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URFO:SLW
Docket No. 40-8829
04008829131E
04008829141E

MEMORANDUM FOR: Docket File No. 40-8829

FROM: Sandra L. Wastler, Project Manager
Licensing Branch 1
Uranium Recovery Field Office, Region IV

SUBJECT: AIRBORNE RADIONUCLIDE MONITORING LOCATIONS AND
MINOR CHANGES TO CONSTRUCTION AND DESIGN DEATILS
FOR THE CROW BUTTE PROJECT

In accordance with License Condition No. 36 to Source Material License SUA-1441, Wyoming Fuel Company (WFC) submitted for NRC review and approval, the locations for the in-plant survey of airborne natural uranium and radon or radon progeny at the Crow Butte project. In addition, under separate cover dated April 2, 1985, WFC submitted a list of minor construction and design modifications for the Crow Butte project. The NRC reviewed both of these submittals, and staff comments were transmitted to the licensee by letter dated May 10, 1985 (Enclosure 1). The licensee's response to these comments was submitted by letter dated May 28, 1985, and the requested modifications to monitoring locations were provided as a part of the licensee's report on the Radiological Monitoring Quality Assurance Program submitted May 24, 1985. An additional modification to the May 28, 1985 letter was submitted by letter dated June 18, 1985. The NRC staff is still reviewing the May 24, 1985 submittal, therefore, this document only refers to the monitoring locations shown on Figures 4.1 and 5.0 of the licensee's May 24, 1985 report.

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Location of Airborne Monitoring

In accordance with the NRC comments as outlined in the May 10, 1985 letter, WFC has made the following changes to the location for airborne monitoring:

1. A radon or radon daughters monitoring station has been added at the control panel.
2. The plan for in-plant monitoring originally submitted April 4, 1985, has been revised to reflect WFC commitment in their February 11, 1983 application to monitor the office, lunchroom, laboratory and maintenance shed. Figure 5.0 to the QA Plan shows the revised plan for in-plant monitoring locations.

Minor Construction and Design Changes

By letters dated May 28, 1985, and June 18, 1985, WFC provided responses to the questions which resulted from the NRC's review of WFC's April 2, 1985 submittal. The NRC has reviewed WFC's responses and considers the responses adequate. As a result of our review of these minor construction and design details, the NRC shall require the following:

1. Prior to adding additional wells to wellfield No. 1 (wells in addition to the original five-spot with 66-foot well spacings and the two observation wells), WFC shall submit the proposed locations and restoration plan for these additional wells to the NRC for review and approval.
2. WFC shall document the wellfield inspections in the operator's log and describe any problems noted during the inspection (e.g., leaking underground piping). The results of these inspections and remedial actions taken to correct problems noted in the inspection shall be reported in the quarterly reports required by License Condition No. (30).

Recommendations and Conclusions

As a result of the review of the applicable data or in accordance with the conclusions previously made in our May 10, 1985 letter, the NRC concludes the following:

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1. The locations for in-plant airborne radiological sampling are adequate for worker protection.
2. Continued monitoring of the pre-operational locations for radon or radon progeny meets the requirements of License Condition No. 26 to monitor radon concentrations at or near the site boundary.
3. The construction and design modifications described in WFC's April 2, 1985, May 28, 1985, and June 18, 1985 submittals are minor and have no effect on the environment or the health and safety of the public.
4. Based on the review of the April 2, 1985 submittal, the NRC will require that prior to adding additional wells to Wellfield No. 1, WFC submit the proposed location of the additional wells and the proposed restoration plan.
5. License Conditions No. 36 and 41 be modified to allow submittal of data required by these license conditions 60 and 90 days respectively, after issuance of the NDEC permits.
6. WFC shall document the wellfield inspections in the operator's log and describe any problems noted during the inspection (e.g., leaking underground piping). The results of these inspections and remedial actions taken to correct problems noted in the inspection shall be reported in the quarterly reports required by License Condition No. (30).

Therefore, I hereby recommend that Source Material License SUA-1441 be amended to modify License Conditions No. 10, 30, 36 and 41, and to add License Condition No. 44, as follows:

10. Authorized Use: For in-situ uranium mining and uranium recovery from pregnant lixiviant in accordance with statements, descriptions, and representations contained in Sections 2.1, 3.1, 3.2, 3.3, 5.1-5.6, 5.7, and 6.0 of the licensee's February 11, 1983 Report, enclosed with License Application Form NRC-2, and in supplements dated July 12, 1983; August 1983; October 1983; October 27, 1983, April 16, 1984, April 2, 1985, May 28, 1985, and June 18, 1985. Wherever the word "will" is used in the licensee's submittals, it shall denote a requirement. Notwithstanding the above, the following

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

30. A quarterly report shall be submitted to the USNRC, Uranium Recovery Field Office, that summarizes the status of the R&D in situ test program, with supporting analytical data and evaluations regarding important environmental aspects of the operations such as water quality and water level data, lixiviant migration control, waste generation volumes, volumes and representative chemical analyses of injected lixiviant and pregnant solution produced. The quarterly report shall also contain the production data for the R&D facility. The quarterly report should also contain the results of the operator's site inspections and remedial actions taken to correct the problems noted in these inspections. For the first two quarters, the operational data sheets, including such data as flow rates, chemical balance and injection pressures shall be included as an attachment to the quarterly report. The remaining quarterly reports will summarize the operational data, with the operational data sheets maintained on site. The Nebraska DEC Mining Monitoring Report (Figure 3.3.05) can be utilized as part of the quarterly report for the operational data. The quarterly report shall include all data on environmental monitoring as well as ground-water data. All water quality and water level data shall be presented in tabular and graphical form, with a written summary explaining what the data show.
36. The licensee shall perform monthly surveys for natural uranium in the restricted area with the exception that they shall be increased to weekly for any area meeting the requirements of an "airborne radioactivity area" as described in 10 CFR 20.203(d), and an investigation of the cause of any high levels shall be made. Records shall be maintained of these investigations and results shall be furnished to the USNRC, Uranium Recovery Field Office, in the quarterly reports described under License Condition (30).

The licensee shall perform monthly surveys for radon or radon progeny in the restricted area inhabited by workers with the exception that radon or radon progeny surveys shall be increased to weekly if the radon or radon progeny concentrations are found to exceed 8 pCi/l or 0.08 WL (Working

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Levels), respectively. Such weekly sampling shall be maintained until four (4) consecutive weekly samples exhibit less than 8 pCi/l or 0.08 WL. The licensee shall continue to monitor the pre-operational sampling locations to determine the radon concentrations at and near the site boundary on a monthly basis. The in-plant locations for surveys of airborne natural uranium and radon or radon progeny shall be as specified on Figure 5.0 of the licensee's May 24, 1985 submittal.

The calculation of internal exposure to radon, radon progeny, or natural uranium shall be based on a Time Weighted Exposure (TWE) calculation incorporating a consideration of both occupancy times and average airborne working levels or activity concentrations. If occupancy times are established as an average for each category of worker, the licensee shall also, by means of a semiannual time study, determine the basis upon which average occupancy periods are established.

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 TWE for the week or the calendar quarter, dependent on the solubility of the material, the Health Physics Technician (HPT) 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 reduction of future exposures to as low as is reasonably achievable. Records shall be maintained of these investigations and results furnished to the USNRC, Uranium Recovery Field Office, in the quarterly reports described in License Condition (30).

41. The licensee shall maintain a quality assurance program for all sampling and analyses performed as part of the in-plant radiation safety, ground-water and environmental monitoring programs that includes all of the recommended elements of a quality assurance program specified in USNRC Regulatory Guide 4.15, "Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Stream and the Environment." In addition, prior to commencing operations and within ninety (90) days of issuance of the NDEC license, the licensee shall submit to the USNRC, Uranium Recovery Field

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Office, for approval in the form of a license amendment, complete specifications for this quality assurance program.

44. Prior to adding additional wells to enlarge wellfield No. 1 (wells in addition to the original 5-spot, 66-foot well spacings and the two observation wells), the licensee shall submit the proposed location, leaching pattern and restoration plan for these additional wells to the USNRC, Uranium Recovery Field Office, for review and approval.

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Sandra L. Wastler, Project Manager
Licensing Branch 1
Uranium Recovery Field Office
Region IV

Original Signed By
Edward F. Hawkins

Approved by:

Edward F. Hawkins, Chief
Licensing Branch 1
Uranium Recovery Field Office, Region IV

Enclosure: As stated

cc: NDEC
Pam French, NDEC
T. Hoffman, NWRD

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Wyoming Fuel Company
ATTN: Steve Collings
12055 W. Second Place
P.O. Box 15596
Lakewood, Colorado 80215

Dear Mr. Collings:

The NRC staff has completed their review of Wyoming Fuel Company's (WFC) April 2, 1985, and April 4, 1985 submittals. The NRC's comments and requests for additional information are outlined in the enclosed memoranda. The NRC will proceed with your license amendment request upon receipt of this additional information.

Should you have any questions, please contact Sandra L. Wastler of my staff at (303) 236-2811.

Sincerely,

Original Signed By
Edward F. Hawkins
Edward F. Hawkins, Chief
Licensing Branch 1
Uranium Recovery Field Office
Region IV

Enclosure: As stated

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SUBJECT: AIRBORNE RADIONUCLIDE MONITORING LOCATIONS AND
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 FOR THE CROW BUTTE PROJECT

In accordance with License Condition No. 36 to Source Material License SUA-1441, Wyoming Fuel Company (WFC) submitted for NRC review and approval the locations for the in-plant survey of airborne natural uranium and radon or radon progeny at the Crow Butte project. In addition, under separate cover dated April 2, 1985, WFC submitted a list of minor construction and design modifications for the Crow Butte project. The NRC has reviewed both of these submittals and staff comments are provided in the following paragraph.

Location of Airborne Monitoring

By letter dated April 4, 1985, WFC proposes to monitor airborne natural uranium at one location between the uranium precipitation tank and the uranium slurry storage tank. Radon and radon progeny will be monitored at two locations; first between the production surge tank and the reverse osmosis feed tank and secondly, between ion exchange Columns A and B. WFC chose the above locations as areas having the highest probability of occurrence for airborne uranium and radon or radon progeny. While the NRC concurs with WFC's airborne monitoring locations as described above, the staff believes these locations do not provide a location to be representative of an employee's work station. An employee will spend very limited, if any, time at the locations defined by WFC. Therefore, the NRC staff will require that WFC add one additional monitoring location for radon or radon progeny that is more representative of employee work location (i.e., near the control panel).

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In addition, WFC's February 11, 1983 application states on page 5.7 (10) that other locations would also be monitored (offices, lunch room, laboratory and maintenance shed), yet these locations were not defined as monitoring points in WFC's April 4, 1985 memorandum. In accordance with License Condition No. 10, WFC shall monitor the office, lunch room, laboratory and maintenance shed for radon or radon progeny. The location of these monitoring stations should also be provided to the NRC in accordance with License Condition No. 36.

The NRC staff has reviewed and concurs with WFC's proposal to continue monitoring the pre-operational locations for radon or radon progeny in order to comply with License Condition No. 36 requirement to monitor radon concentrations at and near the site boundary.

Minor Construction and Design Changes

By letter dated April 2, 1985, WFC submitted a list of minor construction and design details which have been changed from the original application dated February 11, 1983, and additional information dated August 1983 and November 23, 1983. WFC requested that these changes be considered an administrative amendment to Source Material License SUA-1441. The NRC has reviewed these minor changes to construction and design details of the Crow Butte facility and will require the following additional information:

1. Prior to adding additional wells to Wellfield No. 1 (wells in addition to the original five-spot with 66-foot well spacings and the two observation wells), WFC will submit the proposed location of leaching pattern and restoration plan for these additional wells to the NRC for review and approval.
2. Section 3.1 - What provisions have been made for detecting leaks from the underground piping?
3. Section 3.2 - What other tanks will be vented (i.e., injection and recovery surge tank, pregnant eluant tank, etc.)?
4. Section 3.3 - Instruments should be used to check pressure at each well. Header pressure does not tell you which well or wells are pressuring up. A pressure indicator on each well line or well head is a better plan. Likewise, each well should have a dedicated flow meter as indicated on Figure 3.1-10.

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5. Section 5.7 - How many times per shift will injection pressures be read? Once per 8 or 12 hours may not be adequate to control wells prone to overpressuring.
6. Section 7.5 - Figure 3.1-10 indicates injection and production trunklines will be used. WFC's statement that individual buried lines will be used rather than trunk lines is inconsistent with Figure 3.1-10.

Previous Changes

By letter dated January 28, 1985, WFC requested that License Condition Nos. 36 and 41 be modified to allow submittal of the data required by these license conditions 60 and 90 days, respectively, after the issuance of the Nebraska Department of Environmental Control (NDEC) permit. At that time, the NDEC had not issued their final permit and WFC did not know if the NDEC permit would impact the submittals required by License Condition Nos. 36 and 41. Therefore, by letter dated February 15, 1985, the NRC agreed with WFC's request to modify the license, but since the modification was minor, elected to modify the license as part of subsequent license amendment request. AS a result, the Source Material License No. SUA-1441 will be modified as stated above as part of WFC's April 2, 1985 license amendment request.

Recommendations and Conclusions

Based on the NRC review of WFC's submittals dated April 2, 1985, and April 4, 1985, the additional information outlined above will be required prior to the issuance of the requested license amendment.

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Sandra L. Wastler, Project Manager
Licensing Branch 1
Uranium Recovery Field Office
Region IV

Signed By
E. F. Hawkins

Approved by:

Edward F. Hawkins, Chief
Licensing Branch 1
Uranium Recovery Field Office, Region IV

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