

## 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. Central Electricity Generating Board  
Exploration (America) Inc.  
c/o Davis, Graham & Stubbs  
2. P.O. Box 185  
Denver, Colorado 80201

3. License number

SUA-1403, Amendment No. 3

4. Expiration date

December 31, 1990

5. Docket or  
Reference No.

40-8781

6. Byproduct, source, and/or  
special nuclear material7. Chemical and/or physical  
form8. Maximum amount that licensee  
may possess at any one time  
under this license

- a. Natural Uranium  
b. Byproduct Material

- a. Aqueous Solution & Slurry  
b. Unspecified

- a. That amount  
produced under  
licensed activities  
b. That amount  
produced under  
licensed activities

9. Authorized Place of Use: the approximately 80 acre well field area, the processing areas and the evaporation ponds as shown on Figure 2.6 of the Final Environmental Statement (NUREG-0925), located in T34N, R74W, Converse County, Wyoming, approximately 7.5 air miles northeast of Glenrock.
10. Authorized use: For uranium recovery by in situ solution mining from eighty (80) acres (Mine Units I-VIII) of well field in accordance with statements, representations, and conditions contained in Section 5.0 of the application dated October 10, 1980, and supplements dated October 26, 1981, November 17, 1981, and April 21, 1982; and Sections I, VII, VIII A and B, IX, XIII A and B, XIV A, and XXIV of the Health Physics Manual and enclosure submitted by letter dated May 8, 1981, except where superseded by license conditions below.

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

11. 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, 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.
12. The licensee is hereby exempted from the requirements of Section 20.203(e)(2) of 10 CFR 20 for posting areas within the facility, provided that all entrances to the

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facility are conspicuously posted in accordance with Section 20.203(e)(2) and with the words, "Any Area Within This Facility May Contain Radioactive Material."

13. At least three (3) months prior to commencing operations, the licensee shall submit a quality assurance program to the USNRC, Uranium Recovery Field Office, in form of a license amendment. The program shall address in-plant radiation safety and environmental monitoring procedures which include all the recommended elements of a quality assurance program specified in Regulatory Guide 4.15, "Quality Assurance for Radiological Monitoring Programs (Normal Operations)-Effluent Streams and the Environment."
14. In addition to inspections and audits as specified in Section 5.0 of the application and Section XXIV of the Health Physics Manual, the RPO shall perform and document a daily "walk through" inspection of the operating area to determine if written procedures and policies are being followed. On a monthly basis, the RPO shall prepare a summary report of the daily and weekly inspections, personnel exposures, environmental monitoring data and corrective actions, which shall be submitted to the Manager.
15. The RPO or other expert with equivalent qualifications shall conduct and document an annual ALARA audit of the radiation safety program at the facility and submit a written report with any necessary corrective actions to the Manager. A copy of the audit report shall be submitted to the USNRC, Uranium Recovery Field Office, within one (1) month of submittal to the Manager.
16. All radiation monitoring equipment shall be calibrated after repairs and at least semiannually or at the manufacturer's suggested interval whichever is sooner and checked for proper operation using a radiation check source prior to use.
17. The licensee shall implement an urinalysis program as outlined in Regulatory Guide 8.22, "Bioassay at Uranium Mills," with the following exceptions:
  1. The licensee shall perform a baseline urinalysis for all permanent employees prior to their initial assignment at the facility.
  2. The frequency of urine sample collection shall be monthly.
  3. Anytime an action level of 30 ug/l for four (4) consecutive specimens or 130 ug/l for any one specimen is reached or exceeded, the licensee shall provide documentation within one (1) month to the USNRC, Uranium Recovery Field Office, indicating what corrective actions have been performed to satisfy the requirements of Regulatory Guide 8.22.
18. The licensee shall monitor for radon-222 or radon daughters, as well as airborne uranium using frequencies, analytical techniques, and determining doses as specified in Sections X-1(revised April 21, 1982), X-2, XI, and XII of the Health Physics Manual. The licensee may use other equivalent analytical equipment than that specified in the above sections.

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19. Six (6) months prior to commencing of mining operations and annually thereafter. The licensee shall conduct an annual survey of land use (private residences, grazing area, private and public potable water and agricultural wells, and nonresidential structures and uses) in the area within five (5) miles 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.
20. All liquid effluents, with the exception of sanitary wastes, shall be returned to the process circuit, or discharged to the evaporation pond(s) provided that there is no potential for adverse reaction with the liner(s). Contaminated solid wastes, including degraded resin and discarded process equipment shall be placed in containers for disposal off-site at a licensed commercial disposal facility or a licensed uranium tailings impoundment which has the prior approval of the USNRC for the receipt of such wastes.
21. The licensee shall perform and document daily visual inspections of the evaporation pond(s) and shall immediately notify the USNRC, Uranium Recovery Field Office, by telephone or telegraph, of any failure of any evaporation pond, pipeline, or any other fluid or material conduit or storage facility that results in a release of radioactive materials or any conditions which could lead to such a release. Such notification shall be followed within seven days by submittal of a written report detailing the conditions leading to the failure or potential failure, corrective actions taken, and results obtained. This requirement is in addition to the reporting requirements of 10 CFR Part 20.
22. Release of equipment or packages from the restricted area shall be in accordance to Attachment No. 1 to SUA 1403, and "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.
23. The licensee shall, six (6) months prior to commencing operations, submit for approval in the form of a license amendment to the Uranium Recovery Field Office, the proposed Organizational Structure and the personnel qualifications of those personnel to be assigned responsibilities involving health and safety practices for the facility.
24. The licensee shall issue to each facility employee and exchange on a monthly basis, external personnel dosimeters.
25. Any changes in the process circuit or general wellfield as illustrated and described in Figures 2.7 and 2.4 of NUREG-0925, except for flow and production rates, shall require the approval of USNRC, Uranium Recovery Field Office, in the form of a license amendment.
26. The licensee shall, beginning one (1) year prior to facility construction, conduct an environmental radiological monitoring program as specified in Table 4.7 of NUREG-0925. This program shall also include sampling and analysis of Little Sand Creek water quality.



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quarterly or when surface water is running as described in Section 4.4.1.1 and Table 3.19 of NUREG-0925. The results of the monitoring program shall be reported semiannually to the USNRC, Uranium Recovery Field Office, in accordance with the requirements of 10 CFR 40.65.

27. The licensee shall notify the USNRC, Uranium Recovery Field Office, at least one (1) month prior to use of existing evaporation ponds for commercial solution mining operations for the purpose of an on-site inspection. Additionally, the licensee shall not construct new evaporation ponds without specific prior approval of the USNRC in the form of a license amendment.
28. In order to ensure that no disturbance of cultural resources occurs, the licensee shall have an archeological and historical artifact survey of areas of its property, not previously surveyed prior to their disturbance. These surveys must be submitted to the USNRC, Uranium Recovery Field Office, 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 land disturbance shall cease until approval to proceed has been drafted by the USNRC.
29. The licensee shall notify the USNRC, Uranium Recovery Field Office, at least six (6) weeks prior to commencement of mining operations in order to allow adequate time to review the licensee's development and implementation of written operating procedures and monitoring programs. Additionally, all procedures shall be reviewed and approved annually by the RPO.
30. 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, Uranium Recovery Field Office, in the form of a license amendment.
31. The licensee shall mine the eight mine units indicated in Figures 2.2 and 2.3 of NUREG-0925 in numerical sequence beginning with Mine Unit I. Total production flow from all mining activities conducted by the licensee within the permit area shall not exceed 1500 gpm, exclusive of any flow produced from restoration activities.
32. The licensee shall not use any lixiviant other than sodium bicarbonate/carbonate, and shall not use any oxidant other than oxygen and/or hydrogen peroxide, without USNRC review and approval in the form of a license amendment.
33. Production and injection flows shall be continuously monitored at the processing plant, and documented on an hourly basis. The process plant water and chemical balance shall be evaluated and documented daily. Employees noting loss-of-flow and/or leakage shall document the situation, notify the Manager, and institute corrective actions.

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34. Individual well-head injection pressures shall be monitored and recorded at least daily when in use. Individual well-head injection pressure shall not exceed the latest initial test pressure to which the well was successfully tested, and shall in no case exceed 0.63 psi per foot of well depth.
35. Every two weeks water quality samples shall be obtained for excursion monitor wells associated with any mine unit being mined or restored and analyzed for all UCL parameters. Sampling shall not occur until field pH and conductivity have stabilized and at least one casing volume has been displaced. The water levels shall be measured and recorded prior to pumping. An excursion is confirmed if the UCL for chloride is exceeded, if the UCL of any single indicator parameter is exceeded by more than 20%, or if the UCLs are exceeded for any two indicator parameters. If an excursion is identified a second confirmatory sample shall be obtained within 48 hours, and analyzed for all the excursion parameters. Routine and confirmatory sample analysis results shall be available within 48 hours of the time of sample collection. The licensee shall initiate appropriate corrective action upon verification of the excursion and the licensee shall notify the USNRC, Uranium Recovery Field Office, within one business day. The licensee shall submit a written report and evaluation within seven days. Any well on excursion shall be sampled weekly for water level and all excursion parameters until recovery from excursion has been achieved and maintained for a continuous period of one month. The licensee shall prepare and submit monthly reports for any well on excursion status. If a well remains on excursion in excess of 90 days the injection of lixiviant into the affected mine unit shall be terminated until the licensee receives written approval to resume injection from the USNRC in the form of a license amendment.
36. DELETED by Amendment No. 3.
37. The number, identification and location of excursion monitor wells and restoration baseline sampling wells, for Mine Unit I, shall be as indicated in Figure 4.2 and as specified in Sections 4.3.1.1 and 4.4.2.5 of NUREG-0925.
- The general plan for determining the number and location of excursion monitoring wells and restoration baseline sampling wells in subsequent mining units shall be as specified in Sections 4.3.1.1 and 4.4.2.5 of NUREG-0925.
38. The licensee shall maintain sufficient reserve capacity within the evaporation pond system to allow transfer of the total contents of any one pond to another pond without violating freeboard requirements.
39. The volume of liquid process effluent discharges to the evaporation pond(s) system shall be recorded and maintained. Quarterly samples of the pond(s) solution shall be analyzed for calcium, alkalinity, sodium, sulfate, radium-226, and uranium.

The pond(s) leak detection systems shall be checked daily. If liquid is present, it shall be sampled and analyzed, within 48 hours. The licensee shall also notify the USNRC, Uranium Recovery Field Office, within one business day and submit a written evaluation within seven days. The licensee shall immediately initiate appropriate

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investigative and/or corrective actions and submit monthly reports documenting the correction of the problem.

40. Baseline water quality data for excursion monitor wells, and restoration baseline sampling wells shall consist of analyses of three rounds of samples collected at least ten (10) days apart. Samples shall be collected after field pH and conductivity have stabilized and at least one casing volume has been displaced. Baseline samples shall be analyzed for all parameters shown in Table 4.4 of NUREG-0929. To ensure that all water quality data are unaffected by any prior solution mining activity, baseline quality shall be determined prior to injecting into the production zone aquifer of any adjacent mining unit(s). The water level in each well used to obtain baseline data shall be measured and recorded immediately before it is pumped for sample collection.
41. A semiannual well field operations report shall be submitted to the USNRC, Uranium Recovery Field Office, which summarizes water quality, water level elevations, restoration data, lixiviant migration control measures, waste generation volumes, and volumes of injected lixiviant and pregnant solution. All data shall be presented in tabular and graphical form, with a written evaluation of the data.
42. The licensee shall submit copies of any correspondence with the Wyoming Department of Environmental Quality regarding well field operations and/or monitoring to the USNRC, Uranium Recovery Field Office.
43. Upon cessation of mining an individual mine unit, the licensee shall submit to the USNRC, Uranium Recovery Field Office, for review and approval in the form of a license amendment, a groundwater restoration program in accordance with the general plan described in Section 2.3.10.3 of NUREG-0925.
- The licensee shall not mine or transfer groundwater from one mine unit to another in other than Mine Units I, II and III without written approval in the form of a license amendment.
44. Boreholes and wells within the well field area not used in production or monitoring shall be plugged prior to injecting lixiviant to comply with Section 2.3.10.1 of NUREG-0925 and Wyoming Department of Environmental Quality (WDEQ) requirements.
45. The licensee shall maintain throughout the project and annually update a surety to cover groundwater restoration, reclamation and decommissioning to unrestricted release limits. A copy of the surety along with a cost breakdown shall be submitted to the USNRC, Uranium Recovery Field Office, in the form of a license amendment six (6) months prior to injecting lixiviant.
46. Prior to conducting operations in any mine unit, the licensee shall submit to the USNRC, Uranium Recovery Field Office, for review and approval, in the form of a license amendment, the following information for all excursion monitoring wells and restoration baseline sampling wells.



- A. A location and identification map on a scale of 1 in. = 50 ft.
- B. Well completion intervals.
- C. Restoration criteria and associated baseline data for the parameters listed in Table 4.4 of NUREG-0929.
- D. Upper control limits (UCLs) for total alkalinity, electrical conductance, chloride and uranium as well as baseline data.
- E. Geophysical logs and geologic cross sections at a density of at least one section parallel to and one section normal to the ore trend for every 5 acres of well field within a mine unit.
- F. A potentiometric surface map using monitor and production water level data, for the M and N aquifers which cover the active unit as well as adjoining mining units that have not previously been mapped. The scale of these maps shall be 1 in. = 50 ft with a contour interval of 0.1-ft.
- G. The results of a mine unit pump test conducted in the ore zone aquifer which is designed to evaluate ore zone and confining unit hydraulic characteristics. Aquifer tests shall be conducted in the two mine units adjacent to Mine Unit I prior to production in Mine Unit I. Subsequent aquifer tests shall be conducted with at least one inactive mine unit between the test unit and active units.

Initial well casing integrity testing shall be performed initially and every five years for active wells as specified in Section 2.3.10.1 of NUREG-0925. No production or injection well shall be used after initial completion or after re-entry by drilling equipment without integrity testing. The results of all tests, including time, date, well number, initial test pressure, and test pressure after 10 minutes, shall be documented, signed, and approved by the wellfield engineer or the Manager.

Date JAN 29 1986

By

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

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