

MORTON RANCH PROJECT
RESPONSE TO
10 CFR 40, Appendix A

Criteria Relating to the Operation of Uranium
Mills and the Disposition of Tailings or Wastes
Produced by the Extraction or Concentration of Source
Material from Ores Processed Primarily for Their
Source Material Content

January 5, 1982

It is the licensee's opinion that the majority of the required information and programs for meeting the technical and financial criteria of 10 CFR 40 Appendix A have been submitted to the U. S. Nuclear Regulatory Commission in previous documents. Additional documents which have been submitted to, and approved by, the State of Wyoming fulfill an additional portion of the requirements.

This document is a summary of these programs with references to the more detailed information provided in previous documents.

The following documents which have not previously been submitted to the Nuclear Regulatory Commission are included in this submittal are:

Permit 230C Volume II (Fourth Edition) Reclamation Plans for Morton Ranch Operations, January 31, 1979
Section 9. Mill Reclamation

Letter to C. E. Wolff from the State of Wyoming, Department of Environmental Quality, Land Quality Division, dated August 18, 1981, on the subject of Morton Ranch Revised Bonding Calculations (Permit No. 230C)

Estimated Radon Attenuation from Reclaimed Tailings at the Morton Ranch Project, January 4, 1982

Criterion 1 -- In selecting among alternative tailings disposal sites or judging the adequacy of existing tailings sites, the following site features, which will determine the extent to which a program meets the broad objective of isolating the tailings and associated contaminants from man and the environment during operations and for thousands of years thereafter without ongoing active maintenance, shall be considered:

remoteness from populated areas;

hydrologic and other natural conditions as they contribute to continued immobilization and isolation of contaminants from usable groundwater sources; and

potential for minimizing erosion, disturbance, and dispersion by natural forces over the long term.

The site selection process shall be an optimization to the maximum extent reasonably achievable in terms of these features.

In the selection of disposal sites, primary emphasis shall be given to isolation of tailings or wastes, a matter having long term impacts, as opposed to consideration only of short term convenience or benefits, such as minimization of transportation or land acquisition costs. While isolation of tailings will be a function of both site and engineering design, overriding consideration shall be given to siting features given the long term nature of the tailings hazards.

Tailings shall be disposed of in a manner that no active maintenance is required to preserve conditions of the site.

RESPONSE TO CRITERION 1

A. Remoteness from Populated Areas.

Detailed information regarding the demography of the region surrounding the Morton Ranch Project may be found in Section 2.1 of the Application for a Uranium Milling License on the Morton Ranch, Wyoming Uranium Mill, January 14, 1977, and supplements dated November 15, 1977, July 25, 1978, April 20, 1979, and April 23, 1979.

No major changes in population within five miles of the Morton Ranch Project have occurred since the submittal of this report with the exception of the reduction in force of the Exxon Highland Uranium Mine and Mill. At the beginning of February, 1982, the Exxon Highland Uranium Operation will have reduced its employment on their property to approximately 200 people. Further reductions in Exxon's employment are anticipated in the future as mining is completed.

B. Hydrologic and Other Natural Conditions Which Contribute to Isolation from Useable Groundwater Sources.

Geotechnical studies of the tailings pond areas have shown the presence of shale lenses continuous throughout the tailings pond area. The presence of the shale lenses and clay soils underlying the surface area will preclude significant seepage into the groundwater aquifers.

Detailed information regarding the geology of the tailings disposal area may be found in the following documents:

Application for a Uranium Milling License on the Morton Ranch, Wyoming Uranium Mill, Section 2.4.1., January 14, 1977, and supplements dated November 15, 1977, July 25, 1978, April 20, 1979, and April 23, 1979.

Environmental Report on the Morton Ranch,
Wyoming Uranium Mill, Volume I, (UNC-ER-2 1976),
Section 2.4 Geology.

Environmental Report on the Morton Ranch,
Wyoming Uranium Mill, Volume II Appendices
(UNC-ER-2 1976), Appendix A-III Geotechnical Study.

C. Potential for Minimizing Erosion, Disturbance, and
Dispersion by Natural Forces over the Long Term.

The mill tailings effluent pond has been located in a
natural depression which has been dammed at its narrow,
downstream end. The natural topography has provided
protection from wind, while minimizing the acreage
draining into the effluent pond.

De-watered tailings will be placed in mined-out pits
which will be backfilled to a level ten feet above the
water table with compacted overburden and then lined
with three feet of compacted clay. Placement of
tailings in mined-out pits will control erosion and
dispersion during the operation of the mill.

Reclamation of the Morton Ranch Project tailings
disposal site will be in accordance with the
reclamation plan submitted to and approved by the State
of Wyoming and the U.S. NRC. This reclamation plan is
designed to prevent the dispersal of contamination
without continual long-term maintenance. This will be
achieved through proper backfilling, sealing, sloping,
and revegetation of the tailings disposal area.

Detailed information may be found in the following documents:

Application for Uranium Milling License on the Morton Ranch, Wyoming Uranium Mill
January 1, 1977 and supplements dated
November 15, 1977, July 25, 1978, April 20, 1979 and
April 23, 1979

Environmental Report on the Morton Ranch,
Wyoming Uranium Mill, Volume II,
(UNC-ER-2 1976), Appendix A-VI Reclamation Program

Permit 230C Volume II (Fourth Edition)
Reclamation Plans for Morton Ranch Operations,
January 31, 1979, Section 9, Mill Reclamation

Criterion 2 -- To avoid proliferation of small waste disposal sites and thereby reduce perpetual surveillance obligations, byproduct material from in situ extraction operations, such as residues from solution evaporation or contaminated control processes, and wastes from small remote above ground extraction operations shall be disposed of at existing large mill tailings disposal sites; unless, considering the nature of the wastes, such as their volume and specific activity, and the costs and environmental impacts of transporting the wastes to a large disposal site, impracticable or the advantages of onsite burial clearly outweigh the benefits of reducing the perpetual surveillance obligations.

RESPONSE TO CRITERION 2

The Morton Ranch Operation will ensure that all contaminated wastes, by-product wastes, and laboratory wastes will be disposed of into the tailings disposal area and that no small waste disposal areas, other than sanitary landfills, will be utilized.

Detailed information is provided in the following documents:

Source Material License Number SUA-1356, May 10, 1979
License Condition 11
License Condition 21

Application for Uranium Milling License on
the Morton Ranch, Wyoming Uranium Mill,
January 14, 1977 and supplements dated
November 15, 1977, July 25, 1978, April 20, 1979, and
April 23, 1979 Section 4.0 Waste Management System

Environmental Report on the Morton Ranch,
Wyoming Uranium Mill, Volume I (UNC-ER-2),
Sections 3.4 and 3.5

Criterion 3 -- The "prime option" for disposal of tailings
is placement below grade, either in mines or specially
excavated pits (that is, where the need for any specially
constructed retention structure is eliminated).

The evaluation of alternative sites and disposal methods
performed by mill operators in support of their proposed
tailings disposal program (provided in applicants'
environmental reports) shall reflect serious consideration
of this disposal mode. In some instances, below grade
disposal may not be the most environmentally sound approach,
such as might be the case if a high quality groundwater
formation is relatively close to the surface or not very
well isolated by overlying soils and rock. Also, geologic
and topographic conditions might make full below grade
burial impracticable; for example, bedrock may be
sufficiently near the surface that blasting would be
required to excavate a disposal pit at excessive cost, and
more suitable alternate sites are not available. Where full
below grade burial is not practicable, the size of retention
structures, and size and steepness of slopes of associated
exposed embankments, shall be minimized by excavation to the
maximum extent reasonably achievable or appropriate given
the geologic and hydrologic conditions at a site. In these
cases, it must be demonstrated that an above grade disposal
program will provide reasonably equivalent isolation of the
tailings from natural erosional forces.

RESPONSE TO CRITERION 3

After a careful evaluation of available alternatives the
licensee proposes that tailings generated by the Morton
Ranch Project be disposed of in mined-out pits. Detailed
information regarding the evaluation of alternatives, the
disposal method and locations may be found in the following
documents:

Application for Uranium Milling License on the Morton Ranch, Wyoming Uranium Mill, Section 4.0 Waste Management System, January 14, 1977, with supplements dated November 15, 1977, July 25, 1978, April 20, 1979, and April 23, 1979

Supplement to Applicant's Environmental Report on the Morton Ranch, Wyoming Uranium Mill, Analysis of Alternatives for Mill Tailings Management and Reclamation (UNC-ER-2 Supplement I 1977)

Environmental Report on the Morton Ranch, Wyoming Uranium Mill, Volume I (UNC-ER-2 1976), Section 10.0 Alternatives to the Proposed Action

Criterion 4 . . . The following site and design criteria shall be adhered to whether tailings or wastes are disposed of above or below grade:

- (a) Upstream rainfall catchment areas must be minimized to decrease erosion potential and the size of the maximum possible flood which could erode or wash out sections of the tailings disposal area.
- (b) Topographic features should provide good wind protection.
- (c) Embankment and cover slopes shall be relatively flat after final stabilization to minimize erosion potential and to provide conservative factors of safety assuring long term stability. The broad objective should be to contour final slopes to grades which are as close as possible to those which would be provided if tailings were disposed of below grade: this could, for example, lead to slopes of about 10 horizontal to 1 vertical (10h:1v) or less steep. In general, slopes should not be steeper than about 5h:1v. Where steeper slopes are proposed, reasons why a slope less steep than 5h:1v would be impracticable should be provided, and compensating factors and conditions which make such slopes acceptable should be identified.
- (d) A full self-sustaining vegetative cover shall be established or rock cover employed to reduce wind and water erosion to reduce wind and water erosion to negligible levels.

Where a full vegetative cover is not likely to be self-sustaining due to climatic or other conditions, such as in semi-arid and arid regions,

rock cover shall be employed on slopes of the impoundment system. The NRC will consider relaxing this requirement for extremely gentle slopes such as those which may exist on the top of the pile.

The following factors shall be considered in establishing the final rock cover design to avoid displacement of rock particles by human and animal traffic or by natural processes and to preclude undercutting and piping:

shape, size, composition, and gradation of rock particles (excepting bedding material average particles size shall be at least cobble size or greater);

rock cover thickness and zoning of particles by size; and

steepness of underlying slopes.

Individual rock fragments shall be dense, sound, and resistant to abrasion, and shall be free from cracks, seams, and other defects that would tend to unduly increase their destruction by water and frost actions. Weak, friable, or laminated aggregate shall not be used. Shale, rock laminated with shale, and cherts shall not be used.

Rock covering of slopes may not be required where top covers are very thick (on the order of 10m or greater); impoundment slopes are very gentle (on the order of 10h:1v or less); bulk cover materials have inherently favorable erosion resistance characteristics; and, there is negligible drainage catchment area upstream of the pile and good wind protection as described in points (a) and (b) of this Criterion.

Furthermore, all impoundment surfaces shall be contoured to avoid areas of concentrated surface runoff or abrupt or sharp changes in slope gradient. In addition to rock cover on slopes, areas toward which surface runoff might be directed shall be well protected with substantial rock cover (rip rap). In addition to providing for stability of the impoundment system itself, overall stability, erosion potential, and geomorphology of surrounding terrain shall be evaluated to assure that there are not ongoing or potential processes, such as gully erosion, which would lead to impoundment instability.

- (e) The impoundment shall not be located near a capable fault that could cause a maximum credible earthquake larger than that which the impoundment could reasonably be expected to withstand. As used in this criterion, the term "capable fault" has the same meaning as defined in §III(g) of Appendix A of 10 CFR 100. The term "maximum credible earthquake" means that earthquake which would cause the maximum vibratory ground motion based upon an evaluation of earthquake potential considering the regional and local geology and seismology and specific characteristics of local subsurface material.
- (f) The impoundment, where feasible, should be designed to incorporate features which will promote deposition. For example, design features which promote deposition of sediment suspended in any runoff which flows into the impoundment area might be utilized; the object of such a design feature would be to enhance the thickness of cover over time.

RESPONSE TO CRITERION 4

The Morton Ranch Project avoids the use of upstream rainfall catchment areas through utilization of diversion channels around the tailings area. This serves to both reduce erosion and minimize the maximum possible flood. Topographic features have been utilized to provide good wind protection.

The reclamation plan, approved by the State of Wyoming, includes sloping, contouring, and revegetation of disturbed areas with a self-sustaining vegetation cover. Extensive pre-operational studies of earthquake potential have resulted in an impoundment design which can withstand the "maximum credible earthquake."

Details of the programs which satisfy the requirements of Criterion 4 may be found in the following documents:

Source Material License Number SUA-1356, May 10, 1979
License Condition 11
License Condition 15
License Condition 16
License Condition 24

Application for Uranium Milling License on the Morton Ranch, Wyoming Uranium Mill
Section 4.0 Waste Management System, January 14, 1977, and supplements dated November 15, 1977, July 25, 1978, April 20, 1979, and April 23, 1979

Permit 230C Volume II (Fourth Edition)
Reclamation Plans for Morton Ranch Operations, January 31, 1979, Section 9 Mill Reclamation

Supplement to Applicant's Environmental Report on the Morton Ranch, Wyoming Uranium Mill,
Additional Environmental information and Mill Design Data (UNC-ER-2 Supplement II 1977)
Response to Question No. 28 of the United Nuclear Corporation Response to Questions as set forth by the U. S. Nuclear Regulatory Commission letter dated June 28, 1977 Requesting Additional Information

Environmental Report on the Morton Ranch, Wyoming Uranium Mill, Volume I (UNC-ER-2 1976), Section 9.0 Reclamation and Restoration

Environmental Report on the Morton Ranch, Wyoming Uranium Mill, Volume II (UNC-ER-1976), Appendix A-VI Reclamation Program

Criterion 5 -- Steps shall be taken to reduce seepage of toxic materials into groundwater to the maximum extent reasonably achievable. Any seepage which does occur shall not result in deterioration of existing groundwater supplies from their current or potential uses. The following shall be considered in order to accomplish this objective:

installation of low permeability bottom liners (where synthetic liners are used, a leakage detection system shall be installed immediately below the liner to ensure major failures are detected if they occur. This is an addition to the groundwater monitoring program conducted as provided in Criterion 7. Where clay

liners are proposed or relatively thin in-situ clay soils are to be relied upon for seepage control, tests shall be conducted with representative tailings solutions and clay materials to confirm that no significant deterioration of permeability or stability properties will occur with continuous exposure of clay to tailings solutions. Tests shall be run for a sufficient period of time to reveal any effects if they are going to occur [in some cases, deterioration has been observed to occur rather rapidly after about nine months of exposure]).

mill process designs which provide the maximum practicable recycle of solutions and conservation of water to reduce the net input of liquid to the tailings impoundment.

dewatering of tailings by process devices and/or in-situ drainage systems (at new sites, tailings shall be dewatered by a drainage system installed at the bottom of the impoundment to lower the phreatic surface and reduce the driving head for seepage, unless tests show tailings are not amenable to such a system. Where in-situ dewatering is to be conducted, the impoundment bottom shall be graded to assure that the drains are at a low point. The drains shall be protected by suitable filter materials to assure that drains remain free running. The drainage system shall also be adequately sized to assure good drainage).

neutralization to promote immobilization of toxic substances.

Where groundwater impacts are occurring at an existing site due to seepage, action shall be taken to alleviate conditions that lead to excessive seepage impacts and restore groundwater quality to its potential use before milling operations began to the maximum extent practicable. The specific seepage control and groundwater protection method, or combination of methods, to be used must be worked out on a site-specific basis. Technical specifications shall be prepared to control installation of seepage control systems. A quality assurance, testing, and inspection program, which includes supervision by a qualified engineer or scientist, shall be established to assure the specifications are met.

While the primary method of protecting groundwater shall be isolation of tailings and tailings solutions, disposal involving contact with groundwater will be considered provided supporting tests and analyses are presented demonstrating that the proposed disposal and treatment methods will not degrade groundwater from current or potential uses.

In support of a tailings disposal system proposal, the applicant/operator shall supply information concerning the following:

the chemical and radioactive characteristics of the waste solutions.

the characteristics of the underlying soil and geologic formations particularly as they will control transport of contaminants and solutions. This shall include detailed information concerning extent thickness, uniformity, shape, and orientation of underlying strata. Hydraulic gradients and conductivities of the various formations shall be determined.

This information shall be gathered from borings and field survey methods taken within the proposed impoundment area and in surrounding areas where contaminants might migrate to usable groundwater. The information gathered on boreholes shall include both geologic and geophysical logs in sufficient number and degree of sophistication to allow determining significant discontinuities, fractures, and channeled deposits of high hydraulic conductivity. If field survey methods are used, they should be in addition to and calibrated with borehole logging. Hydrologic parameters such as permeability shall not be determined on the basis of laboratory analysis of samples alone; a sufficient amount of field testing (e.g., pump tests) shall be conducted to assure actual field properties are adequately understood. Testing shall be conducted to allow estimating chemi-sorption attenuation properties of underlying soil and rock.

Location, extent, quality, capacity and current uses of any groundwater at and near the site.

Furthermore, steps shall be taken during stockpiling of ore to minimize penetration of radionuclides into underlying soils; suitable methods include lining and/or compaction of ore storage areas.

RESPONSE TO CRITERION 5

The licensee proposes to use clay liners for seepage control, to conduct in-situ dewatering of tailings through a drainage system installed in the bottom of the tailings disposal pit, and to provide for recycle of solutions in the milling process. Details of these items may be found in the following documents:

Source Material License Number SUA-1356, May 10, 1979
License Condition 11
License Condition 15
License Condition 24

Application for Uranium Milling License on the
Morton Ranch, Wyoming Uranium Mill, January 14, 1977,
and supplements dated November 15, 1977, July 25, 1978,
April 20, 1979, and April 23, 1979, Section 3.0 Facility
Design and Construction Section 4.0 Waste Management

Criterion 6 -- Sufficient earth cover, but not less than three meters, shall be placed over tailings or wastes at the end of milling operations to result in a calculated reduction in surface exhalation of radon emanating from the tailings or wastes to less than two pico-curies per square meter per second. In computing required tailings cover thicknesses, moisture in soils in excess of amounts found normally in similar soils in similar circumstances shall not be considered. Direct gamma exposure from the tailings or wastes should be reduced to background levels. The effects of any thin synthetic layer shall not be taken into account in determining the calculated radon exhalation level. If non-soiled materials are proposed to reduce tailings covers to less than three meters, it must be demonstrated that such materials will not crack or degrade by differential settlement weathering or other mechanism, over long term time intervals. Near surface cover materials (i.e., within the top three meters) shall not include mine waste or rick that contains elevated levels of radium; soils used for near surface cover must be essentially the same, as far as radioactivity is concerned, as that of surrounding surface soils. This is to ensure that surface radon exhalation is not significantly above background because of the cover material itself.

RESPONSE TO CRITERION 6

The Morton Ranch Project has prepared detailed plans for reclamation of the tailings disposal area which include the calculated reduction in surface exhalation of radon to less than two pico-curies per square meter per second. The detailed information on tailings area reclamation may be found in the following document:

Permit 230C, Reclamation Plans for
Morton Ranch Operations, Volume II, January 31, 1979

Estimated Radon Attenuation from Reclaimed Tailings at
the Morton Ranch Project, January 4, 1982

Criterion 7 -- At least one full year prior to any major site construction, a preoperational monitoring program shall be conducted to provide complete baseline data on a milling site and its environs. Throughout the construction and operating phases of the mill, an operational monitoring program shall be conducted to measure or evaluate compliance with applicable standards and regulations; to evaluate performance of control systems and procedures; to evaluate environmental impacts of operation; and to detect potential long term effects.

RESPONSE TO CRITERION 7

The Morton Ranch Operation, at the time of submittal of this document, has had an approved pre-operational monitoring program in effect continuously since March, 1978. An operational monitoring program is scheduled to be instituted upon initiation of mill construction. Details of the Morton Ranch Project Pre-operational and Operational Programs may be found in the following documents:

Source Material License Number SUA-1356
License Condition 29
License Condition 31
License Condition 32
License Condition 34
License Condition 38
License Condition 39
License Condition 40

Application for Uranium Milling License on the
Morton Ranch, Wyoming Uranium Mill, January 14, 1977,
and supplements dated November 15, 1977, July 25, 1978,
April 20, 1979, and April 23, 1979

Section 5.5.0, Pre-operational Radiological
Environmental Monitoring Program

Section 5.5.1, Operational Radiological
Environmental Monitoring Program

Criterion 8 -- Milling operations shall be conducted so that all airborne effluent releases are reduced to levels as low as is reasonably achievable. The primary means of accomplishing this shall be by means of emission controls. Institutional controls, such as extending the site boundary and exclusion area, may be employed to ensure that offsite exposure limits are met, but only after all practicable measures have been taken to control emissions at the source.

Notwithstanding the existence of individual dose standards, strict control of emissions is necessary to assure that population exposures are reduced to the maximum extent reasonably achievable and to avoid site contamination. The greatest potential sources of offsite radiation exposure (aside from radon exposure) are dusting from dry surfaces of the tailings disposal area not covered by tailings solution and emissions from yellowcake drying and packaging operations.

Checks shall be made and logged hourly of all parameters (e.g., differential pressures and scrubber water flow rates) which determine the efficiency of yellowcake stack emission control equipment operation. It shall be determined whether or not conditions are within a range prescribed to ensure that the equipment is operating consistently near peak efficiency; corrective action shall be taken when performance is outside of prescribed ranges. Effluent control devices shall be operative at all times during drying and packaging operations and whenever air is exhausting from the yellowcake stack. Drying and packaging operations shall terminate when controls are inoperative. When checks indicate the equipment is not operating within the range prescribed for peak efficiency, actions shall be taken to restore parameters to the prescribed range. When this cannot be done without shutdown and repairs, drying and packaging operations shall cease as soon as practicable. Operations may not be re-started after cessation due to off-normal performance until needed corrective actions have been identified and implemented. At such cessations, corrective actions, and re-starts shall be reported to the appropriate NRC regional office as indicated in Criterion 8A, in writing, within 10 days of the subsequent restart.

To control dusting from tailings, that portion not covered by standing liquids shall be wetted or chemically stabilized to prevent or minimize blowing and dusting to the maximum

extent reasonably achievable. This requirement may be relaxed if tailings are effectively sheltered from wind, such as may be the case where they are disposed of below grade and the tailings surface is not exposed to wind. Consideration shall be given in planning tailings disposal programs to methods which would allow phased covering and reclamation of tailings impoundments since this will help in controlling particulate and radon emissions during operation. To control dusting from diffuse sources, such as tailings and ore pads where automatic controls do not apply, operators shall develop written operating procedures specifying the methods of control which will be utilized.

RESPONSE TO CRITERION 8

Details of the Morton Ranch Project emissions controls on the mining and storage of ore and on the operation of the mill are found in the following documents:

Source Material License Number SUA-1356, May 10, 1979
License Condition 14
License Condition 19

Application for Uranium Milling License on the Morton Ranch, Wyoming Uranium Mill, January 14, 1977, and supplements dated November 15, 1977, July 25, 1978, April 20, 1979, and April 23, 1979

Section 3.0, Facility Design and Construction

Section 4.0, Waste Management Systems

Section 5.0, Radiation Safety Program

Criterion 8A -- Daily inspections of tailings or waste retention systems shall be conducted by a qualified engineer or scientist and documented. The appropriate NRC regional office as indicated in Appendix D of 10 CFR Part 20, or the Director, Office of Inspection and Enforcement, U. S. Nuclear Regulatory Commission, Washington, D. C., 10555, shall be immediately notified of any failure in a tailings or waste retention system which results in a release of tailings or waste into unrestricted areas, and/or of any unusual conditions (conditions not contemplated in the design of the retention system) which if not corrected could indicate the potential or lead to failure of the system and result in a release of tailings or waste into unrestricted areas.

RESPONSE TO CRITERION 8A

The Morton Ranch Project Operation will conduct operations in compliance with Criterion 8A as specified in Source Materials License SUA-1356, license condition 22, in addition to the requirements of 10 CFR 20.

Criterion 9 -- Financial surety arrangements shall be established by each mill operator prior to the commencement of operations to assure that sufficient funds will be available to carry out the decontamination and decommissioning of the mill and site and for the reclamation of any tailings or waste disposal areas. The amount of funds to be ensured by such surety arrangements shall be based on Commission-approved cost estimates in a Commission-approved plan for (1) decontamination and decommissioning of mill buildings and the milling site to levels which would allow unrestricted use of these areas upon decommissioning, and (2) the reclamation of tailings and/or waste disposal areas in accordance with technical criteria delineated in Section I of this Appendix. The licensee shall submit this plan in conjunction with an environmental impacts of the milling operation, decommissioning and tailings reclamation, and evaluates alternatives for mitigating these impacts. The surety shall also cover the payment of the charge for long term surveillance and control required by Criterion 10. In establishing specific surety arrangements, the licensee's cost estimates shall take into account total costs that would be incurred if an independent contractor were hired to perform the decommissioning and reclamation work. In order to avoid unnecessary duplication and expense, the Commission may accept financial sureties that have been consolidated with financial or surety arrangements established to meet requirements of other Federal or state agencies and/or local governing bodies for such decommissioning, decontamination, reclamation, and long term site surveillance and control, provided such arrangements are considered adequate to satisfy these requirements and that the portion of the surety which covers the decommissioning and reclamation of the mill, mill tailings site and associated areas, and the long term funding charge is clearly identified and committed for use in accomplishing these activities. The licensee's surety mechanism will be reviewed annually by the Commission to assure that sufficient funds would be available for

RESPONSE TO CRITERION 9

The Morton Ranch Property has assured sufficient funding for decontamination and decommissioning of the mill and site facilities and for reclamation of tailings and waste disposal areas through a surety bond (Reclamation Performance Bond executed to fulfill the requirements of the State of Wyoming.

Detailed information on the financial surety arrangements is provided in the following documents:

Reclamation Performance Bond

Permit 230C, Mining and Milling Plans for Morton Ranch Operations, Section 9, Volume II, Reclamation Plans for Morton Ranch Operations, January 31, 1979

Criterion 10 -- A minimum charge of \$250,000 (1978 dollars) to cover the costs of long term surveillance shall be paid by each mill operator to the general treasury of the United States or to an appropriate State agency prior to the termination of a uranium or thorium mill license.

If site surveillance or control requirements at a particular site are determined, on the basis of a site-specific evaluation, to be significantly greater than those specified in Criterion 12, (e.g., if fencing is determined to be necessary) variance in funding requirements may be specified by the Commission. In any case, the total charge to cover the costs of long term surveillance shall be such that, with and assumed 1 percent annual real interest rate, the collected funds will yield interest in an amount sufficient to cover the annual costs of site surveillance. The total charge will be adjusted annually prior to actual payment to recognize inflation. The inflation rate to be used is that indicated by the change in the Consumer Price Index published by the U. S. Department of Labor, Bureau of Labor Statistics.

completion of the reclamation plan if the work had to be performed by an independent contractor. The amount of surety liability should be adjusted to recognize any other conditions affecting costs. Regardless of whether reclamation is phased through the life of the operation or takes place at the end of operations, an appropriate portion of surety liability shall be retained until final compliance with the reclamation plan is determined. This will yield a surety that is at least sufficient at all times to cover the costs of decommissioning and reclamation of the areas that are expected to be disturbed before the next license renewal. The term of the surety mechanism must be open ended, unless it can be demonstrated that another arrangement would provide an equivalent level of assurance. This assurance could be provided with a surety instrument which is written for a specified period of time (e.g., five years) yet which must be automatically renewed unless the surety notifies the beneficiary (the Commission or the State regulatory agency) and the principal (the licensee) some reasonable time (e.g., 90 days) prior to the renewal date of their intention not to renew. In such a situation the surety requirement still exists and the licensee would be required to submit an acceptable replacement surety within a brief period of time to allow at least 60 days for the regulatory agency to collect.

Proof of forfeiture must not be necessary to collect the surety so that in the event that the licensee could not provide an acceptable replacement surety within the required time, the surety shall be automatically collected prior to its expiration. The conditions described above would have to be clearly stated on any surety instrument which is not open-ended, and must be agreed to by all parties. Financial surety arrangements generally acceptable to the Commission are:

- (a) Surety bonds;
- (b) Cash deposits;
- (c) Certificates of deposit;
- (d) Deposits of government securities;
- (e) Irrevocable letter or lines of credit; and
- (f) Combinations of the above or such other types of arrangements as may be approved by the Commission. However, self insurance, or any arrangement which essentially constitutes self insurance (e.g., a contract with a state or federal agency), will not satisfy the surety requirement since this provides no additional assurance other than that which already exists through license requirements.

RESPONSE TO CRITERION 10

The licensee will bond for this occurrence and at the termination of the project will consider the compliance requirements for long-term surveillance and monitoring costs.

Criterion 11 -- A. These criteria relating to ownership of tailings and their disposal sites become effective on November 8, 1981, and apply to all licenses terminated, issued, or renewed after that date.

B. Any uranium or thorium milling license or tailings license shall contain such terms and conditions as the Commission determines necessary to assure that prior to termination of the license, the licensee will comply with ownership requirements of this criterion for sites used for tailings disposal.

C. Title to the byproduct material licensed under this Part and land, including any interests therein (other than land owned by the United States or by a State) which is used for the disposal of any such byproduct material, or is essential to ensure the long term stability of such disposal site, shall be transferred to the United States or the State in which such land is located, at the option of such State. In view of the fact that physical isolation must be the primary means of long term control, and Government land ownership is a desirable supplementary measure, ownership of certain severable subsurface interests (for example, mineral rights) may be determined to be unnecessary to protect the public health and safety and the environment. In any case, however, the applicant/operator must demonstrate a serious effort to obtain such subsurface rights, and must, in the event that certain rights cannot be obtained, provide notification in local public land records of the fact that the land is being used for the disposal of radioactive material and is subject to either an NRC general or specific license prohibiting the disruption and disturbance of the tailings. In some rare cases, such as may occur with deep burial where no ongoing site surveillance will be required, surface land ownership transfer requirements may be waived. For licenses issued before November 8, 1981, the Commission may take into account the status of the ownership of such land, and interests therein, and the ability of a licensee to transfer title and custody thereof to the United States or a State.

D. If the Commission subsequent to title transfer determines that use of the surface or subsurface estates, or both, of the land transferred to the United States or to a State will not endanger the public health, safety, welfare, or environment, the Commission may permit the use of the surface or subsurface estates, or both, of such land in a manner consistent with the provisions provided in these criteria. If the Commission permits such use of such land, it will provide the person who transferred such land with the right of first refusal with respect to such use of such land.

E. Material and land transferred to the United States or a State in accordance with this Criterion shall be transferred without cost to the United States or a State other than administrative and legal costs incurred in carrying out such transfer.

F. The provisions of this Part respecting transfer of title and custody to land and tailings and wastes shall not apply in the case of lands held in trust by the United States for any Indian tribe or lands owned by such Indian tribe subject to a restriction against alienation imposed by the United States. In the case of such lands which are used for the disposal of byproduct material, as defined in this Part, the licensee shall enter into arrangements with the Commission as may be appropriate to assure the long term surveillance of such lands by the United States.

RESPONSE TO CRITERION 11

Please refer to the December 8, 1981 letter from C. E. Wolff, Resident Manager of Silver King Mines, Inc. Morton Ranch Project to Harry J. Pettengill, Section Leader, Operating Facilities Section II, Uranium Recovery Licensing Branch, U. S. Nuclear Regulatory Commission.

As stated in the letter, the Morton Ranch Project is currently acquiring certain additional property and mineral rights in the Morton Ranch Project area. Acquisition of these rights will negate most of the current agreements.

Details on the agreements and on land acquisition will be submitted to the U. S. Nuclear Regulatory Commission prior to April 1, 1982.

Criterion 12 -- The final disposition of tailings or wastes at milling sites should be such that ongoing active maintenance is not necessary to preserve isolation. As a minimum, annual site inspections shall be conducted by the government agency retaining ultimate custody of the site where tailings, or wastes are stored to confirm the integrity of the stabilized tailings or waste systems and to determine the need, if any, for maintenance and/or monitoring. Results of the inspection shall be reported to the Commission within 60 days following each inspection. The Commission may require more frequent site inspections if, on the basis of a site-specific evaluation, such a need appears necessary due to the features of a particular tailings or waste disposal system.

RESPONSE TO CRITERION 12

The Morton Ranch Project, through careful design and consideration of the topographical, geological, and other natural conditions has provided for final disposition of wastes in such a manner that assures minimal or no active maintenance to preserve isolation. However, if inspections indicate increasing maintenance or monitoring, those activities will be conducted accordingly and funded as provided for in Criterion 10.