

# PATHFINDER

Pathfinder Mines Corporation  
Lucky Mc Mine  
P.O. Box 831  
Riverton, Wyoming 82501  
(307) 452-6626

40-2259  
X60590

RETURN ORIGINAL TO PDR, HQ.

July 23, 1993

Mr. Ramon E. Hall  
U. S. Nuclear Regulatory Commission  
Region IV Uranium Recovery Field Office  
P. O. Box 25325  
Denver, Colorado 80225

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Docket No. 40-2259  
SUA-672

Dear Mr. Hall:

Please find enclosed replacement pages (five sets) for the Lucky Mc mill decommissioning plan in response to a request from Pete Garcia in a telephone conversation earlier today. The changes incorporated with these new pages were reviewed with Pete Garcia. We trust that this submittal completes all outstanding items relating to the mill decommissioning plan (excepting the bond calculation and the decontamination survey which are tied to the overall tailings reclamation/decommissioning plan). We look forward to NRC approval of the decommissioning plan. Please call if you have any questions.

Sincerely,

  
T. W. Hardgrove  
Environmental Coordinator

Enclosure  
WP51\NRC\DECOMSUB.793

cc: G. J. Simchuk w/o encl.  
E. L. Nugent  
R. W. Poyser  
C. F. VanBrunt

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Add'l Info

Most of the asbestos is in the form of nonfriable asbestos-containing transite sheeting that forms the external skin of significant portions of the older parts of the mill building. The portions of the mill left intact for an interim period for potential ISL use contain most of this transite sheeting. Upon decommissioning of these preserved portions of the mill, this material would be placed in the crusher chamber. At that time any remaining void space in the chamber after placement of the asbestos will be eliminated by earthen fill. After filling the chamber the fill material will be compacted to preclude settling. The isolation then will be further enhanced by the placement of a one foot deep compacted clay (Cody shale) cap over the area. The final surface gradient in the area of the asbestos placement will be designed in conjunction with the forthcoming tailings reclamation plan to assure erosional stability and the requisite radon attenuation.

Upon completion of the first phase asbestos removal the rest of the mill materials will be removed or dismantled and hauled to the mill rubble disposal site. Equipment and materials removed from the mill that are destined for burial will be sufficiently dismantled such that void spaces are precluded when the items are buried. Exhibit 2-2 illustrates the proposed area for burial of mill materials. Waste material will be placed in two to three foot lifts with compaction of the material provided by the weight of dozers running over each lift. Tanks will be sufficiently cut up or flattened by the heavy equipment to preclude significant void space. Each materials lift will be covered by at least one foot of compacted subgrade ore from the mill ore pad or clean earthen fill prior to the placement of the next materials lift. All materials currently stored in the mill "boneyard" not destined for decontamination/release will also be buried in the same location.

The mill wastes disposal area is located below the pond 2 embankment in an area of elevated beach along the south edge of pond 2A that consists almost exclusively of coarse tailings sands. As such, there will be virtually no differential settlement that would disturb the mill rubble placed on top of the sands. The compaction of the rubble and elimination of voids within the material will assure no consolidation due to the wastes. Upon completion of the placement of the last of the mill wastes, an interim cover of at least four feet of clean fill will be placed over the mill waste disposal area. Cover thickness will be designed to meet the radon-222 release limit of Appendix A of 10 CFR 40.

During the final reclamation of the tailings the mill waste disposal area will receive substantial amounts of additional clean earthen fill to create the final reclaimed slope configuration off the crest of the pond 2 embankment. The exact slope configuration is under development with the overall tailings reclamation plan due for submittal to the NRC by July 1, 1992. A riprap layer to be specified in the tailings reclamation plan will then be placed over the outslope area. Since the erosional stability of the slope in

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this area must meet the requirements of Appendix A of 10 CFR 40,  
the burial site for mill wastes will remain isolated.

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2-3A

consideration of this potential hazard. Ample use of water prior to removal will mitigate the hazard. CCD was a new circuit that experienced only nine months of operation. As such it is expected to be relatively clean from a radiological standpoint. However, the rubber lining in the CCD tanks may have absorbed some radioactive material (especially radium-226.) Any removal of rubber liner and tank cutting will be done with due consideration of that potential hazard.

Deposits of uranium containing materials at various locations within SX are anticipated. Likewise any future decommissioning activity in the precipitation circuit must be done in recognition of the likely occurrence of concentrate, especially inside pumps and pipes that are removed. If the ion exchange circuit is removed the biggest hazard will likely be from a radium precipitate that tends to form inside pipes in IX. Care will be taken when removing pipes to assure no respiratory uptake of the precipitate. Much of IX would be removed with minimal dismantling in order to minimize exposures. The IX cells will require some disassembly before they can be flattened for burial. Any interior rubber liner removal prior to cutting the IX cells and the actual cutting would be carefully controlled by the RWP system. As an alternative, consideration will be given to the feasibility of placing unflattened IX cells in the burial area and then filling them with sand to preclude voids.

Portions of the original mill building are still intact in the vicinity of the original yellowcake dryer location (the old dryer was removed during the renovation.) Respiratory protection will be particularly important when dismantling the old walls in this area due to the possibility of encountering residual yellowcake deposits behind the interior walls. Note that this area will remain intact at least for the interim, as discussed previously.

The yellowcake dryer acquired from the Petrotonics mill is currently sitting in fenced storage adjacent to the mill. If the dryer is not sold and thus becomes subject to disposal, it will be transported to the 2A burial site with all openings sealed. A hole of sufficient size to contain the dryer upright will be excavated, and the dryer will be placed in the hole. The top will then be removed in order to fill the dryer with the excavated tailings to eliminate voids. Fill will then cover the dryer. All of these activities will be accomplished under the control of RWP's. In the event that the SAG mill or the high rate thickener tanks are not salvaged and removed from the property and are subject to burial in the tailings disposal site, these items will be buried in a manner similar to the dryer. That is, the items will be placed upright in an excavated area in the 2A burial site, and tailings will be used to fill void spaces in the items.

#### B. Employee/Contractor Training

Initial radiation safety training for newly hired decommissioning personnel will be conducted in conformance with the current license and SOP's. Besides the principles of radiation and radiation

safety, respirator use and fit testing are also covered. The training will consist of eight contact hours with the RSO and will conclude with a test covering the material presented. Incorrect answers to test questions will prompt a review of the test items to insure worker understanding. Any outside contract help utilized during the decommissioning will also receive radiation safety training as specified in SOP 02.119. Supervisory and reinforcement training are also an integral part of the program. Section 3-K includes an itemization of the training SOP's that are relevant.

#### C. Area Radiation Monitoring

The routine area monitoring, consisting of generally quarterly air samples, quarterly penetrating radiation monitoring (TLD badges), quarterly wipe tests, and quarterly radon sampling will be continued during the decommissioning. Weekly surface contamination surveys will be conducted in the change room and the lunch room during the decommissioning. As the dismantling of each area of the mill is completed, that area will, of course, be dropped from the routine monitoring program. In addition, area air monitoring will be conducted on a daily basis with analysis for uranium (based upon alpha counting) in each area where active decommissioning activity is occurring.

#### D. Personnel Radiation Exposure Monitoring

The existing programs for personnel radiation monitoring will remain in effect during the decommissioning for both Pathfinder mill employees and any contractor personnel. Key elements of the program consist of TLD badge issuance to each individual on a quarterly basis, weekly and quarterly exposure calculations based upon airborne concentrations of uranium and time spent in different areas, routine and nonroutine urinalysis for uranium uptake, and personnel lapel air sampling when appropriate. Bioassays (urinalyses) will be conducted on a monthly basis for all mill employees. In addition, a baseline urinalysis will be performed for all new mill employees prior to the start of their work in the mill. When the employment of any mill personnel terminates, efforts will be made to obtain a final, exit urine sample from such individuals. Continued maintenance of these programs and the utilization of the RWP program will assure that personnel exposures will be kept as low as is reasonably achievable. The existing exposure record maintenance program will continue, assuring no cumulative high exposures. Previous exposure records, if any, are obtained for any newly hired or contractor personnel. The relevant SOP's for personnel exposure monitoring and control are listed in section 3-K.

#### E. Radiation Work Permit Program

The existing radiation work permit (RWP) program at Lucky Mc will be integral to the radiation safety aspect of the mill decommissioning. Weekly documented meetings will be held involving the mine manager or his designee, the mill foreman, and the RSO to plan the coming week's activities. This will allow a good discussion of

anticipated hazards, enabling the RSO to plan in advance the radiation safety needs for the various tasks. Prior to the beginning of each shift the RSO will review the planned activities for the day in order to ascertain any late changes in activities. Required RWP's will be issued at that time (recognizing that additional RWP's could be necessitated as the day progresses, depending upon the development of unanticipated conditions.) The potential for nonradiological hazards to the worker will also be considered when issuing RWP's.

Typically, the RWP will specify that at least 25% of the personnel