



# energy fuels nuclear, inc.

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April 7, 1983

Mr. Richard C. DeYoung, Director  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
4350 East-West Highway, Rm. 322  
Bethesda, Maryland 20014

Re: Docket No. 40-8681, License No. SUA-1358, EA 83-5

Dear Mr. DeYoung:

Pursuant to the letter dated February 22, 1983 from Mr. Collins, Regional Administrator, Region IV, and supplemental materials transmitted by Mr. Brown of the same Region on March 7, 1983, Energy Fuels Nuclear, Inc. furnishes its response to the Notice of Violation dated February 22, 1983 arising from the NRC's inspection of the White Mesa Uranium Mill, during the period November 2-4, 1982. The response, a copy of which is enclosed herewith and by this reference incorporated herein, follows the guidelines set forth in the above correspondence and applicable regulations.

Specifically, Energy Fuels admits the violations, states reasons for the violations, lists steps taken to correct the problems and to prevent further violations, and gives dates of compliance. With these admissions, Energy Fuels has elected not to contest the violations, and our check for \$4,000.00 is enclosed to cover the civil penalty.

Sincerely yours,

M.D. Vincelette  
Vice President-Uranium  
and Mineral Operations

STATE OF COLORADO )  
 ) ss.  
CITY & COUNTY OF DENVER )

The foregoing, together with all enclosures, was subscribed and sworn to before me this 7<sup>th</sup> day of April, 1983, by M.D. Vincelette, Vice President-Uranium and Mineral Operations, Energy Fuels Nuclear, Inc.

Witness my hand and official seal.

  
Notary Public

MDV/kc  
Enclosure  
cc: Mr. John T. Collins  
VIA FEDERAL EXPRESS

My Commission Expires Sept. 30, 1985  
1515 Arapahoe Street # 900  
Denver, Colorado 80202

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RESPONSE TO  
NOTICE OF VIOLATION  
AND  
PROPOSED IMPOSITION OF CIVIL PENALTY

Energy Fuels Nuclear, Inc.

Docket No. 40-8681  
License No. SUA-1358  
EA 83-5

I. CIVIL PENALTY VIOLATION

10 CFR 20.201(b) requires that each licensee make or cause to be made surveys as (1) may be necessary for the licensee to comply with the regulations in 10 CFR Part 20, and (2) are reasonable under the circumstances to evaluate the extent of radiation hazards that may be present.

Contrary to the above, evaluations of weekly worker exposure to airborne soluble uranium in the product drying and packaging enclosures were not performed to ensure compliance with 10 CFR 20.103(a)(2) during the period from November 1981 to March 1982. Inadequate evaluations of worker exposure to soluble uranium during the week beginning April 5, 1982, resulted in an undetected exposure of one individual to soluble uranium at 1.7 times the limit specified in 10 CFR 20.103(a)(2). In addition, evaluations of worker exposure to other airborne radionuclides in the mill were not performed with regard to the 40-hour control measure as required by 10 CFR 20.103(b)(2) during the period from November 1981 to November 1982.

RESPONSE:

In response to the aforementioned Civil Penalty Violation, Energy Fuels Nuclear, Inc. ("Energy Fuels") admits to:

- A. Inadequate evaluation of worker exposure to soluble airborne uranium for the periods set forth above as required by 10 CFR 20.103(a)(2).
- B. Inadequate evaluation of worker exposure to the 40-hour control measure as required by 10 CFR 20.103(b)(2). Specifically, the lack of increased surveillance needed when the airborne concentration exceeds 25% of those limits specified in 10 CFR Part 20, Appendix B, Table 1, Column 1.

The requirement to evaluate personnel exposures to soluble uranium is found in footnote #4 of 10 CFR Part 20, Appendix B. The footnote had been reviewed, but had not been properly understood as to its application. Therefore, the requirement was unintentionally overlooked. Furthermore, while the exposed worker was wearing a respirator at the time of the overexposure, Energy Fuels did not have an approved respirator program and accordingly received no credit for the effect of the respirator.

Failure to increase the sampling frequency when an area was found to exceed 25% MPC was an oversight and was not intentional.

On November 5, 1982, corrective actions were initiated to abate the violations that were identified during the exit briefing. The changes were as follows:

- A. Two airborne sampling locations were added to the areas to be routinely sampled. The new locations are within the yellowcake dryer and packaging enclosures.
  
- B. In areas where there is potential for exposure to soluble uranium, the airborne sampling frequency was increased to weekly. The areas of concern are yellowcake precipitation, packaging and storage, and within the yellowcake dryer and packaging enclosures. As soon as the results of the air filter analyses are reported, the exposure for each employee working in the area is evaluated.

In addition, a weekly lapel air sampler is worn by an employee in the yellowcake packaging and precipitation areas. The sample is collected during one normal work shift.

C. When the results of monthly airborne sampling indicate that concentrations of other radionuclides (radon, insoluble uranium, etc.) approach or exceed 25% of the limits specified in 10 CFR Part 20, Appendix B, Table 1, Column 1, the following actions are initiated:

- i. Mill management is notified in writing of the situation.
- ii. The frequency of airborne sampling is increased to weekly.
- iii. The area is posted as an "Airborne Radioactivity Area."
- iv. Corrective or investigative action report is prepared.

The above procedures have been in effect since November 5, 1982 and will continue.

## II. VIOLATIONS NOT ASSESSED CIVIL PENALTIES

1. 10 CFR 20.405 requires that each licensee shall make a report in writing within 30 days to the appropriate NRC Regional Office, with a copy to the Director of Inspection and Enforcement, of each exposure of an individual to radioactive material in excess of applicable limits in 10 CFR 20.103(a)(2).

10 CFR 20.409(b) requires that when a report pursuant to 10 CFR 20.405 is required, the licensee shall also notify the exposed individual. Such notice shall be transmitted at a time not later than the transmittal to the Commission and shall comply with the provisions of 10 CFR 19.13(a).

Contrary to these requirements, such reports had not been submitted by November 4, 1982, the date of the NRC inspection, for an exposure of an individual which occurred during the week beginning April 5, 1982.

**RESPONSE:**

During April, 1982, all exposures were determined for insoluble uranium ore dust and were time weighted on a quarterly basis. Using this method, the employee exposure for insoluble uranium was determined to be 66.1% MPC. To meet the requirements of 10 CFR 20.103(a)(2), the exposure should have been determined and evaluated weekly. This error allowed the overexposure to be undetected and therefore unreported. Energy Fuels thus admits to a violation of 10 CFR 20.405 and 409(b).

On November 10, 1982, a written notice of the overexposure was mailed to the Nuclear Regulatory Commission, Region IV in Arlington, Texas. On the same day (November 10, 1982) a written notification was hand-delivered to the employee involved. Furthermore, the licensee when required under applicable regulations now evaluates exposures to soluble uranium on a weekly basis. Therefore, overexposures will not go undetected.

Should an overexposure occur again, the procedure will be to notify the responsible parties in the following order:

- A. Mill management (local and corporate);
- B. The appropriate NRC Regional Office and the Director of Inspection and Enforcement, as required by 10 CFR 20.405.
- C. The overexposed individual(s) as required by 10 CFR 20.409(b).

All notifications will be in writing and completed within thirty (30) days of the overexposure.

Compliance with 10 CFR Part 20, Sections 405 and 409(b) was achieved on November 10, 1982.

2. 10 CFR 20.203(d)(2) requires that each airborne radioactivity area shall be conspicuously posted with a sign or signs bearing the radiation caution symbol and the words:

CAUTION (or DANGER)  
AIRBORNE RADIOACTIVITY AREA

Contrary to this requirement, the following areas known to be airborne radioactivity areas as a result of monthly air samples were not posted during the indicated periods:

- (a) the secondary crusher area during March through June 1982,
- (b) the grind and leach circuit areas during May 1982, and
- (c) the yellowcake product storage room during August 1981.

RESPONSE:

Prior to November 5, 1982, the areas that had been properly posted as "Airborne Radioactivity Areas" were the yellowcake packaging and precipitation enclosure, and all entrances to the sample plant building. Documentation does not exist to indicate that the areas referenced in the Notice of Violation were posted in accordance with the requirements of 10 CFR 20.203(d), and thus Energy Fuels admits the violation.

Since November 7, 1982, all areas that have been determined by airborne sampling to exceed 25% MPC of the limits specified in 10 CFR Part 20, Appendix B, Table 1, Column 1, have been properly posted. Also, the following policies have been implemented:

- A. All areas of the mill that have been determined to exceed 25% MPC shall be posted as an "Airborne Radioactivity Area" in accordance with 10 CFR 20.203(d)(2).

- B. The appropriate signs shall be posted in a conspicuous location at all entrances to the area or sections, and such signs shall comply with the specifications set forth in 10 CFR 20.203(b).
- C. The area or sections shall remain posted until at least two (2) consecutive weekly airborne samples indicate concentration below 20% MPC.
- D. Appropriate documentation of the posting shall be maintained on file at the mill site.

These policies have been adhered to and will continue to be standard operating procedure.

Full compliance was achieved on November 7, 1982.

- 3. License Condition 11 requires that source material shall be used in accordance with statements, representations, and conditions contained in Section 5.5.1 through 5.5.11 of the licensee's application as revised July 16, 1979.

- a. Section 5.5.2 of the application states that air samplers used for inplant sampling will be calibrated prior to each use and that samples will be taken each month.

Contrary to this requirement, such samplers were not calibrated prior to sampling during the period from June 10 to October 15, 1981.

- b. Section 5.5.3 of the application states that if a worker's quarterly exposure to airborne radioactivity equals or exceeds 25 percent of the regulatory limit, the licensee will institute an investigation to identify the problem.

Contrary to this requirement, no such investigation was conducted for a worker whose exposure exceeded 25 percent of the limit during the fourth quarter of 1981 and for each of the first two quarters of 1982.

- c. Section 5.5.5 of the application states that all employees will be required to monitor themselves with a survey meter prior to leaving the mill and that alpha contamination on skin or clothing greater than 1,000 dpm/100cm<sup>2</sup> shall be cause for additional showering or decontamination and an investigation by the radiation safety staff.

Contrary to this requirement, on November 3, 1982, the audible alarm set point of the instrument used for personnel surveys was set at 1,900 dpm/100cm<sup>2</sup>, thus permitting contamination in excess of the action level to go undetected.

RESPONSE:

- A. Energy Fuels admits to all of the above violations.
- B. Air sampling instruments were properly calibrated during the period of June 10 through October 15, 1981, but documentation to demonstrate this is not adequate. It has been Company policy at the White Mesa Mill to calibrate all instruments prior to each use and to document such actions. This policy will be emphasized in the future to avoid a recurrence of the violation.

To insure that proper calibration and documentation procedures are being implemented, the Radiation Safety Officer will review the technicians' work each month. In the event that improprieties are observed, the proper corrective action will be initiated.

Full compliance with section 5.5.2 of the mill license application began November 5, 1982.

- C. Prior to the November, 1982 inspection, the employee exposures that were found to be equal to or exceed 25% of the regulatory limit were inade-

quately investigated and the documentation of the investigations was also inadequate.

A procedure has been adopted that requires a written investigative report each time an employee exposure exceeds 25% MPE. The Radiation Safety Officer will review exposures monthly with mill management to determine whether exposures in excess of 25% MPE have occurred. If so, appropriate investigations and actions will be implemented.

Compliance with section 5.5.3 of the license application was met on December 1, 1982.

- D. The alarm point on the personnel monitor at the guard station was improperly set at the time of the November 3, 1982 inspection.

Several conditions contributed to the improper setting of the alarm as indicated below:

- i. A documented daily check of the instrument was conducted and it was noticed that the efficiency was dropping. The following entries were taken from the inspection log book:
  - 1. October 28, 1982 - 19% efficiency.
  - 2. November 1, 1982 - 17% efficiency.
  - 3. November 3, 1982 - 14% efficiency (NRC inspection).

- ii. The backup instrument had been sent out for repairs on or about October 26, 1982. During the period the problem existed, we did not have a replacement unit.
- iii The surface area of the survey meter probe face had been assumed to be greater than the manufacturer had specified. The greater number had been used in determining the set point and the result was an unrealistically high setting.

The problem was corrected by lowering the alarm point to an appropriate level, and the manufacturer's specifications for the probe were used in calculating the alarm levels. Daily checks were conducted on the instrument and the appropriate adjustments were made.

On December 20, 1982, the mylar on the survey meter probe face was changed. At this time, the instrument efficiency increased to a normal value and the readings stabilized. On the same date the policy was established that the set point will be 75% or less of the maximum allowable limits of  $1000 \text{ dpm}/100\text{cm}^2$ , allowing a 25% margin.

Thus, compliance with Section 5.5.5 of the mill license application was achieved on December 20, 1982.

- 4. License Condition 21 requires that release of equipment or packages from the restricted area shall be in ac-

cordance with License Annex C. The license annex specifies decontamination limits for both fixed and removable contamination.

Contrary to this requirement, although surveys for removable contamination were performed, surveys for fixed contamination were not performed from January, 1981 to November, 1982.

**RESPONSE:**

Fixed contamination surveys during the period specified were not performed by the licensee and therefore a violation is admitted.

Surface contamination surveys should be conducted before potentially contaminated materials or equipment is released to unrestricted areas. Removable and fixed contamination surveys are now performed by the licensee's radiation safety staff using appropriate instrumentation. All surveys are fully documented. The licensee shall adhere to contamination limits established in Annex C, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for By-Product, Source, or Special Nuclear Material" dated November, 1976. If contamination is detected, the equipment or materials will be decontaminated in accordance with applicable regulations and guidelines.

Fixed (total) contamination surveys were initiated on November 5, 1982.

5. License Condition 22 requires that the licensee shall conduct surface contamination surveys (both smear and total contamination) in all eating areas, change rooms, control rooms, and mill administrative offices, and that area decontamination shall be in accordance with License Annex C. The license annex specifies decontamination limits for both fixed and removable contamination.

Contrary to this requirement, although surveys for removable contamination were performed, surveys for fixed contamination were not performed from January, 1981 to November, 1982.

RESPONSE:

Surveys for fixed contamination during the period specified were not performed by the licensee, and a violation is admitted.

In areas where yellowcake is not present (eating rooms, changes rooms, control rooms, offices), removable surface contamination surveys are performed. Any area found to be contaminated to 25% of the values in Annex C of the license is cleaned.

The licensee is now conducting surface contamination surveys using smear tests and fixed (total) contamination surveys using instrument measurements. The results are fully documented. Full compliance with License Condition 22 was achieved on November 5, 1982.

6. License Condition 53 requires that the licensee shall follow the lower limits of detection (LLD), specified in the condition for environmental monitoring sample analyses, unless alternate LLD's are submitted by the licensee and approved by the Uranium Recovery Licensing Branch.

Contrary to this requirement, environmental air sample data submitted for the first quarter of 1982 included LLD's greater than those specified in the license condition and agreed to by the licensee in his letter dated October 26, 1981.

RESPONSE:

LLD values for air sample data for first quarter of 1982 are greater than the license specifies, and a violation is admitted.

Regulatory Guide 4.14 describes LLD determinations. LLD values depend on the instrument background counting rate, the efficiency of the counting system, chemical yield, and the decay constant for the radionuclide being counted. The licensee has no direct control over these parameters, except through the choice of and agreement with the laboratory performing the analyses. The licensee does have control or partial control on sample volume, elapsed time between sample collection and counting, and the length of the counting time.

With respect to LLD's for air samples the equipment Energy Fuels is required to use under the license application measures a volume of air during a quarter which is near the minimum amount that will allow the LLD requirements to be met. During the first quarter of 1982, air particulate samples were aggregated and analyzed on a monthly basis. The sample volumes were too small to provide adequate LLD values.

Corrective steps that have been taken to insure that future violations will not occur are:

- A. In the near term air particulate samples from the low vols are now aggregated for the entire quarter providing sufficient volume for the specified LLD values. The fourth quarter 1982 effluent report will confirm that the licensee is meeting the LLD values for air samples.
- B. The sample volumes are being increased for other types of samples.
- C. The length of the counting time during the analysis conducted by the vendor laboratories has been increased.
- D. An amendment to the license is being prepared to specify a change from the low-volume equipment presently in use to high-volume sampling equipment. This change in equipment should provide sufficient volume to meet LLD values.

With the exception of the license amendment, the foregoing actions were implemented on October 1, 1982 and compliance is evident in the fourth quarter effluent report for 1982, submitted on February 28, 1983.

7. 10 CFR 40.64(b) requires that each licensee who is authorized to process at any one time and location more than 1,000 kilograms of uranium shall submit to the Commission, within 30 days after September 30 of each year, a statement of his source material inventory. The reports are to be submitted through the Department of Energy, Oak Ridge, Tennessee.

Contrary to this requirement, such reports were not submitted by the licensee for 1981 and 1982.

**RESPONSE:**

These reports were not submitted to the NRC by October 30th for the referenced year, and a violation is admitted. The 1982 report was submitted to the address set forth in 10 CFR 40.64(b) on November 5, 1982, and the 1981 report was forwarded on March 22, 1983.

Approximately ten (10) weeks after submittal of the 1982 inventory report, the licensee became concerned because no acknowledgement of the receipt of the report had been received. 10 CFR 40.64(b) provides only that inventory reports be sent to Post Office Box E in Oak Ridge, Tennessee. Locating someone knowledgeable about inventory report handling was difficult.

Finally, Mr. John Stevens of Union Carbide Corporation, contractor for U. S. Energy Research and Development Administration, indicated that the reports are reviewed and processed by his office. He suggested we use the following address to avoid problems:

Union Carbide Corporation  
Nuclear Division  
Mail Stop 19, Building K1007  
Post Office Box P  
Oak Ridge, Tennessee 37830

The 1982 report was resubmitted on January 26, 1983, and the 1981 report also was submitted to the above address.

To facilitate the submittal of future reports on time, the licensee has directed the Radiation Safety Officer to be responsible for the fulfillment of 10 CFR 40.64(b) by sending the report to the address set forth in 10 CFR Part 40 as well as to the private contractor's address. The Manager of Uranium Processing will verify compliance with this reporting requirement.

8. License Condition 18 requires that the licensee perform a formal semiannual ALARA audit and submit a copy of the audit report to the NRC. The report is to include a summary of operational data and a discussion of trends in exposures and effluents and performance, maintenance, and inspection of effluent and exposure control equipment.

Contrary to those requirements, the audit reports dated April 6, 1982, and August 31, 1982, did not (1) provide a summary of operational data pertaining to exposure records, bioassay results, inplant radiological survey and sampling data, environmental and effluent monitoring data, and radiation overexposures; and (2) discuss performance of exposure and effluent control equipment and trends in personnel exposure and effluents.

**RESPONSE:**

The ALARA audit reports for April 6, 1982, and August 31, 1982, do not contain data summaries, nor do they discuss the performance of exposure or effluent control equipment and trends in personnel exposure and effluents. Therefore, a violation is admitted.

Corrective measures to improve ALARA reporting by licensee were implemented in the regularly scheduled February 14th through 16th, 1983, audit, for which a report is presently being prepared. Thus, compliance is considered to have been achieved on February 14.

These corrective measures include the following:

- A. Comprehensive review of each item in the audit by the audit committee;

- B. A continuous update of trend analysis and data summaries. Thus, if increases in exposures or effluents are observed, rapid solutions can be implemented to resolve problems.

#### OPEN ITEMS

The inspector also reviewed in vivo lung measurement data obtained for workers during September, 1981 and September 1982. All 1981 data were less than 9 nanocuries; however, four individuals had results ranging between 9.2 and 12.8 nanocuries during 1982. Of greater concern was the fact that nine persons were noted in the vendor's in vivo report of having lung depositions which could not be clearly identified as to quantity or constituent, but were likely to be "radon or radium." The licensee responded to the inspector's concern by committing to further discussion with the vendor in order to isolate the radionuclide. This item will be held open for further review with the licensee during the next inspection (40-8681/82-01/01).

#### RESPONSE

The four individuals who had results ranging between 9.2 and 12.8 nanocuries during 1982, were recounted at the University of Utah, School of Medicine, Division of Radiobiology by Dr. Ray d. Lloyd, on February 17, 1983. The results showed that all four individuals had activities below 6 nanocuries.

With respect to the Vendor's conclusion that the test results for nine persons could not be clearly identified as to quantity or constituent, Energy Fuels contacted the Vendor for further explanation. The vendor, after again reviewing the test results, stated that the presence of radon, which is easily identifiable on the test results because of radon activity levels, masked the presence of uranium in the lungs of the nine individuals. When the test was conducted the nine individuals had just come from the mill allowing insufficient time for radon gas to be expelled. If uranium were present in large enough concentrations to be of concern, it's presence would not have been masked by the radon levels. Thus to be conservative the Vendor reported, as uranium,

the greatest deposition that could be present under the detected radon peak. As stated all results were less than 9 nanocuries.

The inspector reviewed the 55-gallon, DOT Specification 17H shipping drums used for product shipments and noted that they were equipped with closure bolts smaller than that specified for such packages in 40 CFR 178.118-8(b). This regulation requires 5/8 inch bolts, although 3/8 inch bolts were in use. The inspector discussed with the licensee that although Specification 17H drums are not specifically required, 40 CFR 173.392(b)(1) does require the use of "strong, tight packages" and that use of a substandard 17H container might be considered a questionable arrangement. The licensee committed to review the matter, and the issue will be left open for review during the next inspection (40-8681/82-01/02). The drums were observed to be properly marked as "Radioactive-LSA."

RESPONSE

The inspector discussed the need to use 5/8 inch bolts on the closure of the drums, instead of the 3/8 inch bolts now in use, to guarantee "strong, tight packages." The licensee has on hand 5/8 inch bolts and compatible drum closure rings. All yellowcake packaged since January 1, 1983 has been placed in drums with the 5/8 inch bolts in the closure rings.

M. D. Vincelette  
M. D. Vincelette, Vice President  
Uranium & Mineral Operations  
Energy Fuels Nuclear, Inc.

STATE OF COLORADO )  
 ) ss.  
CITY AND COUNTY OF DENVER)

The foregoing was subscribed and sworn to before me this 7<sup>th</sup> day of April, 1983, by M. D. Vincelette, Vice President, Uranium & Mineral Operations, Energy Fuels Nuclear, Inc.



Janice L. Frazier  
Notary Public  
3 Pk Centre, Ste 900, Denver, Co.  
Address

My commission expires: 6-12-86