Department of Energy
Albuquerque Operations Office
P. O. Box 5400
Albuquerque, New Mexico 87185-5400

June 10, 1998

Mr. Joseph J. Holonich, Chief
Uranium Recovery Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards
Mail Stop T7J9
U. S. Nuclear Regulatory Commission
Washington, DC 20555-2738

Dear Mr. Holonich:

Enclosed for your review are three (3) copies of the Department of Energy's (DOE) responses to Nuclear Regulatory Commission (NRC) comments, on the Completion Report (CR) for Maybell, Colorado, Vicinity Property No. MB-003S. These comments were transmitted to the Environmental Restoration Division (ERD) by E-Mail on Wednesday, April 2, 1998, and were discussed in a follow-up teleconference with Ms. Elaine Brummett and Mr. Bob Carlson of your staff on Tuesday, April 8, 1998. This transmission represents the ERD's formal response to these comments. Changes to the CR are in the form of replacement pages and are accompanied by a set of pages which utilizes shaded text to indicate additions to existing text. Also included to aid in your review are three (3) copies of the associated Comment and Response Worksheet.

If you concur with our responses, please make the following changes to the documents in your possession to effect the revision.

- *Remove and replace the Table of Contents. Page 2 with new Table of Contents,*
- *Remove and replace Section 1.0 [Summary], Page 5 with new Section 1.0 [Summary],* (Comment #3)
- *Remove and replace Sections 2.0, [Operations Summary] through Section 4.0 [References], Pages 6 and 7 with new Sections 2.0, [Operations Summary] through Section 4.0, [References]* (Comment #4)
- OPTIONAL CHANGE

Remove all but Section 4 [Environmental Impacts] of the Environmental Assessment (EA) from Appendix G (Comment #6). The entire EA has been added as Reference Document 4.5 on Page 7, Section 4.0 [References]. Page 2 has been revised accordingly.

Should you have any questions or require additional information regarding this transmission, please feel free to contact me at (505) 845-5637.

Sincerely,

L. A. Woodworth
Vicinity Property Manager
Uranium Mill Tailings Remedial
Action Team
Environmental Restoration Division

2 Enclosures:
1. MB-003S, Vicinity Property Completion Report Page Changes
2. MB-003S Comment and Response Worksheet

cc w/o Enclosures:
D. Gillen, NRC
C. Abrams, NRC
R. Carlson, NRC
E. Brummett, NRC
F. Bosiljevac, ERD, AL
R. D'Arezzo, MK-F
E. Artiglia, TAC
K. Johnson, TAC

VP No.: MB-003

NRC Review Form
for Supplemental Certification
of Vicinity Properties

The Department of Energy (DOE) has determined that the remedial action at the following vicinity property (VP) has been completed and thereby complies with supplemental standards invoked by DOE under 40 CFR, Subpart C, specifically Subsections 192.21 and 192.22.

[ ] NRC concurrence for the Radiological Engineering Assessment (REA) was given on: ___

[X] Supplemental standards were not in the REA, this property did not require any remedial action.

Frank D. Bosiljevac 5/5/98
Frank D. Bosiljevac, DOE Certification Officer Date

= =

Based on the information and certification provided by the DOE, the NRC:

[ ] Concurs that the remedial action at the subject VP has been competed under its authority provided by the Uranium Mill Tailings Radiation Control Act (UMTRCA), Section 104 (f)(1) and as described in the Memorandum of Understanding (MOU), Appendix A, Section 3.4.

[ ] Concurs, as above, except for the following conditions:

1. ______
2. ______
3. ______

[ ] See attached sheets for any additional provisions.

[ ] Needs additional information to make a concurrence decision. This information consists of:

______
______
______
______

[ ] See attached sheets for any additional informational needs.

______ ______
NRC Concurring Official and Title Date

Responses to NRC Comments on MB-003 CR

Comment 1: Why didn't Frank sign the NRC review form?

Response: MK-Ferguson does not know the answer to this comment.

Responses to NRC Comments on MB-003 CR

Comment 2: None of the REAs called for supp. stds.?

Response: All of the REAs called for supp. stds. Since REAs and CRs for Johnson Wash/Lay Creek are nearly identical to each other, NRC chose not to review the REAs.

Comment 3: Why does page 5 say - if Ra-226/U-238 less than 11, material is ore, while later on documents say 5 and 15" and SS application section B.4.2 says 16. WHY POINT OUT DOE UNCERTAINTY?

Response: On every occasion where the use of a Ra-U ratio has been prudent, the process of getting the ratio approved has been arduous. It was thought that by including some of the paperwork surrounding the establishment of such a ratio for Maybell that CR reviewers who had not been part of the process would be less likely to request additional justification for the establishment of the ratio. Page 5 has been amended to indicate the material is included for historical purposes.

Responses to NRC Comments on MB-003 CR

Comment 4: Page 6 should have explained what 5/15 pCi/g radium standard means.

Response: The page has been amended to reference 40 CFR 192 rather than the numeric values found therein.

Comment 5: Table 3.1, one gamma reading represents up to 60", not very useful.

Response: MKF agrees that there is no correlation between the estimated depth of contamination and a surface, gamma reading unless the depth of contamination is 0-6". For boreholes with more than one depth of contamination listed, the indicated depths are lens of contamination separated by "clean" material. The depths are estimated from borehole log sheets found in Appendix A.

However, exterior, surface gamma readings are very useful: 1) they may be the basis of inclusion/exclusion decisions; 2) they provide guidance in locating boreholes appropriately; 3) they allow the estimation of the surface expression of the areal extent of an area suspected of being contaminated with RRM; and 4) they allow consideration of exposures to gamma radiation that the public and/or workers may be subject to if in close proximity to the area in question.

Responses to NRC Comments on MB-003 CR

Comment 6: Why was 152 page EA for Maybell included? What portions relate to the Supp. Stds. application that couldn't have been summarized in a few sentences?

Response: It was the possibility that the CR needs, in some cases, to be a stand alone document that prompted the inclusion of the complete EA. The EA contains information useful in justifying the application of supplemental standards that goes well beyond that required by the 1992 Checklist. It is understood that in the case of the NRC the inclusion of a complete EA could be considered "overkill", however, it was decided to keep the section intact at the time. Due to comments received, it has been suggested that the exclusion of the EA with the exception of Section 4 [Environmental Impacts] would be acceptable, so we have made it an option as to whether the entire EA is retained in the existing documents. It is anticipated that any new documents that are assembled by this office will contain only Section 4.

Responses to NRC Comments on MB-003 CR

Comment 7: What were the TAC's comments and were they resolved?

Response: MK-F issued responses to TAC comments on 1/21/98.

Responses to NRC Comments on MB-003 CR

Comment 8: Why .34 factor for converting U values to U-238; going from ppm to pCi/g?

Respnse: The .34 factor is used to convert U-nat in ug/g to U-238 in pCi/g.

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1.0 SUMMARY

Remedial action was not performed on Vicinity Property MB-003.

The Maybell Site is situated in a large area of naturally occurring uranium ore bodies which lie at and/or very near the surface of the ground. There are several abandoned open pit uranium mines, with their attendant overburden piles in close proximity to the Maybell Site. The forces of nature have eroded and dispersed portions of these ore bodies, mine products, and overburden piles over large areas of ground adjacent to, and down gradient from, the Maybell Site. Most of this material has collected in the drainages (arroyos/ravines) in the area. It is also known that while the mill was in operation, approximately 500 tons of solid tailings material was lost from a tailings settlement pond.

A letter written by the Union Carbide Nuclear Company (UCNC) (Attached as Appendix H) states that on December 6, 1961, the mill lost control of some 500 tons of solid tailings material. Of that material only 100 to 200 tons were carried off of the mill property. It is believed that the majority of the material carried off of the mill property was deposited into the upper reaches of the wash, not far from the property. No solids or liquids reached the Yampa River. The flow of solids and liquids had stopped by the same evening. Also, UCNC did not recover the material because of the rough topography of Johnson Wash and because the tailings would have little effect on the environment due to the insolubility of radium.

Differentiating between these "contaminants" and wind/water dispersed uranium tailings is problematic. Several procedures to distinguish between naturally occurring radioactive material and tailings at Maybell have been developed. In summary, those materials having a Ra-226:U-238 ratio less than 11:1 are deemed to be naturally occurring uranium ore. Those materials with a ratio between 11:1 and 16:1 may be naturally occurring or UMTRA related. Materials with a ratio greater than 16:1 are judged to be tailings and may be eligible for remediation. However, naturally occurring uranium and its daughters are not necessarily found in equal amounts at the same location because of the chemical actions during deposition. Ratios between radium and uranium in naturally occurring material, therefore, can and do, vary greatly. If radioactive materials being investigated are situated in unlikely areas or are "suspect" for other reasons, additional assessments, including geologic, may be performed to determine whether the substances are UMTRA related. Appendix D provides an historic perspective of how the Ra:U ratio was developed. Appendix F contains instructions for visually identifying ore (vs tailings).

Much of the elevated gamma and radium values on this property are attributed to naturally occurring ore. However, because of the problems of distinguishing between naturally occurring uranium and UMTRA related materials, the State of Colorado and the Department of Energy directed the Application of Supplemental Standards for all UMTRA related material and naturally occurring uranium ore on this property exceeding Ra-226 values found in 40 CFR 192. The cost for cleaning the contamination on this property far outweighs any benefit that may be received and the excessive harm to the environment around the wash make the application of supplemental standards an option. Appendix B contains the Application for Supplemental Standards.

The recommendation for the application of Supplemental Standards is supported by the Environmental Assessment of Remedial Action at the Maybell Uranium Mill Tailings Site Near Maybell, Colorado (Reference 4.5). It provides a detailed investigation of environmental concerns, socioeconomic impacts, and assessments of health risks that may be associated with the remediation, or lack thereof, of the Maybell Site, including the Johnson Wash/Lay Creek area. Section 4 of the document has been included in this Report as Appendix G.

2.0 OPERATIONS SUMMARY

2.1 Remedial Action Plan

No remedial action was performed on this property.

2.2 Previously Unidentified Contamination

N/A

2.3 Unanticipated Items During Remedial Action

N/A

3.0 VERIFICATION SUMMARY

3.1 Radiological Survey Data

All survey data were acquired according to approved procedures.

3.1.1 Pre-Remedial Action Survey

The results of the survey defining the contaminated area requiring remedial action are presented on Drawing MB-003-015, 016, and 017.

3.1.2 Pre-Restoration Survey

Exterior:

No remedial action was performed on this property.

Interior:

No structures exist on this property.

3.2 Recommendation for Certification

3.2.1 Exterior:

No remedial action was performed on this property. Supplemental Standards have been recommended for all material on the property which exceeds the Ra-226 criteria of 40 CFR 192 - regardless of the source. The State of Colorado and the U.S. Department of Energy have approved the Recommendation. Based on this information, we recommend the exterior of this vicinity property be certified, with the application of Supplemental Standards, to be in compliance with EPA standards for the UMTRA Project.

3.2.2 Interior:

No structures exist on this property.

4.0 REFERENCES

4.1 The Radiological and Engineering Assessment for Rifle, Property NT-080; MK-Ferguson Company/RUST Federal Services, Inc.; Albuquerque, New Mexico; June 4, 1996.

4.2 Health Physics Procedures; RUST Federal Services, Inc., for MK-Ferguson Company, Remedial Action Contractor; Albuquerque, New Mexico; October 1993.

4.3 Vicinity Properties Management and Implementation Manual; UMTRAP, U.S. Department of Energy; Albuquerque, New Mexico; March 1988.

4.4 Title 40, Code of Federal Regulations, Part 192.12-23; U.S. Environmental Protection Agency; Washington, D.C.; July 1983.

4.5 Environmental Assessment of Remedial Action at the Maybell Uranium Mill Tailings Site Near Maybell, Colorado, DOE/EA-0347, Rev. 2; UMTRAP, U.S. Department of Energy; Albuquerque, New Mexico; January 1995.

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