

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, 36, 39, 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	3. License Number
1. Atlas Corporation	SUA-917, Amendment No. 28
2. 370 17th Street, Suite 3150D Denver, Colorado 80202-5631 [Applicable Amendment: 9]	4. Expiration Date
	5. Docket or Reference No. Until terminated

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	40-3453 Unlimited

9. Authorized place of use: The licensee's uranium milling facility located at Moab, Utah.

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

11. For use in accordance with statements, representations, and conditions contained in Sections 4.2.4, 5, and 7 (except 5.5.10 and 5.5.11), Appendices 5.3, 5.5.6, and 6.0 of the licensee's renewal application dated May 31, 1984, and submittals dated December 17, 1984, January 18, and June 5, 1985, and September 16, 1992. The mill site organizational structure shall be maintained as presented by submittal dated May 13, 1991, as revised by letter dated March 5, 1993.

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

[Applicable Amendments: 12, 15, 18, 20]

12. DELETED by Amendment No. 18.

13. DELETED by Amendment No. 18.

14. The licensee is hereby exempted from the requirements of Section 20.1902(e) of 10 CFR 20 for areas within the mill, provided that all entrances to the mill are conspicuously posted in accordance with Section 20.1902 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 training courses required by this license; and any subsequent reviews,

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number

SUA-917, Amendment No. 28

Docket or Reference Number

40-3453

investigations, and corrective actions, shall be documented. Unless otherwise specified in NRC regulations, all such documentation shall be maintained for a period of at least 5 years.

16. DELETED by Amendment No. 18.

17. The licensee shall implement a compliance monitoring program containing the following:

A. Sample wells AMM-1, AMM-2 and AMM-3 on a quarterly frequency for chloride, nitrate, sodium, sulfate, pH, TDS and water level, and on a semiannual frequency for chromium, gross alpha, lead, molybdenum, nickel, radium-226 and 228, selenium, silver, uranium and vanadium. Additionally, the upper completion of well ATP-2 shall be sampled on a quarterly frequency for chloride, nitrate, sodium, sulfate, pH, TDS and water level.

B. Comply with the following ground-water protection standards at point of compliance wells AMM-2 and AMM-3, with background being recognized as well AMM-1.

chromium = 0.08 mg/l, gross alpha = 33 pCi/l, molybdenum = 0.05 mg/l, nickel = 0.06 mg/l, radium-226 and 228 = 5 pCi/l, selenium = 0.01 mg/l, vanadium = 0.04 mg/l and uranium = 4.0 pCi/l.

C. Implement a corrective action program that includes pumping dewatering wells PW1, PW4, PW6, PW7, PW8, PW9, and PW12 during periods of nonfreezing weather. Sufficient data shall be collected, for the constituents listed in Subsection A, to determine the mass of constituents that have been recovered by the corrective action program.

The licensee shall on a semiannual frequency, submit a ground-water monitoring report as well as submit a corrective action program review by December 31, of each year, that describes the progress towards attaining ground-water protection standards.

[Applicable Amendments: 3, 4, 8, 11, 13, 19]

18. Released equipment or packages from the restricted area shall be in accordance with the document entitled, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of License for Byproduct or Source Materials" dated September, 1984. [Applicable Amendment: 18]

19. DELETED by Amendment No. 18.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number

SUA-917, Amendment No. 28

Docket or Reference Number

40-3453

20. The licensee shall conduct and document at least five inspections of the tailings embankment per week (one per day, 5 days per week) and shall immediately notify the NRC, by telephone and telegraph, of any failure to the tailings dam which could result in a release of radioactive materials and/or of any unusual conditions which if not corrected could lead to such failure. This requirement is in addition to the reporting requirements of 10 CFR 20.

[Applicable Amendment: 18]

21. A. The licensee shall decommission the Moab Mill facilities in accordance with policy and procedures described in submittals dated November 27, 1987, and March 29, and May 13, 1988.
- B. The licensee shall submit soil sampling criteria, including radium-226/gamma correlations at least 60 days prior to conducting soil sampling as a part of the mill decommissioning process.
- C. The licensee shall submit decontamination and decommissioning reports within 60 days of completion of the decontamination and decommissioning activities.
- D. The reports required by this condition shall include, as a minimum, the following information:
- (1) Employee exposure records including internal exposure time weighted calculations.
 - (2) Bioassay results.
 - (3) Inspection log entries and inspections.
 - (4) Training program activities, including safety meetings.
 - (5) Radiological survey and sampling data.
 - (6) Cross section drawings of all disposal areas and the proposed interim cover.

[Applicable Amendments: 3, 15]

22. Occupational exposure calculations shall be performed and documented within 1 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 samples taken in airborne ore dust and yellowcake areas shall be analyzed in a timely manner to allow exposure calculations to be performed in accordance with this condition. Non-routine samples taken in ore dust and yellowcake areas shall be analyzed and the results reviewed by the Radiation Control Coordinator (RCC) within 2 working days after sample collection.
23. Standard written procedures shall be established and maintained for all activities involving radioactive materials that are handled, processed or stored. Written procedures shall be established for nonoperational (nonprocessing)

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number

SM-217, Amendment No. 28

Docket or Reference Number

40-3453

activities to include in-plant and environmental monitoring, bioassay analyses, and instrument calibrations. Up-to-date copies of all written procedures shall be kept in the applicable work stations to which they apply.

All written procedures, shall be reviewed and approved in writing by the RCC before implementation and whenever a change in procedure is proposed to ensure that proper radiation protection principles are being applied. The licensee shall perform a documented review of all existing procedures at least annually.

[Applicable Amendment: 18]

24. The personnel contamination surveys conducted, in accordance with Section 5.5.5.2 of the application, shall be documented and maintained. In addition, the licensee (RCC or qualified alternate) shall perform spot personnel surveys for alpha contamination at least quarterly on employees leaving the restricted area.
25. The licensee shall use a Radiation Work Permit (RWP) for all nonroutine work not covered by an existing procedure where the potential for significant exposure to radioactive materials exists. The RWP shall be approved by the RCC or an alternate, qualified by way of specialized radiation protection training, and shall at least describe the following:
 - A. The scope of work to be performed and the potential radiological hazards.
 - B. Any precautions necessary to minimize worker exposure to radioactive materials.
 - C. The radiological monitoring and sampling necessary prior to, during, and following completion of the work in order to assess any potential exposures.
26. Notwithstanding the representations in Appendix 5.3 to the renewal application, the licensee shall develop and implement procedures to ensure that visitors and contractors receive instruction and training in accordance with Section 19.12 of 10 CFR 19, prior to entering any restricted area.
27. The existing on-site catchment basin west of the S-X units shall be maintained in a condition and with enough remaining available capacity to assure the collection of any spillage of chemicals from hazardous chemical storage tanks within the graded area. Any storage tanks containing hazardous chemicals which are not located within the graded area shall be surrounded by individual containment dikes capable of containing all leakage.
28. Notwithstanding the representations in Section 5.5.5 of the licensee's application, the licensee shall conduct weekly alpha contamination surveys of lunch rooms and monthly surveys of change rooms, shower facilities and offices when they are in use.

[Applicable Amendment: 18]

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number

SUA-917, Amendment No. 28

Docket or Reference Number

40-3453

29. A copy of the report documenting the annual ALARA audit in accordance with Section 5.1.4 of the renewal application dated May 31, 1984, shall be submitted to the NRC, for review within 30 days of completion of the audit report.
30. In addition to the tailings embankment surveillance and inspection program specified in Section 4.2.4 of the licensee's renewal application dated May 31, 1984, the licensee shall comply with the following:
- A. Notwithstanding any statements to the contrary, the professional responsible for the annual technical evaluation report shall ensure that all field inspectors are trained to recognize and assess signs of possible distress or abnormality.
 - B. All routine inspection reports shall be dated and maintained on file at the mill site for use in developing the annual report.
 - C. The results of ground-water sampling and piezometer and pond level measurements shall be maintained in graphical form and on file at the mill site for use in developing the annual report. The licensee shall adhere to commitments made in their July 8, 1991, submittal modifying the number of piezometers monitored.
 - D. The annual technical evaluation report shall include an assessment of the hydraulic and hydrologic capacities, water quality and structural stability of the tailings impoundment.
 - E. A copy of each annual technical evaluation report shall be submitted to the NRC, within one (1) month of its completion.
- [Applicable Amendment: 15]
31. In addition to the requirements in Section 5.2 of the renewal application, the Radiation Control Coordinator (RCC) shall have the minimum education, training, and experience as detailed in Section 2.4.1 of Regulatory Guide 8.31 dated May 1983. [Applicable Amendment: 18]
32. Radiation survey instruments shall be calibrated at least semiannually or at the manufacturer's suggested interval, and after each repair, whichever is sooner. All radiation survey instruments shall be checked for proper operation using a radiation check source prior to each day's use. Portable air sampling equipment shall be calibrated after repair and at least quarterly or at the manufacturer's suggested interval, whichever is sooner. Flow rates on portable samplers shall be checked and documented prior to each day's use. Fixed continuous air samplers shall be calibrated after repair and at least quarterly or at the manufacturer's suggested interval, whichever is sooner. Flow rates on fixed continuous air samplers shall be checked each time the sampling head is changed.
33. The licensee shall implement an interim tailings stabilization program as specified in the March 16, 1987 submittal. In addition, this program shall include written procedures which are of sufficient detail to describe inspection methodologies, management notifications and implementation of corrective actions

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number

SUA-917, Amendment No. 28

Docket or Reference Number

40-3453

to assure compliance to Criterion 8 of 10 CFR 40, Appendix A. As a minimum, the licensee shall perform at least weekly, a documented inspection to assure the effectiveness of the control methods used. Corrective actions taken shall be documented in response to inspection findings. Corrective actions shall be completed within 30 days unless a longer period is approved in writing by the NRC.

34. The licensee is authorized to dispose of byproduct material contaminated solid wastes generated at the Moab Mill in the sump collection pond as described in the licensee's submittal dated February 29, 1984.
35. Notwithstanding representations made in Section 4.3 of the renewal application the licensee shall not dispose of materials other than uranium mill tailings, spent resins, raffinate, vanadium waste residues, liquids or residues contained in the catchment basin described in Condition No. 27, or liquid sanitary wastes in the tailings pond, without the specific authorization of NRC. If liquid sanitary wastes are discharged to the tailings pond, written authorization shall first be obtained from the Utah Bureau of Water Pollution Control. A copy of the written authorization shall be submitted to NRC prior to the discharge of the liquid sanitary waste.

The licensee shall be permitted to discharge as necessary any liquids or solids to the tailings impoundment from the catchment basin as described in License Condition No. 27 that are generated during the decommissioning phase of the mill.

[Applicable Amendment: 18]

36. DELETED by Amendment No. 18.
37. Reclamation phase modifications to Moab Wash shall be as specified in the "Pilot Channel" option of the licensee's submittal dated October 13, 1983 with the following modifications:
- A. The pilot channel bottom shall be sloped at a 1% grade away from the tailings pile (i.e., to the north).
 - B. Excavation material shall be used to backfill the entire length of the existing Moab Wash channel, with the fill sloped away from the tailings pile. Any remaining excavation material shall be used to construct a berm on the south side of the pilot channel to increase channel capacity.

In addition, operational phase modifications to Moab Wash shall be maintained in accordance with the licensee's submittal dated October 26, 1982.

38. Mill tailings other than samples for research shall not be transferred from the site without specific prior approval of the NRC. The licensee shall maintain a permanent record of all transfers made under the provisions of this condition.
39. Atlas shall, in accordance with submittals dated February 25 and June 29, 1987, develop methods and procedures prior to reclamation, to ensure that:

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

Licensee Number

SUA-917, Amendment No. 28

Docket or Reference Number

40-3453

- A. The entire area of contaminated soil southeast of the tailings impoundment, consisting of approximately 6.6 acres with an estimated volume of 25,000 cubic yards, is placed in the tailings pond and otherwise ensure that the entire area is decontaminated consistent with 10 CFR Part 40, Appendix A, Criterion 6.
- B. The entire area west of State Highway No. 279 identified as exceeding Ra-226 levels provided in 10 CFR Part 40, Appendix A, Criterion 6, shall be removed and placed in the tailings pond prior to final reclamation. By our letter dated February 25, 1987, background for the area west of State Highway No. 279 is 5.5 pCi/gm Ra-226.
- C. Records of all surveys and soil analyses of the section southeast of the tailings impoundment and west of State Highway No. 279 shall be maintained until the NRC authorizes their disposal.

40. DELETED by Amendment No. 18.

41. The licensee shall reclaim the tailings disposal area in accordance with the May 29, 1981, submittal entitled "Report, Conceptual Design and Cost Estimate, Tailings Pile Reclamation, Moab, Utah, for Atlas Minerals," until superseded by an approved site reclamation plan which meets the requirements of 10 CFR 40, Appendix A.

[Applicable Amendment: 18]

42. The licensee shall maintain an NRC-approved financial surety arrangement, consistent with 10 CFR 40, Appendix A, Criteria 9 and 10, adequate to cover the estimated costs, if accomplished by a third party, for decommissioning and decontamination of the mill and mill site, for reclamation of any tailings or waste disposal areas, ground-water restoration as warranted and the long-term surveillance fee. Within 3 months of NRC approval of a revised reclamation/decommissioning plan, the licensee shall submit, for NRC review and approval, a proposed revision to the financial surety arrangement if estimated costs in the newly approved plan exceed the amount covered in the existing financial surety. The revised surety shall then be in effect within 3 months of written NRC approval.

Annual updates to the surety amount, required by 10 CFR 40, Appendix A, Criteria 9 and 10, shall be submitted to the NRC at least 3 months prior to the anniversary date which is designated as December 31 of each year. If the NRC has not approved a proposed revision to the surety coverage 30 days prior to the expiration date of the existing surety arrangement, the licensee shall extend the existing surety arrangement for 1 year. Along with each proposed revision or annual update, the licensee shall submit supporting documentation showing a breakdown of the costs and the basis for the cost estimates with adjustments for inflation, maintenance of a minimum 15 percent contingency fee, changes in engineering plans, activities performed, and any other conditions affecting estimated costs for site closure. The basis for the cost estimate is the NRC approved reclamation/decommissioning plan or NRC approved revisions to the plan. The previously provided guidance entitled, "Recommended Outline for Site Specific

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number

SL-917, Amendment No. 28

Docket or Reference Number

40-3453

Reclamation and Stabilization Cost Estimates," outlines the minimum considerations used by the NRC in the review of site closure estimates. Reclamation/decommissioning plans and annual updates should follow this outline.

Atlas' currently approved surety instrument, Performance Bond No. 5652 issued by the Acstar Insurance Company of New Britain, Connecticut in favor of the NRC, shall be continuously maintained in an amount no less than \$6,500,000 for the purpose of complying with 10 CFR 40, Appendix A, Criteria 9 and 10, until a replacement is authorized by the NRC.

The Licensee shall maintain a Standby Trust (Trust) arrangement for the benefit of NRC. The currently established Trust is with Norwest Bank of Colorado N.A.

[Applicable Amendments: 5, 14, 16, 22, 24]

43. 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, at the State's option.
44. DELETED by Amendment No. 18.
45. Before engaging in any activity not previously assessed by the NRC, 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 in the Final Environmental Statement (NUREC-0453), the licensee shall provide a written evaluation of such activities and obtain prior approval of the NRC for the activity.
46. Prior to disturbing any presently undisturbed soils for mill related activities (including borrow areas for tailings reclamation cover) in the future, the licensee shall have an archeological survey conducted of the site(s) to be disturbed. The Utah State Department of Development Services and the U.S. Department of the Interior shall be contacted by the licensee prior to the survey to provide assistance or comment in planning such a survey. The completed survey shall be submitted to the NRC for review and approval to proceed prior to any disturbance of presently undisturbed areas.
47. The licensee shall conduct an annual survey of land use (grazing, residence, wells, etc.) in the area within two miles of the mill and submit a report of this survey annually to the NRC. This report shall indicate any differences in land use from that described in the licensee's previous annual land use report. The report shall be submitted by March 31 of each year.
48. The results of the effluent and environmental monitoring programs required by this license shall be reported in accordance with 10 CFR 40, Section 40.65 with copies of the report sent directly to the NRC. Data from the effluent and environmental monitoring program shall be reported in accordance with the format

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number

SUA-917, Amendment No. 28

Docket or Reference Number

40-3453

in the previously provided guidance entitled, "Sample Format For Reporting Monitoring Data."

49. The licensee shall conduct an environmental and effluent monitoring program as specified in the renewal application in accordance with Table 5.5-8 during normal operations and Table 5.5-9 during periods of extended shutdown with the following modifications:

- A. Air particulate samples shall be analyzed for U-nat, Ra-226 and Th-230, quarterly.
- B. The analysis of quality control samples shall be in accordance with Section 3 of Regulatory Guide 4.15.
- C. Lower limits of detection utilized for sample analysis shall be in accordance with Section 5 of Regulatory Guide 4.14.
- D. Soil and vegetation sampling shall be analyzed annually for Ra-226 and Pb-210.
- E. Notwithstanding the ground-water monitoring specified in Tables 5.5-8 and 5.5-9, the licensee shall monitor the ground water as described in License Condition No. 17.
- F. DELETED by Amendment No. 23.

[Applicable Amendments: 1, 3, 4, 11, 23]

50. The licensee shall conduct a bioassay program in accordance with Section 5.5.4 of the renewal application with the following additions:

- A. Laboratory surfaces used for in-house bioassay analyses shall be decontaminated to less than 25 dpm alpha-(removable)/100 cm² prior to analysis of samples.
- B. Anytime an action level of 15 ug/l uranium for urinalysis is reached or exceeded, the licensee shall document the corrective actions which have been performed in accordance with Revision 1 of Regulatory Guide 8.22, dated January 1987. This documentation shall be submitted to the NRC as part of the semiannual report required by 10 CFR 40.65 and Condition No. 48 to this license.
- C. Anytime an action level of 35 ug/l for two consecutive specimens or 130 ug/l uranium for one specimen for urinalysis is reached or exceeded, the licensee shall document the corrective actions which have been performed in accordance with Revision 1 of Regulatory Guide 8.22. This documentation shall be submitted to the NRC, within thirty (30) days of exceeding the action level.

51. DELETED by Amendment No. 6.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number

SUA-917, Amendment No. 28

Docket or Reference Number

40-3453

52. A. Construction of a roadway toward the center of the tailings impoundment for use by mobile equipment in the application and inspection of binding agents for dust control and to provide access during initial reclamation activities, shall be in accordance with submittals dated July 14 and August 19, 1988.

- B. Any proposed changes to the roadway or its uses, as described in the licensee's July 14 and August 19, 1988 submittals, shall require prior approval of the NRC, in the form of a license amendment.

[Applicable Amendment: 2]

53. The licensee shall conduct fence line inspections on a monthly basis in accordance with their submittal dated March 22, 1989.

[Applicable Amendments: 7, 18]

54. The licensee shall implement the program for radon attenuation specified in the submittal dated July 19, 1989.

[Applicable Amendment: 10]

55. The licensee shall complete site reclamation in accordance with the approved reclamation plan. The ground-water corrective action plan shall be conducted as authorized by License Condition No. 17 in accordance with the following schedules.

- A. To ensure timely compliance with target completion dates established in the Memorandum of Understanding with the Environmental Protection Agency (56 FR 55432, October 25, 1991), the licensee shall complete reclamation to control radon emissions as expeditiously as practicable, considering technological feasibility, in accordance with the following schedule:

- (1) Windblown tailings retrieval and placement on the pile - December 31, 1997.
- (2) Placement of the interim cover - Complete.
- (3) Placement of final radon barrier designed and constructed to limit radon emissions to an average flux of no more than 20 pCi/m²/s above background - December 31, 2000.

- B. Reclamation, to ensure required longevity of the covered tailings and ground-water protection, shall be completed as expeditiously as is reasonably achievable, in accordance with the following target dates for completion.

- (1) Placement of erosion protection as part of reclamation to comply with Criterion 6 of Appendix A of 10 CFR Part 40 - December 31, 1999.
- (2) Projected completion of ground-water corrective actions to meet

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License Number

SUA-917, Amendment No. 28

Docket or Reference Number

40-3453

performance objectives specified in the ground-water corrective action plan - December 31, 1998.

- C. Any license amendment request to revise the completion dates specified in Section A must demonstrate that compliance was not technologically feasible (including inclement weather, litigation which compels delay to reclamation, or other factors beyond the control of the licensee).
- D. Any license amendment request to change the target dates in Section B above must address added risk to the public health and safety and the environment, with due consideration to the economic costs involved and other factors justifying the request such as delays caused by inclement weather, regulatory delays, litigation, and other factors beyond the control of the licensee.

[Applicable Amendments: 21, 25, 26, 27, 28]

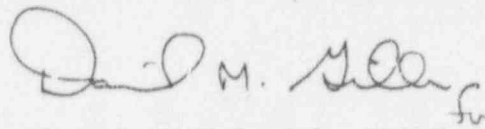
56. Notification to NRC under 10 CFR 20.2202, 10 CFR 40.60, and specific license conditions should be made as follows:

Required written notice to NRC under this license should be given to: Chief, Uranium Recovery Branch, Division of Waste Management, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

Required telephone notification to NRC should be made to the Operations Center at (301) 816-5100.

[Applicable Amendment: 24]

FOR THE NUCLEAR REGULATORY COMMISSION



Joseph J. Holonich, Chief
Uranium Recovery Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Dated: 3/4/97