed to in Section 5.5.4 of the renewal application:

    A. Baseline urinalysis shall be performed for all new employees prior to start of work activities.

    B. In-vivo counting shall be performed every two years for ore crusher operators as well as yellowcake dryer-packaging operators.

    C. Laboratory surfaces used for bioassay analyses shall be decontaminated to less than 25 dpm alpha (removable)/100 cm^2 prior to analysis of samples.

    D. Anytime an action level of 15 ug/l uranium for urinalysis or 9 nCi uranium for an in-vivo measurement is reached or exceeded, the licensee shall provide documentation to the USNRC, Uranium Recovery Field Office, indicating what corrective actions have been performed to satisfy the requirements of Regulatory Guide 8.22. This documentation shall be included and submitted with the semiannual 10 CFR 40.65 report.

    E. Anytime an action level of 30 ug/l uranium for four consecutive speciments or 130 ug/l uranium for one speciment for urinalysis or 16 nCi uranium for an in-vivo measurement is reached or exceeded, the licensee shall provide documentation within 30 days to the USNRC, Uranium Recovery Field Office, indicating what corrective actions have been performed to satisfy the requirements of Regulatory Guide 8.22.

43. The licensee shall perform and document weekly checks of the alpha survey meters used in the personnel and surface contamination control program using a radiation check source.

44. The licensee shall implement the inspection programs for the upper and lower tailings embankments and the Bisco Lake embankment as specified in their May 17,

1984, August 20, November 17, 1987, and November 20, 1987 submittals subject to the following modifications and additions:

a. Embankment piezometers shall be read monthly during operational mill periods. During periods of mill shutdown, embankment piezometers shall be read quarterly. On an annual basis, the piezometers shall be examined and tested for proper functioning. The available records and readings of these instruments shall also be reviewed quarterly to detect any unusual performance or distress in the structure.

b. The maintenance of operating facilities and features (such as pumps and valves) that pertain to the safety of the retention system shall be examined to determine the adequacy and quality of the maintenance procedures followed in maintaining the dam and facilities in safe operating condition.

c. The professional responsible for the technical evaluation shall ensure that field inspectors are trained to recognize and assess signs of possible distress or abnormality.

d. The results of piezometer and pond level measurements shall be maintained in graphical form.

e. A copy of each annual technical evaluation report shall be submitted to the USNRC, Uranium Recovery Field Office, within one (1) month of completion of the report.

45. The licensee shall comply with the following:

A. For the upper tailings pond, the licensee shall maintain at least 2.75 feet of freeboard between the embankment crest and the maximum pond operating level.

B. For the lower tailings pond, the licensee shall maintain at least eleven (11) feet of freeboard between the maximum pond operating level and the Stage I dam crest elevation of 6651 feet msl and at least ten (10) feet of freeboard between the maximum pond operating level and the Stage II dam crest elevation of 6661 feet msl.

C. Water levels in the upper and lower tailings ponds shall be read and recorded weekly, unless the ponds are receiving tailings in which case water levels will be read and recorded daily.

D. During normal operations, at least 100 feet of beach shall be maintained between the crest of the lower tailings dam and the ponded water.

46. Construction, maintenance, and operation of the upper tailings retention system shall be in accordance with the specifications, representations, recommendations and commitments contained in:

"Report of Geotechnical Evaluation to Support The Request For A Five-Foot Dam Raise, Upper Tailings Pond--Embankment System," Dames and Moore, August 22, 1980.

In addition, whenever the word "should" appears in the section of the above document entitled "Design Recommendations", it shall denote a requirement.

47. Construction, maintenance and operation of the lower tailings pond embankment, with a Stage I crest at 6651 feet above mean sea level and a Stage II crest at 6661 feet above mean sea level, shall be in accordance with the specifications, representations, recommendations and commitments contained in the following documents:

A. "Report of Geotechnical Engineering Study, Proposed Raise of Lower Tailings Pond Embankment System to Maximum Crest Elevation of 6661 Feet, Lisbon Mine and Mill, LaSal, Utah" by Dames & Moore, dated March 17, 1981.

B. "Tailings Dam Improvement and Flood Control Structures, Lisbon Valley Operations, Near Moab, Utah, for Rio Algom Corporation" by Dames & Moore, dated October 14, 1981, transmitted by letter from Rio Algom Corporation to Ross A. Scarano, USNRC, dated November 4, 1981.

Notwithstanding conflicting information in the submittals referenced above, embankment fill material shall be compacted on the dry side of the optimum moisture content as determined by AASHTO T-180 (-3 percent to +1 percent).

48. The licensee shall submit a set of construction specifications to the USNRC, Uranium Recovery Field Office, for review and approval prior to placement of embankment fill for the final stage of the two-staged raise of the lower tailings pond embankment. The specifications shall include a quality assurance soils testing program detailing frequencies of tests to be performed during the embankment construction.

49. The licensee shall notify USNRC, Uranium Recovery Field Office, at least three weeks prior to the following construction features of the two-staged lift of the lower tailings pond embankment to provide adequate time for on-site inspections by the NRC:

A. During Stage I embankment fill placement at approximately 10 percent and 80 percent stages of completion.

B. After completion of Stage II construction and prior to placement of tailings above the Stage I maximum operating level.

The licensee shall submit to the USNRC, Uranium Recovery Field Office within six months of completion of construction of the Stage II lift, a construction report summarizing construction equipment used, construction procedures, problems encountered, methods used to resolve these problems, and quality control procedures and test results for embankment fill material.

50. Construction and maintenance of the flood diversion structures shall be in accordance with the specifications, representations, recommendations, and commitments contained in:

A. "Supplementary Information for Flood Control and Diversion Structures, Rio Algom Uranium Mining Facility, LaSal, Utah" by Dames & Moore, August 26, 1981.

B. "Report on the Design of Flood Control and Diversion Structures, Rio Algom Uranium Mining Facility, LaSal, Utah" by Dames & Moore, September 8, 1981.

51. The licensee shall conduct an environmental monitoring program as specified in Section 5.5.6.1 and Table 5.5-5 of the renewal application dated December, 1982, as modified by the supplement dated December 6, 1985, with the following modifications:

a. Radon monitoring shall be conducted continuously using passive monitoring devices which are exchanged and read at least quarterly.

b. Except as superseded by the requirements of License Condition No. 53 below, the licensee shall implement groundwater monitoring programs as follows:

(1) During mill operational periods the licensee shall implement a groundwater monitoring and seepage control program as specified in the submittal dated September 21, 1984. In addition, the licensee shall collect and report water level data from the following:

MW wells 1, 2, 4, 5, 6A, 7, 8, 9, 10, 11, and 12; H wells 38, 48, 49, 55, 56, 57, 71, 72, 73, 77, and 78; LT wells 1 through 15; GW wells 17, 19, 20; RW wells 1 and 2; UT wells 1 through 8; D wells 3 and 10, and DM wells 80-1, 80-2, 80-3, and 80-4.

(2) During a period of mill shutdown the licensee shall conduct its groundwater monitoring and seepage control program as specified in Table 5.5-5 of the submittal dated November 20, 1987. Notwithstanding

statements to the contrary in the November 20, 1987 submittal, the licensee shall comply with the following:

The licensee shall collect and report semiannually water level data, pH, SO_4, chloride, conductivity, arsenic, and selenium data for MW wells, 1, 4, 5, 7, and 13; H well 56; and RW well 1. The licensee shall also analyze samples semiannually for uranium natural and Radium-226 for MW wells 2, 4, 5, and 7. In addition, the licensee shall determine, annually, water levels in wells listed in b.(1) above.

c. During mill operational periods the licensee shall implement a surface water monitoring program as specified in the submittal dated September 21, 1984. In addition, sediment samples shall be collected at the surface water sampling sites. During periods of mill shutdown, the licensee shall implement a surface water monitoring program as specified in the submittals dated July 21, August 14, 1986 and November 20, 1987. In addition, sediment samples shall be collected at the surface water sampling sites.

d. Recovery well No. CW-UT9 shall be continuously pumped back to the upper tailings pond.

e. The lower limits of detection (LLD) to be utilized for sample analysis shall be as specified in the submittals dated September 29 and December 16, 1984, with the exception that the LLD for analysis of Pb-210 in water shall be 2.0 E-9 µCi/ml.

f. Continuous air samplers shall be calibrated and the calibration documented at least quarterly.

g. Notwithstanding the requirement of the submittals dated July 21 and August 14, 1986 and November 20, 1987, the licensee shall implement a program to monitor vegetation consistent with the renewal application dated December 1982 as modified by the supplement submittal dated December 6, 1985.

52. The licensee shall submit to the USNRC, Uranium Recovery Field Office, by December 31, 1985, a detailed reclamation plan which includes the following:

A. A stabilization plan which details methods to prevent blowing, ponding, and recharge of the tailings;

B. A plan to dewater and/or consolidate the tailings;

C. Plan and cross-sectional views of the final reclaimed area which detail the location and elevations of tailings and cover materials;

D. Detailed plans for placement of rock or vegetative cover on the final reclaimed tailings pile;

E. A proposed implementation schedule for items A through D above;

F. An analysis to show that the proposed type and thickness of soil cover is adequate to provide appropriate attenuation of radon;

G. An erosion analysis to show that the proposed cover materials will provide long-term isolation of tailings.

53. The licensee shall implement a ground water detection monitoring program to ensure compliance to 40 CFR 192.32(a)(2) which includes the following elements:

A. The licensee shall monitor at the point of compliance and background wells for the following indicator parameters: Arsenic, Selenium and pH. The licensee shall utilize analytical techniques capable of providing lower limits of detection of 0.005 mg/l and 0.001 mg/l for arsenic and selenium, respectively. Measurements of pH shall be reported to the nearest 1/10 standard unit.

B. The determination of compliance shall be based on sampling Wells H-49(a), H-55 and H-56.

C. The determination of background levels for the parameters specified in subsection (A) shall be defined by sampling Well MW-5.

D. The licensee shall sample for those parameters specified in subsection (A) at those wells designated in subsections (B) and (C) on a monthly basis for a period of one (1) year and at least twice annually thereafter. The first monthly sample shall be taken within 30 days of the date of this Order. All semiannual samples shall be taken at least four months apart.

E. The licensee shall, within 60 days of collection of the last of the twelve monthly samples, propose for USNRC review and approval in the form of a license amendment background levels for indicator parameters and a statistical procedure for identifying significant changes (95% confidence level) between data from the wells specified in subsections (B) and (C).

F. The licensee shall report the data required by subsection (D) semiannually along with those data required by License Condition No. 22 in accordance to the reporting format, Attachment No. 3 to SUA-1119, "Sample Format for Reporting Detection Monitoring Data." These monitoring requirements are in addition to the requirements specified in License Condition No. 52.

G. The licensee shall report at least annually in accordance to reporting requirements specified in subsection (F) the rate and direction of ground water flow under the tailings impoundment.

54. In accordance with the submittals dated December 15, 1986 and January 12, 1988, the licensee is authorized to dispose of a maximum of 3000 cubic yards of contaminated materials and soil within the location shown on Figure 1 of the licensee's December 15, 1986 submittal. Further, all barrels or equipment shall be crushed or disassembled to the maximum extent possible to minimize void space. The disposals shall be completed by March 31, 1989 and shall be documented.

FOR THE NUCLEAR REGULATORY COMMISSION

Dated: MAR 1 1988

R. Dale Smith, Director
Uranium Recovery Field Office
Region IV

G. The licensee shall report at least annually in accordance to reporting requirements specified in subsection (F) the rate and direction of ground water flow under the tailings impoundment.

54. In accordance with the submittals dated December 15, 1986 and January 12, 1988, the licensee is authorized to dispose of a maximum of 3000 cubic yards of contaminated materials and soil within the location shown on Figure 1 of the licensee's December 15, 1986 submittal. Further, all barrels or equipment shall be crushed or disassembled to the maximum extent possible to minimize void space. The disposals shall be completed by March 31, 1989 and shall be documented.

FOR THE NUCLEAR REGULATORY COMMISSION

Dated: MAR 1 1988

/S/

R. Dale Smith, Director
Uranium Recovery Field Office
Region IV

OFC	URFO	URFO	URFO	URFO			
NAME	VScovill/db	PJGarcia	HJPettengill	RDSmith			
DATE	88/02/26		2/29/88	3/1			

ATTACHMENT NO. 1

GUIDELINES FOR DECONTAMINATION OF FACILITIES AND EQUIPMENT

PRIOR TO RELEASE FOR UNRESTRICTED USE

OR TERMINATION OF LICENSES FOR

BYPRODUCT OR SOURCE MATERIALS

U. S. Nuclear Regulatory Commission
Uranium Recovery Field Office
Region IV
Denver, Colorado 80225

SEPTEMBER 1984

The instructions in this guide in conjunction with Table I specify the radioactivity and radiation exposure rate limits which should be used in accomplishing the decontamination and survey of surfaces or premises and equipment prior to abandonment or release for unrestricted use.

1. The licensee shall make a reasonable effort to eliminate residual contamination.

2. Radioactivity on equipment or surfaces shall not be covered by paint, plating, or other covering material unless contamination levels, as determined by a survey and documented, are below the limits specified in Table I prior to applying the covering. A reasonable effort must be made to minimize the contamination prior to use of any covering.

3. The radioactivity on the interior surfaces of pipes, drain lines, or ductwork shall be determined by making measurements at all traps, and other appropriate access points, provided that contamination at these locations is likely to be representative of contamination on the interior of the pipes, drain lines, or ductwork. Surfaces of premises, equipment, or scrap which are likely to be contaminated but are of such size, construction, or location as to make the surface inaccessible for purposes of measurement shall be presumed to be contaminated in excess of the limits.

4. Upon request, the Commission may authorize a licensee to relinquish possession or control of premises, equipment, or scrap having surfaces contaminated with materials in excess of the limits specified. This may include, but would not be limited to, special circumstances such as razing of buildings, transfer of premises to another organization continuing work with radioactive materials, or conversion of facilities to a long-term storage or standby status. Such requests must:

   a. Provide detailed, specific information describing the premises, equipment or scrap, radioactive contaminants, and the nature extent, and degree of residual surface contamination.

   b. Provide a detailed health and safety analysis which reflects that the residual amounts of materials on surface areas, together with other considerations such as prospective use of the premises, equipment or scrap, are unlikely to result in an unreasonable risk to the health and safety of the public.

5. Prior to release of premises for unrestricted use, the licensee shall make a comprehensive radiation survey which establishes that contamination is within the limits specified in Table I. A copy of the survey report shall be filed with the Uranium Recovery Field Office, Region IV, P.O. Box 25325, Denver, CO 80225. The survey report shall:

   a. Identify the premises.

   b. Show that reasonable effort has been made to eliminate residual contamination.

   c. Describe the scope of the survey and general procedures followed.

   d. State the findings of the survey in units specified in the instruction.

Following review of the report, the NRC will consider visiting the facilities to confirm the survey. The licensee shall not release the premises for unrestricted use without the written approval of the USNRC staff.

TABLE I

ACCEPTABLE SURFACE CONTAMINATION LEVELS

NUCLIDES[a]	AVERAGE[b c f]	MAXIMUM[b d f]	REMOVABLE[b e f]
U-nat, U-235, U-238, and associated decay products	5,000 dpm /100 cm²	15,000 dpm /100 cm²	1,000 dpm /100 cm²
Transuranics, Ra-226, Ra-228, Th-230, Th-118, Pa-231, Ac-227, I-125, I-129	100 dpm/100 cm²	300 dpm/100 cm²	20 dpm/100 cm²
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1,000 dpm/100 cm²	3,000 dpm/100 cm²	200 dpm/100 cm²
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except SR-90 and others noted above.	5,000 dpm /100 cm²	15,000 dpm /100 cm²	1,000 dpm /100 cm²

[a] Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides should apply independently.

[b] As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

[c] Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

[d] The maximum contamination level applies to an area of not more than 100 cm².

[e]The amount of removable radioactive material per 100 cm^2 of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.

[f]The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr at 1 cm and 1.0 mrad/hr at 1 cm, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.

ATTACHMENT NO. 2

SAMPLE FORMAT FOR REPORTING

MONITORING DATA

REGULATORY GUIDE 4.14

TABLE 3[a]

SAMPLE FORMAT FOR REPORTING MONITORING DATA

STACK SAMPLES

For each sample analyzed, report the following information:

a. Date sample was collected
b. Location of sample collection
c. Stack flow rate (m^3/sec)

Radionuclide	Concentration (μCi/ml)	Error Estimate[b] (μCi/ml)	Release Rate (Ci/qr)	Error Estimate (Ci/qr)	LLD[c] (μCi/ml)	% MPC[c]
U-nat						
Th-230						
Ra-226						
Pb-210						

AIR SAMPLES

For each sample analyzed, report the following information:

a. Date sample was collected
b. Location of sample collection

Radionuclide	Concentration (μCi/ml)	Error Estimate (μCi/ml)	LLD (μCi/ml)	% MPC
U-nat				
Th-230				
Ra-226				
Pb-210				
Rn-222				

a) This table illustrates format only. It is not a complete list of data to be reported. (See text of guide and Tables 1 and 2.)

b) Error estimate should be calculated at 95% uncertainty level, based on all sources of random error, not merely counting error. Significant systematic error should be reported separately. See Sections 6.1, 7.1.4, and 7.3.

c) All calculations of lower limits of detection (LLD) and percentages of maximum permissible concentration (MPC) should be included as supplemental information.

TABLE 3 (Continued)

SAMPLE FORMAT FOR REPORTING MONITORING DATA

3. LIQUID SAMPLES

For each sample analyzed, report the following information:

a. Date sample was collected
b. Location of sample collection
c. Type of sample (for example: surface, ground, drinking, stock, or irrigation)

Radionuclide	Concentration (μCi/ml)	Error Estimate (μCi/ml)	LLD (μCi/ml)
U-nat (dissolved)			
U-nat (suspended)(d)			
Th-230 (dissolved)			
Th-230 (suspended)(d)			
Ra-226 (dissolved)			
Ra-226 (suspended)(d)			
Pb-210 (dissolved)			
Pb-210 (suspended)(d)			
Po-210 (dissolved)			
Po-210 (suspended)(d)			

4. VEGETATION, FOOD, AND FISH SAMPLES

For each sample analyzed, report the following information:

a. Date sample was collected
b. Location of sample collection
c. Type of sample and portion analyzed

Radionuclide	Concentration (μCi/kg wet)	Error Estimate (μCi/kg)	LLD (μCi/kg)
U-nat			
Th-230			
Ra-226			
Pb-210			
Po-210			

(d) Not all samples must be analyzed for suspended radionuclides. See Sections 1.2 and 2.2 of this guide.

TABLE 3 (Continued)

SAMPLE FORMAT FOR REPORTING MONITORING DATA

SOIL AND SEDIMENT SAMPLES

For each sample analyzed, report the following information:

a. Date sample was collected
b. Location of sample collection
c. Type of sample and portion analyzed

Radionuclide	Concentration (pCi/g)	Error Estimate (pCi/g)	LLD (pCi/g)
U-nat			
Th-230			
Ra-226			
Pb-210			
Po-210			

DIRECT RADIATION MEASUREMENTS

For each measurement, report the dates covered by the measurement and the following information:

Location	Exposure Rate (mR/qr)	Error Estimate (mR/qr)

RADON FLUX MEASUREMENTS

For each measurement, report the dates covered by the measurement and the following information:

Location	Flux (pCi/m²-sec)	Error Estimate (pCi/m²-sec)

ATTACHMENT NO. 3

NRC FORM 484
(7-86)
10 CFR 40.192

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DETECTION MONITORING DATA REPORT

BACKGROUND WELL(S)				POINT OF COMPLIANCE WELL(S)				
DATE		INDICATOR SPECIES			DATE		INDICATOR SPECIES		
MONTH	YEAR	As (mg/l)	Se (mg/l)	pH (units)	MONTH	YEAR	As (mg/l)	Se (mg/l)	pH (units)

DESCRIPTION (SAMPLE)	BACKGROUND WELL(S) INDICATOR SPECIES			POINT OF COMPLIANCE WELL(S) INDICATOR SPECIES		
	As (mg/l)	Se (mg/l)	pH (units)	As (mg/l)	Se (mg/l)	pH (units)
POPULATION						
MEAN						
STANDARD DEVIATION						
DISTRIBUTION						
NORMAL						
POISSON						
OTHER (Specify)						

STATISTICAL SIGNIFICANCE TEST

REFERENCE

SAMPLE STATISTICAL CALCULATION

RESULTS OF STATISTICAL EVALUATION