

September 27, 2001

Mr. William P. Goranson  
Manager, Radiation Safety, Regulatory  
Compliance and Licensing  
Rio Algom Mining Corp.  
6305 Waterford Boulevard, Suite 325  
Oklahoma City, Oklahoma 73118

Dear Mr. Goranson:

SUBJECT: AMENDMENT 1 TO SOURCE MATERIAL LICENSE SUA-1548 -- ANNUAL  
SURETY UPDATE

The U.S. Nuclear Regulatory Commission (NRC) staff has completed its review of Rio Algom Mining Corp.'s (RAMC's) annual surety update for the Smith Ranch facility. By a submittal dated June 30, 2001, RAMC's proposed amount for this surety update has been changed from \$8.093 million to \$8.676 million to reflect: (1) construction of new and expansion of existing buildings; (2) additional surface disturbance associated with wellfield construction; and, (3) groundwater reclamation during an additional year of commercial mining operations. Rio Algom Limited proposes the continued use of the Letter of Credit from the Canadian Bank of Commerce; Instrument for its wholly owned subsidiary, RAMC, and its Smith Ranch facility.

In your 2000 surety update submittal, you failed to identify the fact that the flair factor used in the update (1.5) differed from the flair factor used in the license renewal application that was under review (1.68). NRC approved the 2000 surety update based on this incorrect information. This 2001 surety update submitted also uses the 1.5 flair factor and has since been approved. Therefore, the NRC is requiring that Rio Algom submit a license amendment request for the change in flair factor and provide a thorough justification for the use of the 1.5 flair factor instead of 1.68 as provided in the current approved application.

Based on the information contained in this submittal the staff concludes that the revised 2001 surety amount of \$8.676 million is acceptable for the Smith Ranch facility, and has also determined that the 2001 surety amount of \$8.676 million is covered adequately by the Letter of Credit. Should NRC's review of RAMC's forthcoming license amendment request conclude that the 1.5 flair factor is inappropriate, RMAC will be required to adjust its surety amount accordingly.

Pursuant to Title 10 of the Code of Federal Regulations, Part 40, Source Material License SUA-1548 is hereby amended by revising License Condition No. 9.5. All other conditions of this license shall remain the same. The enclosed license is being reissued to incorporate the above modification. An environmental review was not performed since these actions are categorically excluded under 10 CFR 51.22(c)(10).

These changes to SUA-1548 were discussed between you and Mr. John Lusher, the NRC Project Manager for the Smith Ranch facility, on September 19, 2001. If you have any questions concerning this letter or the enclosure, please contact Mr. Lusher at (301) 415-7694 or by e-mail at [JHL@nrc.gov](mailto:JHL@nrc.gov).

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Melvyn Leach, Chief  
Fuel Cycle Licensing Branch  
Division of Fuel Cycle Safety  
and Safeguards  
Office of Nuclear Material Safety  
and Safeguards

Docket No. 40-8964  
SUA-1548, Amendment No. 1

Enclosure: Materials License SUA-1548, Amendment No.1

cc: S. Ingle, WDEQ  
B. Ferdinand, RAMC

W. Goranson

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Sincerely,

**/RA/**

Melvin Leach, Chief  
Fuel Cycle Licensing Branch  
Division of Fuel Cycle Safety  
and Safeguards  
Office of Nuclear Material Safety  
and Safeguards

Docket No. 40-8964  
SUA-1548, Amendment No. 17

Enclosure: Materials License SUA-1548, Amendment No. 17

cc: S. Ingle, WDEQ  
B. Ferdinand, RAMC

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<b>DATE</b>	9/10/01		9/12/01		9/21/01		9/27/01	

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**MATERIALS LICENSE**

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and the applicable parts of Title 10, Code of Federal Regulations, Chapter I, Parts 19, 20, 30, 31, 32, 33, 34, 35, 36, 39, 40, 51, 70, and 71, and in reliance on statements and representations heretofore made by the licensee, a licensee 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	SUA-1548
1. Rio Algom Mining Corp.		Amendment No. 1	
2. 6305 Waterford Boulevard, Suite 325 Oklahoma City, Oklahoma 73118		4. Expiration Date	September 30, 2010
		5. Docket or Reference	40-8964
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 Byproduct material as defined in 10 CFR 40.4	a. Any b. Unspecified	a. Unlimited b. Quantity generated under operations authorized by this license	

**9. ADMINISTRATIVE CONDITIONS**

9.1 The authorized place of use shall be the licensee's Rio Algom Smith Ranch In-situ Leach (ISL) Facility in Converse County, Wyoming.

9.2 All written notices and reports to NRC required under this license shall be addressed to the Chief, Fuel Cycle Licensing Branch, C/O Document Control Desk, Division of Fuel Cycle Safety and Safeguards, Office of Nuclear Materials Safety and Safeguards, U. S. Nuclear Regulatory Commission, 11545 Rockville Pike, Two White Flint North, Rockville, MD 20852-2738.

Required telephone notification shall be made to the NRC Operations Center at (301) 816-5100, unless otherwise specified in license conditions.

9.3 The licensee shall conduct operations in accordance with the commitments, representations, and statements contained in the license application dated November 15, 1999, as amended by submittals or amendments dated September 27, 2000, and October 12, 2000, which are hereby incorporated by reference, except where superseded by license conditions below.

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

9.4 Performance Based License Condition

- a) The licensee may, without obtaining a license amendment pursuant to §40.44, and subject to conditions specified in Part b of this condition:
  - A) Make changes in the facility as described in the license application (as updated),
  - B) Make changes in the procedures as described in the license application (as updated), and

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- C) Conduct test or experiments not described in the license application (as updated).
- b) The licensee shall obtain a license amendment pursuant to §40.44 prior to implementing a proposed change, test or experiment if the change, test, or experiment would:
- A) Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the license application (as updated);
  - B) Result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in the license application (as updated);
  - C) Result in more than a minimal increase in the consequences of an accident previously evaluated in the license application (as updated);
  - D) Result in more than a minimal increase in the consequences of a malfunction of an SSC important to safety previously evaluated in the license application (as updated);
  - E) Create a possibility for an accident of a different type than any previously evaluated in the license application (as updated);
  - F) Create a possibility for a malfunction of an SSC important to safety with a different result than previously evaluated in the license application (as updated);
  - G) Result in a departure from the method of evaluation described in the license application (as updated) used in establishing the final safety evaluation report (FSER) or the environmental assessment (EA).
- c) The licensee's determinations concerning Part b of this condition, shall be made by a Safety and Environmental Review Panel (SERP). The SERP shall consist of a minimum of three individuals. One member of the SERP shall have expertise in management (e.g., Plant Manager) and shall be responsible for financial approval for changes; one member shall have expertise in operations and/or construction and shall have responsibility for implementing any operational changes; and, one member shall be the radiation safety officer (RSO) or equivalent, with the responsibility of assuring changes conform to radiation safety and environmental requirements. Additional members may be included in the SERP as appropriate, to address technical aspects such as groundwater, hydrology, surface-water hydrology, specific earth sciences, and other technical disciplines. Temporary members or permanent members, other than the three above-specified individuals, may be consultants.
- d) The licensee shall maintain records of any changes made pursuant to this condition until license termination. These records shall include written safety and environmental evaluations made by the SERP, that provide the basis for determining changes are in compliance with Part b of this condition. The licensee shall furnish, in an annual report to the NRC, a description of such changes, test, or experiments, including a summary of the safety and environmental evaluation of each. In addition, the licensee shall annually submit to the NRC changed pages, which shall include both a change indicator for the area changed, e.g. a bold line vertically drawn in the margin adjacent to the portion actually changed, and a page change identification (date of change or change number or both), to the operations plan and reclamation plan of the approved license application (as updated) to reflect changes made under this condition.

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- 9.5 The licensee shall maintain an NRC-approved financial surety arrangement, consistent with 10 CFR 40, Appendix A, Criterion 9, adequate to cover the estimated reclamation and closure costs, if accomplished by a third party, for all existing operations and any planned expansions or operational changes for the upcoming year. Reclamation includes all cited activities and groundwater restoration, as well as off-site disposal of all 11e.(2) byproduct material.

Within three months of NRC approval of a revised closure (decommissioning) plan and its cost estimate, the licensee shall submit for NRC review and approval, a proposed revision to the financial surety arrangement if estimated costs exceed the amount covered in the existing financial surety. The revised surety instrument shall then be in effect within 30 days of written NRC approval of the surety documents.

Proposed annual updates to the surety amount, required by 10 CFR 40, Appendix A, Criterion 9, shall be provided to NRC ninety days prior to the anniversary date (e.g., renewal date of the surety instrument/vehicle) of June 30 of each year. If NRC has not approved a proposed revision 30 days prior to the expiration date of the existing surety arrangement, the licensee shall extend the existing arrangement, prior to expiration, for one year. Along with each proposed revision or annual update of the surety, 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, changes in engineering plans, activities performed, and any other conditions affecting estimated costs for site closure.

At least 90 days prior to beginning construction associated with any planned expansion or operational change which was not included in the annual surety update, the licensee shall provide for NRC approval an updated surety to cover the expansion or change.

The licensee shall also provide NRC with copies of surety-related correspondence submitted to the State of Wyoming, a copy of the State's surety review, and the final approved surety arrangement. The licensee also must ensure that the surety, where authorized to be held by the State, identifies the NRC-related portion of the surety and covers the above-ground decommissioning and decontamination, the cost of offsite disposal of 11e(2) byproduct material, soil and water sample analyses, and groundwater restoration associated with the site. The basis for the cost estimate is the NRC-approved site closure plan or the NRC-approved revisions to the plan. Reclamation or decommissioning plan, cost estimates, and annual updates should follow the outline in Appendix E to NUREG-1569 (NRC, 1997), entitled "Recommended Outline for Site-Specific *In Situ* Leach Facility Reclamation and Stabilization Cost Estimates."

Rio Algom Mining Corp. currently approved surety instrument, a Letter of credit from the Canadian Imperial Bank of Commerce, New York Agency, 425 Lexington Avenue, NY 10017, in favor of the State of Wyoming, shall be continuously maintained in the sum total amount of no less than \$8,676,084 for the purpose of complying with 10 CFR 40, Appendix A, Criterion 9, until a replacement is authorized by both the State of Wyoming and the NRC.

[Applicable Amendment: 1]

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- 9.6 The licensee shall dispose of 11e.(2) byproduct material from the Rio Algom Smith Ranch ISL facility at a site licensed by NRC or an NRC Agreement State to receive 11e.(2) byproduct material. The licensee's approved waste disposal agreement must be maintained on-site. In the event the agreement expires or is terminated, the licensee shall notify NRC in writing, in accordance with License Condition 9.2, within 7 days after the date of expiration or termination. A new agreement shall be submitted for NRC approval within 90 days after expiration or termination unless further delay is justified, or the licensee will be prohibited from further lixiviant injection.
- 9.7 The licensee shall follow the guidance set forth in U.S. Nuclear Regulatory Commission, Regulatory Guides 8.22, "Bioassay at Uranium Recovery Facilities," 8.30, "Health Physics Surveys in Uranium Recovery Facilities," and 8.31, "Information Relevant to Ensuring that Occupational Radiation Exposure at Uranium Recovery Facilities will be As Low As is Reasonably Achievable (ALARA)," or NRC-approved equivalent.
- 9.8 The licensee is hereby exempted from the requirements of 10 CFR §20.1902(e) for areas within the facility, provided that all entrances to the facility are conspicuously posted in accordance with §20.1902(e) and with the words, "ANY AREA WITHIN THIS FACILITY MAY CONTAIN RADIOACTIVE MATERIAL."
- 9.9 Before engaging in any developmental activity not previously assessed by the NRC, the licensee shall administer a cultural resource inventory. All disturbances associated with the proposed development will be completed in compliance with the National Historic Preservation Act (as amended) and its implementing regulations (36 CFR 800), and the Archaeological Resources Protection Act (as amended) and its implementing regulations (43 CFR 7).
- In order to ensure that no unapproved disturbance of cultural resources occurs, any work resulting in the discovery of previously unknown cultural artifacts shall cease. The artifacts shall be inventoried and evaluated in accordance with 36 CFR Part 800, and no disturbance of the area shall occur until the licensee has received authorization from the NRC to proceed.
- 9.10 The licensee shall provide buffer zones and construct its facilities in accordance with the recommendations made in its historical consultant's report submitted May 7, 1991, in order to prevent adverse effects upon historic and prehistoric resources found in the State permit area. Land disturbance plans and well-field facility design shall be coordinated with NRC and the Bureau of Land Management in Mills, Wyoming.
- 9.11 Final (detailed) decommissioning plan(s) for land (soil) or facilities will be submitted to the NRC for review and approval at least 12 months before the planned commencement of decommissioning of a wellfield or the processing facility.

**10. OPERATIONAL LIMITS, CONTROLS, AND RESTRICTIONS**

- 10.1 Commercial processing plant operations shall not exceed an average monthly flow rate of 12000 gallons per minute, and an annual yellowcake production shall not exceed 3.5 million pounds as  $U_3O_8$ .

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- 10.2 The licensee shall maintain effluent control systems as specified in Section 4.1 of the license application dated September 27, 2000, as amended, with the following additions:
- a) If during yellowcake drying operations any emission control equipment for the yellowcake drying or packaging areas is not performing within the operational specifications, the licensee shall not; (1) unload the dryer as part of the routine operations until the emission control equipment has been returned to service within operational specifications; or (2) reload the dryer with yellowcake until the emission control system has been returned to service within its operational specifications.
  - b) The licensee shall, during all periods of yellowcake drying operations, assure that the specified operating pressure differential is maintained in the drying chamber. This shall be accomplished by either: (1) performing and documenting checks of air pressure differential approximately every 4 hours during operation; or (2) installing instrumentation that will signal an audible alarm if air pressure falls below the specified operating levels. If an audible alarm is used, its operation shall be checked and documented daily during dryer operations. Air pressure differential gauges for other emission control equipment shall be read and the readings documented at least once per shift during dryer operations.
- 10.3 The licensee shall perform well integrity tests on each injection and production well before the wells are utilized and on wells that have been serviced using a downhole drill bit or underreaming. The integrity test shall pressurize the well to 125 percent of the design operating wellhead casing pressure and shall maintain 95 percent of this pressure for 10 minutes to pass the test. If any well casing failing the integrity test cannot be repaired, the well shall be plugged and abandoned. During wellfield operations, injection pressures shall not exceed the integrity test pressure at the injection well heads.
- 10.4 The licensee may utilize carbon dioxide and sodium carbonate/bicarbonate as the lixiviant with an oxygen or hydrogen peroxide oxidant. Any variation from this combination shall require a license amendment.
- 10.5 The licensee is prohibited from constructing new Satellite Facilities or waste water evaporation ponds prior to NRC review and approval of designs and specifications. Pond design shall allow for sufficient reserve capacity in the evaporation pond system to enable the transfer of the contents of any one pond to the other ponds. All retention ponds shall be designed to meet requirements of NRC Regulatory Guide 3.11, Staff Position Paper No. WM-8101, and WDEQ.
- 10.6 The licensee shall maintain an area within the restricted area boundary for storage of contaminated materials prior to their disposal. All contaminated wastes and evaporation pond residues shall be disposed at a licensed radioactive waste disposal site.
- 10.7 All liquid effluents stemming from commercial mine units, process buildings and process waste streams, with the exception of sanitary wastes, shall be returned to the process circuit, discharged to the solution evaporation ponds, or deep well injected.
- 10.8 Prior to mining, baseline water quality data for the constituents identified in Table 5.1 of the application dated September 27, 2000, as amended, shall be established for each mining unit prior to mining at the following points: (a) all mining zone perimeter monitor wells; (b) two upper and two lower aquifer monitor wells per mining unit; and (c) ten production/injection wells per mining unit. For mining units exceeding ten acres in size, baseline water quality data shall be collected from one additional production/injection well for each two acres beyond the ten-acre limit. Baseline production/injection wells shall be evenly distributed across the mining unit.

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- 10.9 The licensee is prohibited from conducting well-field installation in the southwestern part of the State of Wyoming permit area, T35N R74W, excluding Section 2 until aquifer characteristics have been tested, reviewed, and approved by NRC.
- 10.10 The licensee is prohibited from commencing aquifer restoration using chemical-reducing agents prior to review and approval of an occupational safety plan addressing the deployment of chemical reducing agents in the processing plant or well fields.

**11. MONITORING, RECORDING, AND BOOKKEEPING REQUIREMENTS**

- 11.1 The effluent and environmental monitoring report shall include injection rates, recovery rates, injection manifold pressures, and injection trunk-line pressures for each satellite facility. This data will be provided as monthly averages for the reporting period.
- 11.2 Any time uranium in a worker's urine specimen exceeds 15 micrograms per liter (ug/l), the annual ALARA audit will indicate what corrective actions were considered or performed.
- 11.3 Any time an uranium action level of 35 ug/l for two consecutive urine specimens or 130 ug/l for any one specimen is reached or exceeded, the licensee shall provide documentation within 30 days to the NRC indicating what corrective actions have been performed.
- 11.4 The licensee shall perform and document daily visual inspections of the evaporation pond embankments, fences and liners, as well as measurements of pond freeboard and checks of the leak detection system. Any time 6 inches or more of fluid is in the leak detection system standpipes, it shall be analyzed for specific conductance and chloride. If, with a second sample, those parameters confirm a pond leak, then appropriate actions will be taken. The pond level shall be lowered by transferring its contents into an alternate cell or to the plant for disposal through deep well injection, and repairs undertaken.
- 11.5 Each monitor well shall be sampled and tested for chloride, conductivity, and alkalinity on a twice per month basis. If two UCLs are exceeded in a well or if a single UCL value is exceeded by five standard deviations or more above baseline monitoring data, the licensee shall take a confirmation water sample within 24 hours and analyze it for the excursion indicators. If the second sample does not indicate exceedance, a third sample shall be taken within 48 hours.

If neither the second or third indicate exceedance, the first sample shall be considered in error. If the second or third sample indicates an exceedance, the well in question shall be placed on excursion status. During excursion status, sampling and testing frequency shall be increased to weekly for the affected monitor wells until the excursion is controlled.

- 11.6 The licensee shall establish an effluent and environmental monitoring program in accordance with Table 5.3 of the application dated September 27, 2000, as amended.
- 11.7 During commercial production, the RSO, RST, or a trained designee shall perform and document a daily walk-through inspection of all operating areas. The inspection's purpose is to ensure that all radiation protection and monitoring requirements are being followed.

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**12. REPORTING REQUIREMENTS**

**12.1 Spills, Pond Leaks, Leaks, Excursions, and Incident/Events Reporting**

Until license termination, the licensee shall maintain documentation on spills of source or 11e.(2) by product materials (including mining solutions) and process chemicals. Documented information shall include, but not be limited to: date, spill volume, total activity of each radionuclide released, radiological survey results, soil sample results (if taken), corrective actions, results of post remediation surveys (if taken), and a map showing the spill location and the impacted area.

The licensee shall have procedures which will evaluate the consequences of the spill or incident/event against 10 CFR 20, Subpart "M," and 10 CFR 40.60 reporting criteria. If the criteria are met, then report to the NRC Operations Center as required.

If the licensee is required to report any spills, pond leaks, excursions of source, 11e.(2) by product material, and process chemicals that may have an impact on the environment, or any other incidents/events to State or Federal Agencies, a report shall be made to the NRC Region IV Uranium Recovery Branch Chief and NRC Headquarters Project Manager (PM) by telephone or electronic mail (e-mail) within 48 hours. This notification shall be followed, within thirty (30) days of the notification, by submittal of a written report to NRC Region IV and NRC Headquarters as per License Condition 9.2, detailing the conditions leading to the spill or incident/event, corrective actions taken, and results achieved.

12.2 An annual report will be submitted to the NRC that includes the ALARA audit report, land use survey, monitoring data, corrective action program report, one of the semiannual effluent and environmental monitoring reports, and the SERP information required under LC 9.4(d).

12.3 Three months prior to commencing ground-water restoration in each well field, the licensee shall submit a restoration plan to the NRC. The restoration plan shall have a goal of returning all affected ground-water constituents to baseline levels on a mining-unit average basis. The licensee shall be required to demonstrate baseline conditions are not achievable in order to apply any alternate standard of performance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Dated: September 27, 2001

Melvyn Leach, Chief  
Fuel Cycle Licensing Branch  
Division of Fuel Cycle Safety and Safeguards  
Office of Nuclear Material Safety and Safeguards