

MAR 04 1991

URFO:GRK
Docket No. 40-8958
SUA-1539, Amendment No. 2
Docket No. 40-8981
SUA-1540, Amendment No. 1
04008958030E
04008981020E

Pathfinder Mines Corporation
Shirley Basin Mine
Shirley Basin, Wyoming 83615

Gentlemen:

Our office is in receipt of the license transfer requests from Pathfinder Mines Corporation (Pathfinder) and Uranerz U.S.A., Inc. (Uranerz) dated February 2, 1991. It is our understanding that as required in 10 CFR 40.46, Pathfinder and Uranerz have mutually agreed to transfer title to the Ruth and North Butte properties as well as the NRC licenses authorizing operation of these facilities on or about February 25, 1991.

Our office is also in receipt of your February 15, 1991, letter requesting our review of your letters of credit which were received in our office on February 20, as revised by the submittal dated February 22, 1991. It is our understanding that these documents have also been submitted to the Wyoming Department of Environmental Quality (WDEQ) for their review.

Our review of the transfer requests indicates that Pathfinder will accept the Ruth and North Butte Source Material Licenses, SUA-1539 and SUA-1540, respectively, as they currently exist. Furthermore, we find that the staff that will operate these facilities are qualified by way of specialized training and experience. Your financial assurance for the Ruth site also meets the appropriate regulatory requirements. Because of the lack of development at the North Butte site, no financial bonding arrangement will be required at this time.

Therefore, in consideration of the license transfer request as well as pursuant to Title 10, Code of Federal Regulations, Part 40, Source Material License SUA-1539 is hereby amended by revising License Condition Nos. 1, 2, and 34 to read as follows:

1. Pathfinder Mines Corporation

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DD:URFO
EHawkins
02/ /91
3/4/91

D:URFO:RIV
REHall
02/ /91
3/4/91

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2. Shirley Basin Mine
Shirley Basin, Wyoming 82615
34. The licensee shall maintain an NRC-approved financial surety arrangement, consistent with 10 CFR 40, Appendix A, Criterion 9, adequate to cover the estimated costs, if accomplished by a third party, for completion of the NRC-approved site closure plan including: above-ground decommissioning and decontamination, the cost of offsite disposal of radioactive solid process or evaporation pond residues, and ground-water restoration. Within three (3) months of NRC approval of a revised closure plan and cost estimate, the licensee shall submit, for NRC review and approval, a proposed revision to the financial surety arrangement if estimated costs in the newly-approved site closure plan exceed the amount covered in the existing financial surety. The revised surety shall then be in effect within three (3) months of written NRC approval.

Annual updates to the surety amount, required by 10 CFR 40, Appendix A, Criterion 9, shall be provided to the NRC at least three (3) months prior to the anniversary of the effective date of the existing surety instrument. If the NRC has not approved a proposed revision thirty (30) days prior to the expiration date of the existing surety arrangement, the licensee shall extend the existing arrangement, prior to expiration, for one (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, changes in engineering plans, activities performed, and any other conditions affecting estimated costs for site closure. The licensee shall also provide the 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 must also ensure that the surety, where authorized to be held by the State, expressly identifies the NRC-related portion of the surety and covers the above-ground decommissioning and decontamination, the cost of offsite disposal, soil and water sample analyses, and ground-water restoration associated with the site. The basis for the cost estimate is the NRC-approved closure plan or the NRC-approved revisions to the plan. The reclamation/decommissioning plan, cost estimates, and annual updates should follow the outline in the attachment to this license entitled, "Recommended Outline for Site Specific Reclamation and Stabilization Cost Estimates."

The licensee's currently approved surety, Irrevocable Letter of Credit No. [REDACTED], issued by the Bank of the West in favor of the State of Wyoming, shall be continuously maintained in an amount of not less than \$200,939.00 of the purpose of complying with 10 CFR 40, Appendix A, Criterion 9, until a replacement is authorized by both the State and the NRC.

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Three (3) months prior to the expected commencement of site construction, the licensee shall submit a surety instrument acceptable to the State of Wyoming and the NRC in an amount no less than \$4,597,813. This surety shall be written in favor of the State of Wyoming or the NRC for the purpose of complying with 10 CFR 40, Appendix A, Criterion 9, and shall be continuously maintained until a replacement is authorized by both the State and the NRC. Site construction activities shall not be commenced until the NRC and the State accept the surety arrangement.

Additionally, Source Material License SUA-1540 is hereby amended by revising License Condition Nos. 1 and 2 to read as follows:

1. Pathfinder Mines Corporation
2. Shirley Basin Mine
Shirley Basin, Wyoming 82615

All other conditions of these licenses shall remain the same. The licenses are being reissued to incorporate these modifications. The effect of this amendment is to transfer the licenses from Uranerz to Pathfinder and all the commitments contained therein.

Mr. Konwinski of my staff discussed this amendment with Mr. Catchpole of Uranerz and with Mr. Poyser of Pathfinder on February 7, 20, and 25, 1991.

Sincerely,

Original Sign
R. E. Hall

Ramon E. Hall
Director

Enclosures:

Source Material License SUA-1539
Source Material License SUA-1549

cc:

R. Poyser
Uranerz U.S.A, Inc.
J. Haes, RCPD, WY
WDEQ (2)

bcc:

LFMB
PDR/DCS
URFO r/f
ABBeach, RIV
LLUR Branch, LLWM
OB: IMNS: NMSS
GKonwinski
8958030E/8981020E/GRK/91/2/8/L

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. Pathfinder Mines Corporation

3. License number

SUA-1539, Amendment No. 2

2. Shirley Basin Mine
Shirley Basin, Wyoming 82615

4. Expiration date

December 31, 1995

5. Docket or
Reference No.

40-8958

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

Uranium

Unspecified

300,000 pounds

9. The authorized place of use shall be the licensee's Ruth facility in Johnson County, Wyoming. The licensee is also authorized to possess residual contaminated materials from previous research and development operations.

10. For use in accordance with statements, descriptions and representations contained in Sections 15, 16.1 to 16.4, 16.6 to 16.11, and 19 of the licensee's revised application submitted by cover letter dated October 3, 1988.

Notwithstanding the above, the following conditions shall override any conflicting statements contained in the licensee's application and supplements.

11. The annual throughput shall not exceed a flow rate of 1000 gallons per minute, exclusive of restoration flow resulting in a production rate not to exceed 300,000 pounds of U_3O_8 .

12. Any significant changes in the process circuit as shown in Figure 15.19 of the application, dated October 3, 1988, shall require approval by the NRC, Uranium Recovery Field Office in the form of a license amendment.

13. Release of equipment or packages from the restricted area shall be in accordance with the attachment to this license entitled, "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.

14. The results of effluent and environmental monitoring described in the submittal dated November 13, 1990 shall be reported in accordance with 10 CFR Part 40, Section 40.65, to the NRC, Uranium Recovery Field Office. The report shall also include injection rates, recovery rates and injection manifold pressures.

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15. 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 previously assessed or that is greater than that previously assessed, the licensee shall provide a written evaluation of such activities and obtain prior approval of the NRC in the form of a license amendment.
 16. The results of the 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 the NRC regulations, all such documentation shall be maintained for a period of at least 5 years.
 17. Standard operating procedures (SOPs) 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. Three months prior to the planned initiation of operations the SOPs shall be submitted to the NRC, Uranium Recovery Field Office in the form of a license amendment for review and approval. Additionally, written procedures shall be established for nonoperational activities to include in-plant and environmental monitoring, bioassay analyses and instrument calibrations. An approved, current copy of each written procedure shall be kept in the process area to which it applies.
 18. All written procedures for both operational and nonoperational activities shall be reviewed and approved in writing by the Radiation Safety Officer before implementation, whenever a change in a procedure is proposed, and at least annually, to ensure that proper radiation protection principles are being applied.
 19. The licensee shall submit a detailed decommissioning plan to the NRC at least 12 months prior to planned final shutdown of mining operations. The decommissioning plan shall include a proposal to remove all buried process piping.
 20. All liquid effluents from process buildings and other process waste streams, with the exception of sanitary wastes, shall be returned to the process circuit, discharged to the solution evaporation ponds, or disposed of by way of NPDES permit.
 21. The licensee shall submit baseline water quality data for all mining units from wells established in the mining zone, the mining zone perimeter as well as the upper and lower aquifers. All baseline data shall be submitted to the NRC, Uranium Recovery Field Office, for review and approval 2 months prior to mining. The data shall, at a minimum, consist of the sample analyses shown in Table 16.1 of the license application dated October 3, 1988.
 22. Prior to mining, baseline water quality data for each mining unit shall be established at the following minimal density: all mining zone perimeter monitor wells, one upper and lower aquifer monitor well per four acres of well field, and one production/injection well per acre.

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23. The licensee shall, 2 months prior to lixiviant injection, propose in the form of a license amendment, upper control limits (UCLs) for all monitoring wells utilized for excursion monitoring in each mining unit.

If two UCLs are exceeded in a well or if a single UCL value is exceeded by 20 percent, the licensee shall take a confirmation water sample within 48 hours and analyze it for chloride, conductivity and total alkalinity. 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 and the NRC shall be notified by telephone within 24 hours and within 7 days in writing from the time the confirmation sample was taken. Upon confirmation of an excursion, the licensee shall implement a corrective action and increase the sampling frequency for the excursion indicators to once every 7 days. An excursion is considered concluded when the concentrations of excursion indicators are below the concentration levels defining an excursion for three consecutive 1-week samples.

24. Upper control limits (UCLs) for specific conductivity and carbonate plus bicarbonate shall be the mean of the baseline wells plus five standard deviations. The UCLs for chloride shall be the mean of the baseline wells plus five standard deviations or the mean plus 15 mg/l whichever is greater.

25. A written report shall be submitted to the NRC, Uranium Recovery Field office, within 2 months of excursion confirmation. The report shall describe the excursion event, corrective actions taken and results obtained. If the wells are still on excursion at the time the report is submitted, injection of lixiviant within the well field on excursion shall be terminated until such time that aquifer cleanup is complete.

26. The licensee shall perform well integrity tests on each injection, production, and monitor well before the wells are utilized and on wells that have been serviced. The integrity test shall pressurize the well to 240 pounds per square inch (psi). A well shall have passed the test if it maintains 90 percent of the test pressure after 10 minutes. At the licensee's option, a single point resistance test may be utilized. Any well casing failing the integrity test that cannot be repaired, shall be plugged and abandoned according to State of Wyoming standards. Each well utilized for mining or monitoring shall be retested every 5 years.

Additionally, flow rates on each injection and recovery well and manifold pressures on the entire system shall be measured and recorded daily. During well-field operations, injection pressures shall not exceed the integrity test pressure at the injection well heads.

27. The licensee shall utilize sodium carbonate/bicarbonate as the lixiviant with an oxygen or hydrogen peroxide oxidant. Any variation from this combination shall require a license amendment.

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28. The solution evaporation ponds shall have 3 feet of freeboard.

Additionally, the licensee shall, at all times, maintain sufficient reserve capacity in the evaporation pond system to enable the transfer of the contents of a pond to other ponds. In the event of a leak and subsequent transfer of liquid, the freeboard requirements shall be suspended during the repair period.

29. The licensee shall perform and document weekly 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 fluid detected in the standpipes shall be analyzed for chloride, TDS, sodium, uranium, and radium-226. Should analyses indicate that the pond is leaking, the NRC, Uranium Recovery Field Office, shall be notified by telephone within 48 hours of verification and the pond level lowered by transferring its contents into an alternate cell. Standpipe water quality samples shall be analyzed for the above parameters once every 7 days during the leak period and once every 7 days for at least 2 weeks following repairs.

A written report shall be filed with the NRC, Uranium Recovery Field Office, within 30 days of first notifying the NRC that a leak exists. This report shall include analytical data and describe the mitigative action and the results of that action.

30. Six months prior to construction of the proposed additional evaporation pond, the licensee shall submit a design, in the form of a license amendment, for NRC review and approval.
31. The licensee shall maintain a log of all significant solution spills and notify the NRC, Uranium Recovery Field Office, by telephone within 48 hours of any failure which may have a radiological impact on the environment. Such notification shall be followed, within 7 days, by submittal of a written report detailing the conditions leading to the failure or potential failure, corrective actions taken and results achieved. This requirement is in addition to the requirements of 10 CFR Part 20.
32. The licensee shall maintain an area within the restricted area boundary for storage of contaminated materials prior to their disposal. Prior to lixiviant injection the licensee shall submit a waste disposal agreement to the NRC, Uranium Recovery Field Office, in the form of a license amendment for review and approval. All contaminated wastes and evaporation pond residues shall be disposed at a licensed radioactive waste disposal site.
33. At least 3 months prior to termination of uranium recovery in a mining unit, the licensee shall submit to the NRC, Uranium Recovery Field Office, in the form of a license amendment, a plan for ground-water restoration and at least 12 months of post-restoration monitoring consisting of at least nine sampling events. The goal of restoration shall be to return the ground-water quality, on a mining unit average, to baseline concentrations.
34. The licensee shall maintain an NRC-approved financial surety arrangement, consistent with 10 CFR 40, Appendix A, Criterion 9, adequate to cover the estimated costs, if accomplished by a third party, for completion of the NRC-approved site closure plan.

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including: above-ground decommissioning and decontamination, the cost of offsite disposal of radioactive solid process or evaporation pond residues, and ground-water restoration. Within three (3) months of NRC approval of a revised closure plan and cost estimate, the licensee shall submit, for NRC review and approval, a proposed revision to the financial surety arrangement if estimated costs in the newly-approved site closure plan exceed the amount covered in the existing financial surety. The revised surety shall then be in effect within three (3) months of written NRC approval.

Annual updates to the surety amount, required by 10 CFR 40, Appendix A, Criterion 9, shall be provided to the NRC at least three (3) months prior to the anniversary of the effective date of the existing surety instrument. If the NRC has not approved a proposed revision thirty (30) days prior to the expiration date of the existing surety arrangement, the licensee shall extend the existing arrangement, prior to expiration, for one (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, changes in engineering plans, activities performed, and any other conditions affecting estimated costs for site closure. The licensee shall also provide the 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 must also ensure that the surety, where authorized to be held by the State, expressly identifies the NRC-related portion of the surety and covers the above-ground decommissioning and decontamination, the cost of offsite disposal, soil and water sample analyses, and ground-water restoration associated with the site. The basis for the cost estimate is the NRC-approved closure plan or the NRC-approved revisions to the plan. The reclamation/decommissioning plan, cost estimates, and annual updates should follow the outline in the attachment to this license entitled, "Recommended Outline for Site Specific Reclamation and Stabilization Cost Estimates."

The licensee's currently approved surety, Irrevocable Letter of Credit No. [REDACTED], issued by the Bank of the West in favor of the State of Wyoming, shall be continuously maintained in an amount of not less than \$200,939.00 of the purpose of complying with 10 CFR 40, Appendix A, Criterion 9, until a replacement is authorized by both the State and the NRC.

Three (3) months prior to the expected commencement of site construction, the licensee shall submit a surety instrument acceptable to the State of Wyoming and the NRC in an amount no less than \$4,597,813. This surety shall be written in favor of the State of Wyoming or the NRC for the purpose of complying with 10 CFR 40, Appendix A, Criterion 9, and shall be continuously maintained until a replacement is authorized by both the State and the NRC. Site construction activities shall not be commenced until the NRC and the State accept the surety arrangement.

35. In addition to the inspection and audit program described in Section 19.1.3 of the application, dated October 3, 1988, the RSO or trained assistant shall document a daily walkthrough of the facility to determine if radiation control practices are being implemented.

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36. The licensee shall submit to the NRC, Uranium Recovery Field Office, a copy of the semiannual ALARA audit report containing the information specified in Section 19.1.3 of the application dated October 3, 1988, within 2 months of the end of the reporting period. The report shall also include a summary of the daily walkthrough inspections.
37. The licensee shall implement the radiological surveys specified in Sections 19.1.7.2, 19.1.7.5, 19.1.7.6, and 19.1.7.8 at the locations specified in Figure 19.2 of the application dated, October 3, 1988. Additionally, alpha surveys, at the designated locations shall be conducted weekly and gamma surveys shall be performed monthly.
38. The licensee shall, 2 months prior to operation propose alpha survey locations in the resin transfer and filter areas.
39. In addition to the bioassay program discussed in Section 19.1.7.4 of the application, dated October 3, 1988, the licensee shall comply with the following:
 - A. 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, Uranium Recovery Field Office, as part of the semiannual report required by 10 CFR Part 40.65.
 - B. Anytime an action level of 35 ug/l for two consecutive specimens or 130 ug/l uranium for one specimen for urinalysis or 16 nCi uranium for an in vivo measurement 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, Uranium Recovery Field Office, within 30 days of exceeding the action level.
 - C. All in vivo measurements shall be performed in accordance with the recommendations contained in Revision 1 of Regulatory Guide 8.22.
40. Employees shall monitor themselves with an alpha survey instrument prior to exiting the restricted area. Should the results of monitoring exceed an action level of 1000 dpm/100 cm², employees shall decontaminate themselves to less than the action level. If decontamination cannot be accomplished, the employee shall report the incident to the RSO for investigation. Additionally, the RSO shall perform and document unannounced quarterly spot checks of employees leaving the process area.
41. All radiation and environmental monitoring, sampling and detection equipment shall be recalibrated after each repair and as recommended by the manufacturer or at least semiannually, whichever is more frequent. In addition, all radiation survey instruments shall be operationally checked with a radiation source before each day's use.

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42. Any changes to the organizational chart as illustrated in Figure 19.1 of the application dated October 3, 1988, shall require approval by the NRC, Uranium Recovery Field Office, in the form of a license amendment.
43. At least 3 months prior to operations the licensee shall submit to NRC, Uranium Recovery Field Office, the training and education documents, and resumes for the General Manager In-Situ Projects, Manager of Regulatory Affairs, Radiation Safety Officer, and Environmental Compliance Officer.
44. The licensee is hereby exempted from the requirements of Section 20.203(e)(2) of 10 CFR 20 for areas within the facility, provided that all entrances to the facility are conspicuously posted in accordance with Section 20.203(3)(2) and with the words, "ANY AREA WITHIN THIS FACILITY MAY CONTAIN RADIOACTIVE MATERIAL."
45. The licensee shall be required to use a Special Radiation work permit (SWP) for all work or nonroutine maintenance jobs where the potential for significant exposure to radioactive material exists and for which no standard written operating procedure exists. All SWPs shall be accompanied by a breathing zone air sample or an applicable area air sample. The SWP shall be issued by the RSO or trained assistant, qualified by way of specialized radiation protection training. The SWP shall describe at least 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 prior to, during and following completion of the work.

In addition, the RSO shall review and document all nonroutine work activities on a quarterly frequency.

46. 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 radon or radon daughter and particulate samples shall be analyzed in a timely manner to allow exposure calculations to be performed in accordance with this condition. Nonroutine samples shall be analyzed and the results reviewed by the RSO within 2-working days after sample collection.
47. If any worker reaches or exceeds 25 percent of the maximum permissible exposure limits as specified in 10 CFR Part 20, based upon a calculated time weighted exposure for the week or the calendar quarter, dependent on the solubility of the material, the RSO shall initiate an investigation of the employee's work record and exposure history to identify the source of the exposure.

Necessary corrective measures shall be taken to ensure that future exposures are as low as is reasonably achievable. Records shall be maintained of these investigations and results furnished to the NRC, Uranium Recovery Field Office, in the semiannual report required by 10 CFR 40.65.

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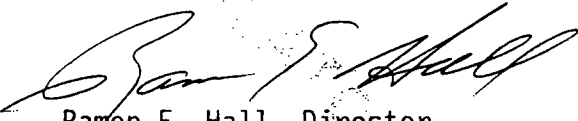
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48. The licensee shall 3 months prior to initiation of operations propose in the form of a license amendment emergency procedures to be implemented in the event of natural disasters, equipment failure, facility damage, loss or theft of source material, and unauthorized discharge of radioactive materials, for review and approval by the NRC, Uranium Recovery Field Office.
49. Notwithstanding the above, the monitoring and reporting requirements stated in License Condition Nos. 14, 16, 35, 36, 37, 39, 40, 41, and 46 shall become effective three (3) months prior to development of the Ruth Property.

FOR THE NUCLEAR REGULATORY COMMISSION

Dated: 3-4-91


Ramon E. Hall, Director
Uranium Recovery Field Office
Region IV

STATES

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. Pathfinder Mines Corporation

2. Shirley Basin Mine
Shirley Basin, Wyoming 82615

3. License number

SUA-1540, Amendment No. 1

4. Expiration date

December 31, 1995

5. Docket or
Reference No.

40-8981

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

Uranium

Unspecified

1,000,000 pounds

9. The authorized place of use shall be the licensee's North Butte facility in Campbell County, Wyoming.
10. For use in accordance with statements, descriptions and representations contained in Sections 15, 16.1 to 16.4, 16.6 to 16.12, and 19 of the licensee's revised application submitted by cover letter dated March 7, 1989.
- Notwithstanding the above, the following conditions shall override any conflicting statements contained in the licensee's application and supplements.
11. The annual throughput shall not exceed a flow rate of 3000 gallons per minute, exclusive of restoration flow resulting in a production rate of 700,000 pounds of U_3O_8 .
12. Any significant changes in the process circuit as shown in Figure 15.21 of the application, dated March 7, 1989, shall require approval by the NRC, Uranium Recovery Field Office in the form of a license amendment. Three months prior to initiation of construction detailed process flow diagrams shall be submitted to the NRC, Uranium Recovery Field Office, for review and approval.
13. Release of equipment or packages from the restricted area shall be in accordance with the attachment to this license entitled, "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.
14. The results of effluent and environmental monitoring described in the submittal dated November 13, 1990 shall be reported in accordance with 10 CFR Part 40, Section 40.65, to the NRC, Uranium Recovery Field Office. The report shall also include injection rates, recovery rates and injection manifold pressures.

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15. Six months prior to evaporation pond construction, the licensee shall submit a design, in the form of a license amendment to the NRC, Uranium Recovery Field Office, for review and approval.
 16. The licensee is authorized to dispose of process waters by way of deep well injection, in accordance with their submittal dated November 13, 1990. Additionally, the quantity of water injected shall be recorded.
 17. 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 previously assessed or that is greater than that previously assessed, the licensee shall provide a written evaluation of such activities and obtain prior approval of the NRC in the form of a license amendment.
 18. The results of the 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 the NRC regulations, all such documentation shall be maintained for a period of at least 5 years.
 19. Standard operating procedures (SOPs) 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. Three months prior to the planned initiation of operations the SOPs shall be submitted to the NRC, Uranium Recovery Field Office in the form of a license amendment for review and approval. Additionally, written procedures shall be established for nonoperational activities to include in-plant and environmental monitoring, bioassay analyses and instrument calibrations. An approved, current copy of each written procedure shall be kept in the process area to which it applies.
 20. All written procedures for both operational and nonoperational activities shall be reviewed and approved in writing by the Radiation Safety Officer before implementation, whenever a change in a procedure is proposed, and at least annually, to ensure that proper radiation protection principles are being applied.
 21. The licensee shall, 6 months prior to installation, submit a description of the emission control equipment for the yellowcake drying and packaging areas that is at least 99 percent efficient as well as a commitment to have the RSO or trained assistant physically present during operation of the dryer. Additionally, annual throughput of the yellowcake dryer shall not exceed 1,000,000 pounds of U_3O_8 .
 22. The licensee shall submit a detailed decommissioning plan to the NRC at least 12 months prior to planned final shutdown of mining operations. The decommissioning plan shall include a proposal to remove all buried process piping.

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23. All liquid effluents from process buildings and other process waste streams, with the exception of sanitary wastes, shall be returned to the process circuit, discharged to the solution evaporation ponds, disposed by way of NPDES permit, or injected via the deep well disposal program.
24. The licensee shall submit baseline water quality data for all mining units from wells established in the mining zone, the mining zone perimeter, and the upper aquifer. All baseline data shall be submitted to the NRC, Uranium Recovery Field Office, for review and approval 2 months prior to mining. The data shall, at a minimum, consist of the sample analyses shown in Table 16.1 of the license application dated March 7, 1989.
25. Prior to mining, baseline water quality data for each mining unit shall be established at the following minimal density: all mining zone perimeter monitor wells, one upper aquifer monitor well per four acres of well field, and one production/injection well per acre.
26. The licensee shall, 2 months prior to lixiviant injection, propose in the form of a license amendment, upper control limits (UCLs) for all monitoring wells utilized for excursion monitoring in each mining unit.

If two UCLs are exceeded in a well or if a single UCL value is exceeded by 20 percent, the licensee shall take a confirmation water sample within 48 hours and analyze it for chloride, conductivity and total alkalinity. 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 and the NRC shall be notified by telephone within 24 hours and within 7 days in writing from the time the confirmation sample was taken. Upon confirmation of an excursion, the licensee shall implement a corrective action and increase the sampling frequency for the excursion indicators to once every 7 days. An excursion is considered concluded when the concentrations of excursion indicators are below the concentration levels defining an excursion for three consecutive 1-week samples.

27. Upper control limits (UCLs) for specific conductivity and carbonate plus bicarbonate shall be the mean of the baseline wells plus five standard deviations. The UCLs for chloride shall be the mean of the baseline wells plus five standard deviations or the mean plus 15 mg/l whichever is greater.
28. A written report shall be submitted to the NRC, Uranium Recovery Field office, within 2 months of excursion confirmation. The report shall describe the excursion event, corrective actions taken and results obtained. If the wells are still on excursion at the time the report is submitted, injection of lixiviant within the well field on excursion shall be terminated until such time that aquifer cleanup is complete.

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29. The licensee shall perform well integrity tests on each injection, production, and monitor well before the wells are utilized and on wells that have been serviced. The integrity test shall pressurize the well to 168 pounds per square inch (psi) or 90 percent of the formation fracture pressure, if higher than 140 psi. A well shall have passed the test if it maintains 90 percent of the test pressure after 10 minutes. At the licensee's option, a single point resistance test may be utilized. Any well casing failing the integrity test that cannot be repaired, shall be plugged and abandoned according to State of Wyoming standards. Each well utilized for mining or monitoring shall be retested every 5 years.

Additionally, flow rates on each injection and recovery well and manifold pressures on the entire system shall be measured and recorded daily. During well-field operations, injection pressures shall not exceed the integrity test pressure at the injection well heads.

30. The licensee shall utilize sodium carbonate/bicarbonate as the lixiviant with an oxygen or hydrogen peroxide oxidant. Any variation from this combination shall require a license amendment.
31. The licensee shall maintain a log of all significant solution spills and notify the NRC, Uranium Recovery Field Office, by telephone within 48 hours of any failure which may have a radiological impact on the environment. Such notification shall be followed, within 7 days, by submittal of a written report detailing the conditions leading to the failure or potential failure, corrective actions taken and results achieved. This requirement is in addition to the requirements of 10 CFR Part 20.
32. The licensee shall maintain an area within the restricted area boundary for storage of contaminated materials prior to their disposal. Prior to lixiviant injection the licensee shall submit a waste disposal agreement to the NRC, Uranium Recovery Field Office, in the form of a license amendment for review and approval. All contaminated wastes and evaporation pond residues shall be disposed at a licensed radioactive waste disposal site.
33. At least 3 months prior to termination of uranium recovery in a mining unit, the licensee shall submit to the NRC, Uranium Recovery Field Office, in the form of a license amendment, a plan for ground-water restoration and at least 12 months of post-restoration monitoring consisting of at least nine sampling events. The goal of restoration shall be to return the ground-water quality, on a mining unit average, to baseline concentrations.
34. At least 3 months prior to operation of the yellowcake dryer, the licensee shall submit to the NRC, Uranium Recovery Field Office, in the form of a license amendment, a respiratory protection program, for NRC review and approval.
35. The licensee shall maintain an NRC-approved financial surety arrangement, consistent with 10 CFR 40, Appendix A, Criterion 9, adequate to cover the estimated costs, if accomplished by a third party, for completion of the NRC-approved site closure plan including: above-ground decommissioning and decontamination, the cost of offsite disposal of radioactive solid process or evaporation pond residues, and ground-water restoration. Within 3 months of NRC approval of a revised closure plan and

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cost estimate, the licensee shall submit, for NRC review and approval, a proposed revision to the financial surety arrangement if estimated costs in the newly-approved site closure 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, Criterion 9, shall be provided to the NRC at least 3 months prior to the anniversary of the effective date of the existing surety instrument. If the 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 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, changes in engineering plans, activities performed, and any other conditions affecting estimated costs for site closure. The licensee shall also provide the 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 must also ensure that the surety, where authorized to be held by the State, expressly identifies the NRC-related portion of the surety and covers the above-ground decommissioning and decontamination, the cost of offsite disposal, soil and water sample analyses, and ground-water 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. The reclamation/decommissioning plan, cost estimates, and annual updates should follow the outline in the attachment to this license entitled, "Recommended Outline for Site Specific Reclamation and Stabilization Cost Estimates."

Three months prior to the expected commencement of site construction, the licensee shall submit a surety instrument acceptable to the State of Wyoming and the NRC in an amount no less than \$4,920,705. This surety shall be written in favor of the State of Wyoming or the NRC for the purpose of complying with 10 CFR 40, Appendix A, Criterion 9, and shall be continuously maintained until a replacement is authorized by both the State and the NRC. Site construction activities shall not be commenced until the NRC and the State accept the surety arrangement.

36. In addition to the inspection and audit program described in Section 19.1.3 of the application, dated March 7, 1989, the RSO or trained assistant shall document a daily walkthrough of the facility to determine if radiation control practices are being implemented.
37. The licensee shall submit to the NRC, Uranium Recovery Field Office, a copy of the semiannual ALARA audit report containing the information specified in Section 19.1.3 of the application dated March 7, 1989, within 2 months of the end of the reporting period. The report shall also include a summary of the daily walkthrough inspections.
38. The licensee shall implement the radiological surveys described in Sections 19.1.7.2, 19.1.7.5, 19.1.7.6, and 19.1.7.8 at the locations specified in Figure 19.2 of the application dated, March 7, 1989. Additionally, alpha surveys, at the designated

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locations shall be conducted weekly and air particulate monitoring shall be performed every time the dryer is utilized. When the dryer is not being used particulate monitoring shall be administered on a weekly frequency. Gamma surveys shall be performed monthly.

39. In addition to the bioassay program discussed in Section 19.1.7.4 of the application, dated March 7, 1989, the licensee shall comply with the following:
- A. 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, Uranium Recovery Field Office, as part of the semiannual report required by 10 CFR Part 40.65.
 - B. Anytime an action level of 35 ug/l for two consecutive specimens or 130 ug/l uranium for one specimen for urinalysis or 16 nCi uranium for an in vivo measurement 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, Uranium Recovery Field Office, within 30 days of exceeding the action level.
 - C. All in vivo measurements shall be performed in accordance with the recommendations contained in Revision 1 of Regulatory Guide 8.22.
40. Employees shall monitor themselves with an alpha survey instrument prior to exiting the restricted area. Should the results of monitoring exceed an action level of 1000 dpm/100 cm², employees shall decontaminate themselves to less than the action level. If decontamination cannot be accomplished, the employee shall report the incident to the RSO for investigation. Additionally, the RSO shall perform and document unannounced quarterly spot checks of employees leaving the process area.
41. All radiation and environmental monitoring, sampling and detection equipment shall be recalibrated after each repair and as recommended by the manufacturer or at least semiannually, whichever is more frequent. In addition, all radiation survey instruments shall be operationally checked with a radiation source before each day's use.
42. Any changes to the organizational chart as illustrated in Figure 19.1 of the application dated March 7, 1989, shall require approval by the NRC, Uranium Recovery Field Office, in the form of a license amendment.
43. At least 3 months prior to operations the licensee shall submit to NRC, Uranium Recovery Field Office, the training and education documents, and resumes for the General Manager In-Situ Projects, Manager of Regulatory Affairs, Radiation Safety Officer, and Environmental Compliance Officer.
44. The licensee is hereby exempted from the requirements of Section 20.203(e)(2) of 10 CFR 20 for areas within the facility, provided that all entrances to the facility are conspicuously posted in accordance with Section 20.203(3)(2) and with the words, "ANY AREA WITHIN THIS FACILITY MAY CONTAIN RADIOACTIVE MATERIAL."

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45. The licensee shall be required to use a special work permit (SWP) for all work or nonroutine maintenance jobs where the potential for significant exposure to radioactive material exists and for which no standard written operating procedure exists. All SWPs shall be accompanied by a breathing zone air sample or an applicable area air sample. The SWP shall be issued by the RSO or trained assistant, qualified by way of specialized radiation protection training, except when the work to be performed is in the drying and packaging areas. The RWP for these areas shall be issued by the RSO. The SWP shall describe at least 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 prior to, during and following completion of the work.

In addition, the RSO shall review and document all nonroutine work activities on a quarterly frequency.

46. 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 radon or radon daughter and particulate samples shall be analyzed in a timely manner to allow exposure calculations to be performed in accordance with this condition. Nonroutine samples shall be analyzed and the results reviewed by the RSO within 2-working days after sample collection.
47. If any worker reaches or exceeds 25 percent of the maximum permissible exposure limits as specified in 10 CFR Part 20, based upon a calculated time weighted exposure for the week or the calendar quarter, dependent on the solubility of the material, the RSO shall initiate an investigation of the employee's work record and exposure history to identify the source of the exposure.

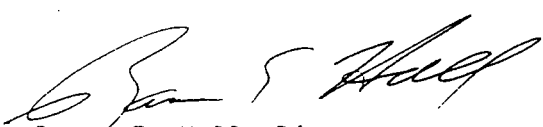
Necessary corrective measures shall be taken to ensure that future exposures are as low as is reasonably achievable. Records shall be maintained of these investigations and results furnished to the NRC, Uranium Recovery Field Office, in the semiannual report required by 10 CFR 40.65.

48. The licensee shall 3 months prior to initiation of operations propose in the form of a license amendment emergency procedures to be implemented in the event of natural disasters, equipment failure, facility damage, loss or theft of source material, and unauthorized discharges of radioactive materials, for review and approval by the NRC, Uranium Recovery Field Office.

FOR THE NUCLEAR REGULATORY COMMISSION

Date:

3-4-91


Ramon E. Hall, Director
Uranium Recovery Field Office
Region IV