Radiation Protection Consultant

Noel Savignac, Ph.D.

40-3453

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Richard Blubaugh
Atlas Corporation
370 - 17th Street, Suite 3150
Denver, CO 80202

Dana Ward ✓
USNRC Uranium Field Office
730 Simms Street
Denver, CO 80225

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Gentlemen:

To expedite approval of the Atlas procedures for "The Release of Equipment from the Mill During Decommissioning," I have altered page 3 item 6 the last sentence and the third line of Form AT-1 to designate placing a lot marking on each item in a lot of similar items. Those changes were requested by Dana Ward. PLEASE DO NOT CONSIDER THOSE CHANGES AS FINAL UNTIL APPROVED BY RICHARD BLUBAUGH.

Sincerely,

Noel Savignac

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DESIGNATED ORIGINAL

Certified By Mary C. Hord

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94-0172

6100 Uptown Boulevard N.E., Suite 700 · Albuquerque, New Mexico 87110
Bus: (505)881-4150 Res: (505)256-9603 FAX: (505)881-7420

4.4 Release of Equipment from the Mill During Decommissioning

Source Materials License No. SUA-917, condition 18 states: "Release of equipment or packages from the restricted area shall be in accordance with the document entitled, 'Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of License for Byproduct or Source Materials' dated September, 1984. [Applicable Amendments: 18] [NRC, 1984]." That document presents the NRC standards for release of material and equipment from a uranium mill and is attached.

This section presents the procedures for how to survey equipment and material prior to release from the Atlas mill, and how to retrieve contaminated materials which may have been released from the mill. See Section 5.4 for how to operate the survey meters, Section 6.3 for how to calibrate alpha survey meters, Section 6.4 for how to calibrate beta detectors, and Section 6.5 for how to calibrate gamma detectors.

Equipment

1. Alpha scintillation survey meter.
2. GM survey meter with beta-gamma, gamma probe.
3. Filter paper wipes (50 mm), or the equivalent.
4. Gas-flow proportional counter.

Equipment and Material Handling and Movement

1. Before any potentially contaminated item can be removed from the restricted area of the mill, the alpha and beta-gamma radiation levels must be surveyed. If those levels are below the NRC release standards, the Radiation Control Coordinator or his designee will authorize release of the equipment or materials from the mill. Potentially contaminated items include any equipment, supplies, and structural materials that have been in contact with radioactive materials possessed by Atlas Minerals Corporation under Materials License SUA-917. In general items located inside the restricted area of the mill are considered potentially contaminated. Items outside the restricted area such as office furniture are not considered potentially contaminated unless specific information is available to the contrary.

2. Identify the source (location) of any item to be removed from the mill. Items from the precipitation and packaging area of the mill have a high probability of being sufficiently contaminated to preclude release without significant decontamination. Visually inspect each item to ascertain that all surfaces can be monitored with the probe of the alpha survey meter. This is the first of 8 inspection-hold points in the equipment survey procedure where items may be held in the restricted area of the mill and not released. Select only items that meet the following standards from NRC,1984:

> "The radioactivity on the interior surface of pipes, drain lines, or ductwork shall be determined by making measurements at all traps, and other appropriate access points, provided that contamination at these locations is likely to be representative of contamination on the interior of the pipes, drain lines, or ductwork. Surfaces of premises, equipment, or scrap which are likely to be contaminated but are of such size, construction, or location as to make the surface inaccessible for purposes of measurement shall be presumed to be contaminated in excess of the limits."

Small pipes with an internal diameter less than approximately twice the width of the alpha probe, assembled pumps, and assembled screw conveyers are examples of items that will not be surveyed and will automatically be rejected. A sealed electric motor with no openings between the inner and outer surfaces will have to be specially evaluated by the radiation survey personnel prior to monitoring.

3. Plan ahead. Schedule the removal, washing, survey, and truck transport of material from the mill site. Contact the radiation survey personnel to schedule the surveys. Contract radiation survey personnel are available on specific days each week and need two days advance notice of monitoring. They can provide estimates of the time required for the surveys. Allow time in the schedule for washed items to completely dry before monitoring, because alpha particles from surface contamination will not penetrate

water on the surface of the items.

4. The decontamination pad is the old concrete ore storage pad inside the restricted area of the mill. Wash the pad each week when the pad is in use. The wash water is contained and controlled from this area. Wash the items to be surveyed. Visually inspect the washed items to be sure grease or crusted deposits do not remain on the items. This is the second of 8 inspection-hold points. Dirty items will not be monitored and must remain in the restricted area of the mill. Items with a low probability of being contaminated, such as equipment from the mill water supply system, may with the consent of the Radiation Control Coordinator by inspected and surveyed directly without washing.

5. Avoid dragging the items in the dirt which can recontaminate items already cleaned. Separate the items to be surveyed so that the items can be turned over to survey all sides. Atlas and/or the demolition contractor are to provide pry bars, chains, fork lifts, and personnel as needed to move large pieces of equipment for surveying. KEEP THE AREA CLEAN. Radiation survey personnel will not survey items that are oily, greasy or dirty.

6. Place an identifying number with a paint pencil or other making tool on each piece of equipment that does not have a serial number. Numerous pieces of similar scrap such as pieces of "I" beams do not have to be individually numbered but have to be individually surveyed and individually marked to designate that all the pieces are from the same lot of similar scrap.

7. FOR EACH ITEM measure the alpha, and beta-gamma levels on the accessible surfaces of each item using only calibrated survey meters. See Section 5.4 for how to operate the survey meters, Section 6.3 for the procedures for alpha detector calibration, Section 6.4 for beta detector calibration, and Section 6.5 for gamma detector calibration. Record the ID number, the average counts per minute (CPM) and the maximum CPM on form AT-1. Record that data for each individual item surveyed except for numerous pieces of similar scrap where the data need only be recorded for 25% of the similar items surveyed. If the maximum CPM exceeds 75 CPM above background perform a wipe test as specified in

Section 5.4 and record the results on form AT-1. The Atlas Control Value of 75 CPM above background was derived by:

$$\frac{(1000\ DPM)}{100\ cm^2}(50\ cm^2)\left(\frac{0.2\ CPM}{DPM}\right) = 100\ CPM$$

$$\simeq 75\ CPM = \text{Atlas Control Value}$$

Where:

$\frac{1000\ DPM}{100\ cm^2}$ = The release limit for removable contamination.

$50\ cm^2$ = Surface area of probe.

$0.2\ \frac{CPM}{DPM}$ = Efficiency of Alpha survey meter.

8. On each side of an item that is surveyed place a spot of white spray paint or other identifying mark. Do not cover any contamination with spray paint. Turn each item over to gain access to the unsurveyed side. Survey as in #7 above and place the spot of paint on the side just surveyed. Record the result on Form AT-1 if higher than the results obtained in #7 above. Visually verify that a monitoring mark (white spot) has been placed on all sides of the item being surveyed. This is the third of 8 inspection-hold points.

9. Count the alpha activity on the wipe samples and record on AT-1. Convert the CPM alpha to DPM/100 cm^2 by:

$$\left(\frac{CPM}{50\ cm^2}\right)\left(\frac{100\ cm^2}{eff.}\right)\left(\frac{1}{}\right) = DPM$$

10. Compare all the DPM/100 cm^2 results on form AT-1 with the NRC release standards in NRC, 1984. If the survey results are less than the NRC release standards, the item is considered suitable for release. Mark the releasable items using a spot of fluorescent orange paint, or the equivalent. The same mark should be used by each member of the survey team. Record the mark used on form AT-1. Periodically change the color and symbol used to designate that items are not contaminated.

11. If the item is contaminated (above NRC standards), DO NOT REMOVE from the restricted area.

12. AS SOON AS POSSIBLE move the releasable items out of the restricted area of the mill into the equipment transfer yard near the front door of the mill office building. After the transfer is completed lock the transfer yard gate and the restricted area gate. Alternately load releasable items directly onto monitored trucks for transport offsite. Monitored releasable items should not remain on the decontamination pad for more than approximately 10 working days. Monitor the trucks before leaving the restricted area as specified in procedure 14 below. Keep the gates to the restricted area closed and locked when Atlas personnel are not in the vicinity.

13. Keep the equipment transfer yard locked except when transferring releasable items into and out of the yard. During months when equipment and materials are being placed in the transfer yard, conduct a beta-gamma survey of the yard surface. Remove any contamination above the NRC release standards.

14. Before leaving the restricted area of the mill, vehicles must be monitored for radioactive materials. This is the fourth of 8 inspection-hold points. Vehicles include all moving equipment such as beam shearing equipment, backhoes, and trenchers. Monitor the areas most likely contaminated such as tires, tracks, wheel wells, cab floors, etc. Record the monitoring results on form AT-1. Vehicles that make several trips each day from the restricted area to the equipment transfer yard need only be monitored before the first trip and after the last trip on a given day. Equipment and vehicles used extensively in the restricted area of the mill are monitored before being released from the restricted area. Include in that monitoring a survey of the paper air filters used on the equipment.

15. Monitor equipment such as front-end loaders used to move releasable items on the decontamination pad before the releasable items are moved. This is the fifth of 8 inspection-hold points. If the front-end loaders, etc. are used for other purposes during a day, that equipment must be resurveyed before handling releasable items again.

16. Monitor all empty trucks used to transport releasable equipment from the equipment transfer yard to off-site locations. This is the sixth of 8 inspection-hold points. Measurements of potential contamination on the bed of the trucks are to be recorded on form AT-1. Determine that the trucks are radiologically clean (under the NRC release limits) before any equipment is loaded on the truck. DO NOT USE the spray paint markers on the trucks.

17. After the trucks have been loaded a radiation survey person is to visually inspect the load and verify that all equipment is marked as releasable. This is the seventh of 8 inspection-hold points. Have any unmarked equipment removed from the truck.

18. Conduct a final, spot check or random, contamination survey of the truck and its load. This is the eighth of 8 inspection-hold points. Monitor select pieces of equipment and the wheels of the truck. If the survey indicate that the loaded truck is not contaminated, the radiation survey person is to enter and sign the following certification on the bill of lading:

AUTHORIZATION FOR RELEASE OF EQUIPMENT AND MATERIALS

I certify that this truckload of equipment and materials meets the Nuclear Regulatory Commission standards for "Acceptable Surface Contamination Levels" for radioactive materials (NRC release criteria) at the point of departure and may be released for transport from Atlas Minerals. For further information contact Atlas Minerals, Moab, UT (801) 259-5131 or Atlas Minerals, Denver, CO (303) 825-1200.

_____ _____

Radiation Survey Technician Date

Retrieval of Contaminated Material Released from Atlas Minerals

1. When Atlas Minerals becomes aware that equipment and materials contaminated with radioactive materials, in excess of the NRC release standards (NRC, 1984), have been released from Atlas Minerals, the Corporation will contact the buyers of the contaminated items to request available information on the type, quantity, and contamination surveys results.

2. Conduct a radiation survey of the potentially contaminated items if the initial contamination survey is inaccurate, incomplete, or suspect. The survey is to be conducted by the buyer, state or federal radiation survey personnel, a third party such as a radiation protection consultant, or by Atlas radiation survey personnel. Use the radiation survey procedures in this document or the equivalent.

3. Return to Atlas Minerals in Moab, UT the items found to be contaminated above the NRC release standards (NRC, 1984). Adhere to the Department of Transportation regulations for the shipments of radioactive materials. Alternatively decontaminate the contaminated items using decontamination techniques commonly used in the nuclear industry. If the residual activity on the items is below the NRC release standards, release the items for unrestricted use. Handle and dispose of the radiological waste from the decontamination process as specified in the State and NRC regulations or return the contaminated waste to Atlas Minerals.

4. Contact the radiological control personnel in the state or country where the contaminated items are found or suspected. Ask if they have received any information about the location and contamination levels on any potentially contaminated items. Seek their advise on potential corrective actions.

5. Attempt to determine if anyone has been exposed to the radioactive material and the magnitude of the exposure.

6. Maintain complete documentation about the incident as information becomes available.

7. Notify the NRC as required in 10 CFR 20.2201 and 20.2202. Telephone numbers and address of the NRC offices are

presented in Appendix D of 10 CFR 20. The NRC can provide the names, telephone numbers, and addresses of radiological control personnel in any state.

Procedure Implementation

An independent Radiation Protection Consultant is to arrange for radiation survey personnel to conduct radiation surveys with Atlas personnel. The contract survey personnel will be employed directly by Atlas Minerals to avoid potential conflicts of interest with the demolition contractor who is partially paid by recovering materials and equipment from the mill. The Consultant will train the survey personnel and the demolition contractor personnel on the implementation of this procedure.

Record Retention

The radiation survey personnel are to file the Atlas Minerals Equipment Release Survey Form AT-1 in the Radiation Safety Department files.

Quality Assurance

1. A Radiation Protection Consultant is to conduct two radiation protection and compliance audits of the implementation of this procedure within the first 3 months of procedure implementation. The reports of those audits will be made available to the NRC within 30 days of the receipt of the audit report by Atlas Minerals. Subsequently Atlas Minerals or their designee will conduct quarterly audits of this procedure for the next year that equipment is being released offsite. Thereafter the audits will be part of the annual ALARA audit.

2. The radiation survey personnel are responsible for conducting the surveys as specified in this procedure, for creation and maintaining the documentation as specified, and for notifying both Atlas Minerals and the Radiation Protection Consultant of any conditions that might lead to the release of radioactive materials in excess of the NRC release limits.

3. The following check list is provided as an aid for implementing this procedure.

References

1. "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct or Source Materials,' dated September 1984."
2. USNRC Regulatory Guide 8.30, Health Physics Surveys in Uranium Mills.
3. 10 CFR 20, Standards for Protection Against Radiation.

CHECK LIST
FOR
SURVEY AND RELEASE OF MATERIALS AND EQUIPMENT
FROM
ATLAS MINERALS URANIUM MILL, MOAB, UT

Item	Comments
Location of item	_____
Items qualifies for monitoring	_____
Schedule survey	_____
Scrap dealer identified	_____
Wash item on ore pad	_____ _____
Washed item is dry	_____
Any grease on washed items?	_____
Move item to disassembly area	_____ _____
Separate item to be monitored	_____ _____
Place ID # on equipment	_____
Alpha survey and record	_____
Beta-gamma survey and record	_____
Wipe test	_____
Paint monitoring mark	_____
Turn over, monitor (A,B-G)	_____
Paint monitoring mark	_____
Verify all sides monitored	_____
Count wipe	_____
Compare to NRC standards	_____

Mark releasable items _____

Move item to eq. trans. yd. or _____

Move item to transport truck _____

Monitor moving equipment _____

Lock gate to eq. trans. yard _____

Monitor truck before loading _____

Visually verify truck load _____

Monitor loaded truck _____

Sign equipment release form _____

ATLAS MINERALS EQUIPMENT RELEASE SURVEY FORM AT-1 (12-93)

Location (Source of equipment)_____ Surveyed by:_____
Releasable equipment marked by:_____ Lots of similar items marked by:_____ Date:_____

EQUIPMENT DESCRIPTION & SERIAL #	#	BETA/ GAMMA mR/HR	AVE ALPHA CPM	AVE ALPHA DPM 100CM²	MAX ALPHA CPM	MAX ALPHA DPM 100CM²	REMOVABLE ALPHA CPM	REMOVABLE ALPHA DPM 100CM²	RELEASE YES	RELEASE NO
DATE CALIBRATED										
EFFICIENCY										
BACKGROUND										
LIMITS		0.2 mR/HR AVE 1.0 mR/HR MAX	5000 DPM AVE 100 CM² 15000 DPM MAX 100 CM²				1000 DPM 100 CM² MAX			