

UNITED STATES ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE

INSPECTION FINDINGS AND LICENSEE ACKNOWLEDGMENT

JUN 15 1964

<p>1. LICENSEE <i>Atlas Minerals</i> <i>Division of Atlas Corporation</i> <i>P.O. Box 488</i> <i>Moab, Utah</i></p>	<p>2. REGIONAL OFFICE U.S. Atomic Energy Commission Division of Compliance, Region IV P. O. Box 15266 Denver 15, Colorado 80215</p>
<p>3. LICENSE NUMBER(S) <i>R-161</i></p>	<p>4. DATE OF INSPECTION <i>June 8-9, 1964</i></p>

5. INSPECTION FINDINGS

- ☒ A. No item of noncompliance was found.
- ☐ B. Rooms or areas were not properly posted to indicate the presence of a RADIATION AREA.
10 CFR 20.203(b) or 31.302
- ☐ C. Rooms or areas were not properly posted to indicate the presence of a HIGH RADIATION AREA.
10 CFR 20.203(c) (1) or 31.302
- ☐ D. Rooms or areas were not properly posted to indicate the presence of an AIRBORNE RADIOACTIVITY AREA.
10 CFR 20.203(d)
- ☐ E. Rooms or areas were not properly posted to indicate the presence of RADIOACTIVE MATERIAL.
10 CFR 20.203(e)
- ☐ F. Containers were not properly labeled to indicate the presence of RADIOACTIVE MATERIAL.
10 CFR 20.203(f) (1) or (f) (2)
- ☐ G. Storage containers were not properly labeled to show the quantity, date of measurement, or kind of radioactive material in the containers. 10 CFR 20.203(f) (4)
- ☐ H. A current copy of 10 CFR 20, a copy of the license, or a copy of the operating procedures was not properly posted or made available. 10 CFR 20.206(b)
- ☐ I. Form AEC-3 was not properly posted. 10 CFR 20.205(c)
- ☐ J. Records of the radiation exposure of individuals were not properly maintained. 10 CFR 20.401(a) or 31.203(b)
- ☐ K. Records of surveys or disposals were not properly maintained. 10 CFR 20.401(b) or 31.303(d)
- ☐ L. Records of receipt, transfer, disposal, export or inventory of licensed material were not properly maintained.
10 CFR 30.41, 40.61 or 70.51
- ☐ M. Records of leak tests were not maintained as prescribed in your license, or 10 CFR 31.105(c).
- ☐ N. Records of inventories were not maintained. 10 CFR 31.106
- ☐ O. Utilization logs were not maintained. 10 CFR 31.107

Leland C. Rouse
(AEC Compliance Inspector)

6. LICENSEE'S ACKNOWLEDGMENT

The AEC Compliance Inspector has explained and I understand the items of noncompliance listed above. The items of noncompliance will be corrected within the next 30 days.

9612200358 640615
PDR ADOCK 04003453
C PDR

(Date)

(Licensee Representative - Title or Position)

COPIES: ☐ LICENSEE: ☒ COMPLIANCE REGION: ☐ DIV. OF LIC. & REG.: ☐ DIV. OF COMPLIANCE

70.22 H-2-a

e.c. Inspection: Jun 899, 1964

licensee: Atlas Minerals

Address: Moab, Utah

License No: R-161

AEC-591 X

Clear case (Initial/Rein) X

Clear Case (F/U of 592) _____

Noncompliance case _____

AEC-417 _____

Immediate Public Health and Safety
Threat _____

Expenditure of more than nominal sum
for compliance _____

Excess of 90 days appears necessary
to achieve enforcement _____

N/C items of particular
complexity _____; Licensing
problems _____; Requires
Headquarters interpretation _____

Appropriate for "Notice of Alleged
Violation" _____

Uncorrected previous noncompliance

Other _____

AEC-592: _____

Involves nonsignificant risk _____

Involves significant risk _____

Date Dispatched JUN 15 1954

Suspense Date: _____

V and VI:

1. Adequate reply received from licensee:
_____; Copy to L&R for info _____
(Date)

2. Inadequate reply received from licensee:
Forwarded to L&R for action _____
(Date)

3. No reply received from licensee and
forwarded to L&R for action

Note: If F/U is made on No. 1, 2, or 3
above, check a. or b. below:

a. F/U shows satisfactory corrective action:
_____ cy AEC-591 to L&R for info _____

TWX report to L&R _____

b. F/U shows incomplete corrective action:
TWX report to L&R _____

VII:

ELAPSED DAYS INFO:

No. of days from date of Inspection to
issuance of AEC-592:

10 or less _____; 11 to 15 _____; 16 to 20 _____

21 to 25 _____; over 25 _____

From issuance of AEC-592 to licensee reply:

20 or less _____; 21 to 30 _____;

31 to 40 _____; over 40 _____

From Inspection date to date of F/U Inspection:

20 or less _____; 21 to 40 _____; 41 to 60 _____;

61 to 90 _____; 91 to 120 _____

VIII:

Additional Follow-up by agreement with L&R

Inspection Notes - L.C. Rouse

Licensee: Atlas Minerals
Division of Atlas Corp.
Moab, Utah

License No: R-161
Bracket No: 40-3453

Date of Inspection: June 8-9, 1964

Type of Inspection: Reinspection (2) - unannounced

Accompanied By: Glen D. Brown, Rad. Spec. (Supr.)

Contacted:

Roy Hollis	- Vice President, Milling
Ted Izzo	- Mill Superintendent
Willard Johnson	- Asst. Mill Superintendent
Henry Beatty	- Radiation Control Tech.
John Goff	- Plant Metallurgist
Kent Olsen	- Personnel Manager

Date of Last Inspection: November 27-29, 1962 and Jan. 15, 1963

Results of Current Inspection: Clear form 591 issued;
items of noncompliance noted during last inspection
had been corrected.

Inspection Findings:

Organization

- ① ~~the~~ Changes in organization since last inspection -
Ted Izzo promoted from Asst. Mill Super. to
Mill Super. replacing R.W. Unger who was
transferred to Mexico Hat Mill. Willard Johnson
replaced Izzo as Asst. Mill Super.

Facilities


② Changes in mill facilities since last inspection —

Closed circuit TV installed in crushing plant - cameras placed at points where plugging tends to occur such as ore pod, no. 1 sample cutter, pulley feeding fine ore bins, ore crusher; effectively eliminated two operators from crushing crew and put the crusher operator in the crusher bldg. Doghouse the major fraction of his time (TV receiver is in the Doghouse) ~~etc~~ which is supplied with outside air.

Changed exhaust on hood in concentrate lot sample room - now exhausts direct to outside; previously was connected to hearth exhaust system which caused a back pressure on the hood when dust collectors were shaken down.

Added ducts to hammer mill of hearth and improved ductwork from incinerator

Installed probe to indicate when VC barrels are filled at packaging station

Provided a long iron rod  (~5') which hearth operators now use to open hearth doors for rather than inspection; previously opened by hand while standing next to door

Restricted Area Air Sampling Program

③ Using his Stetson Model 31 air samplers, the licensee collects GA samples at ~ 20 locations throughout the mill 3 times each quarter year. ~~But~~ However, ~~the~~ since the last inspection, these sample results are no longer used to evaluate the exposure ^{of employees} to airborne concentrations. Baty said he uses the GA samples to detect trends and trouble spots and ~~on~~ on the basis of these samples repair work and modifications are often initiated. Records of these air samples were reviewed and it was noted that high concentrations were occasionally noted at locations such as above the fine ore bins, in the sample tower, crusher MCC deck, and the reground cyclone deck; however, ~~the~~ as noted above these results are not factored into the exposure evaluation of employees (see following paragraph).

④ As a result of the last inspection (cited for not obtaining BZ samples), the licensee procured 2 Valtronics Model BC-35 battery operated lapel air samplers (see letter dated April 15, 1963 to AEC - answer to Enforcement's letter of April 4, 1963). The licensee initiated use of these samplers in January, 1963, to obtain BZ samples for mill employees to evaluate exposures. The individual sampled wears the lapel sampler for the entire 8 hours of his shift. Baty started the program sampling the critical job classifications - crusher operator, ball mill

operator, one lot sample prep operator, and hearth operator - three times each quarter. The three samples for the job classification^{for the quarter} are taken over a period of a few days (different workers are sampled, ~~and~~ day and swing shift workers have been sampled, but workers on graveyard have not been sampled - Baty said he was not aware of any special duties assigned to the graveyard crew that would not also be performed on the other two shifts; thus, by creating the samples for 8 hours, each routine job performed by the particular job classification is included in the exposure evaluation). The three samples are averaged to determine the exposure of each man in the job classification for the three months of the quarter. ~~Exposure is not~~

(The license is authorized to average exposure over 160 hours in any 28 days; however, since the mill work schedule calls for 168 hours in 28 days, the applicable MPC's are 5.7×10^{-6} $\mu\text{Ci/cc}$ for uranium concentrates and 2.4×10^{-6} $\mu\text{Ci/cc}$ for ore dust.) The practice of collecting 3 samples for ^{each of} the job classifications named ~~except~~ above, except for the hearth operator, ~~the~~^{was} continued. ~~The most~~ at the time of the inspection, the most recent data (average of 3 samples collected in March to evaluate exposure for the 1st quarter of 1964) showed an average concentration of ~~1.0~~ 1.0×10^{-6} for the lot sample prep operators, 1.37×10^{-6} for the ball mill operators, and 1.17×10^{-6} for the crusher operators. These results are typical for these workers since the BZ sampling program was initiated.

⑤ The first 3 BZ samples (since the last inspection) were collected in February, 1963 for the hearth operators. These were not analyzed until late in March (after all other quarterly samples were collected). The three samples showed an average concentration of 7.54×10^{-4} $\mu\text{C}/\text{cc}$, in excess of the applicable MPC of 5.71×10^{-4} $\mu\text{C}/\text{cc}$. The overexposures were reported to the ~~Commissioner~~ AEC by letter dated 4-22-63. Kent Olsen produced copies of the written notification to each of the 4 hearth operators to show compliance with 20.405(b). ~~A series of BZ samples taken in early April~~ While not clear in the letter to the AEC, the employees were told that the overexposures were for the first quarter of 1963 (~~and only BZ~~ Baty was aware that since only 3 samples are collected, the average of these 3 samples must be assumed to be the average for ~~each~~ each 160 hour period in the quarter). A series of ~~as samples~~ BZ samples of the hearth operators ~~were~~ taken in early April, as reported in the licensee's letter of 4-22-63. The average concentration for 8 samples over a 10 day period was 4.9×10^{-4} $\mu\text{C}/\text{cc}$. ^{at this time and} as described in the licensee's letter of 5-24-63 (which reported the overexposure of two maintenance employees - see the following paragraph), the hearth was shut down on day shift - thus, the hearth operators were exposed to significant concentrations only ~~on day shift~~ while on the swing and graveyard shifts. As reported in the

letter of 5-24-63, the average concentration for 13 B2 samples collected for the hearth operators (with hearth operating) during the latter part of April and first part of May, 1963 was 6.56×10^{-4} $\mu\text{c}/\text{cc}$. Since samples showed that the average concentration for the day operator (hearth not operating) was $< 1 \times 10^{-4}$ $\mu\text{c}/\text{cc}$, the overall average for the 28 day period was 4.4×10^{-4} $\mu\text{c}/\text{cc}$. Near the end of May, 1963 4 additional hearth operators were added to the work force enabling 3 shift operation of the hearth again; each of the 8 operators spends only $\frac{1}{2}$ of his \pm working time during a 28 day period at the hearth (two operators per shift - one at hearth & one assigned other duties). This working procedure has continued until the time of the inspection. Since initiation of this procedure, Baty has collected 6 B2 samples each quarter for the hearth operators - 3 samples while "on the hearth" and 3 samples while "off the hearth". The average of the 6 samples is used as a measure of the hearth operator's exposure for the quarter. Results are given on the attached two following pages. (the results reflect the improved dust collection system in the VC area). At the time of the inspection, results had not yet been analyzed for the second quarter, 1964.

- (6) Under a procedure established by Baty after the last inspection, maintenance men report to him before performing maintenance work in the YC area. BZ samples (many of legal samples) are obtained if Baty decides the job warrants. BZ samples for two maintenance workers in May 1963 showed exposures that exceeded the applicable MPC when averaged over 28 days.

Name	Date	Hours Worked	BZ sample	avg for 168 hrs
Tidwell	5-9-63	6.5	68.4×10^{-11}	6.2×10^{-11}
"	5-10-63	8.0	74.4×10^{-11}	
Oriel	5-13-63	8.0	192.5×10^{-11}	9.1×10^{-11}

No other exposures in the 28 day period before and after - assigned to mechanics shop garage. Exposures occurred while repairing health dust system. The

exposures were reported to the AEC by letter dated 5-24-63. Kent Olson showed copies of letters to employees in compliance with 20.405(b) as described by the licensee's report dated 11-8-63, another overexposure of a maintenance man occurred on 10-7-63 (first reported to AEC on 10-17-63). Baty stated that there was no other exposure in the 28 days before or after (in mechanics shop). Olson showed a copy of the letter to the workman as required by 20.405(b). Since the last inspection, Baty had collected a total of 63 non-routine BZ samples. He exhibited an MSA full face respirator which is now used by

to: concentrations
reported were
slightly different,
e.g. 6.12×10^{-11}
& 9.45×10^{-11}

7/6: 1. solution was made on 7/6. It was concluded no pump was to be used. The decision had reported the exposure as required by 20.403(a), not complied with 20.403(b), and had taken the appropriate action described in letter to the AEC.

maintenance men on certain jobs. The mask has a side vent adapter which permits attachment of the Lapel sampler such that the sampler pulls air from inside the respirator, i.e. the same air the individual is breathing - it was concluded that this practice was acceptable and was not in noncompliance with ~~20.103~~ 20.103(c)(1).

- ⑦ It was determined that Baty had not used the two stage impactor sampler as discussed in the letter of 3-27-64 (answer from AEC dated 4-17-64). Baty was not aware that the applicable limits would change if samples represented only the respirable fraction - he was doubtful if he would pursue the point any further.

⑧ Miscellaneous notes

Baty has last calibrated the Stoplex sampler on 5-1-64. He said he calibrates ~~Stoplex~~ Lapel samplers every 6 months.

method??

In general discussion of B2 sampling program, it was pointed out that the flow rate on the Lapel sampler was very critical since the small filter probably tends to load up over an 8 hour period. Baty agreed and said that when the samples are taken on day shift he frequently checks the flow & to and adjust it to keep it at or near 3 l/min. When the samplers are worn by men on swing shift he asks them to occasionally check the flow.

and make adjustments as necessary. It was also cautioned to make ~~to~~ sure that the B2 samples were representative for the job classification, i.e., the same individual is not sampled each time (different work table) and that samples were not always taken on the same shift (different shift may have a different routine).

Surfaces in the

1. Crushing plant ~~area~~ ~~was~~ quite dirty at the time of the inspection -- however, because of ~~the~~ closed circuit TV, the crusher operator spends most of his time in the doghouse watching things. Clean-up is accomplished by vacuum in the crusher area. The YC area housecleaning was good at the time of the inspection -- the YC area is hosed down once each shift according to Baty.

② Unrestricted Area Sampling

④ The licensee continued his sampling program in the unrestricted areas, as described in the previous report in pages 37 thru 41, to the end of 1962. The average concentration at each location for the monthly samples taken from June thru December are given below. Samples were also taken at these locations on May 4 and 5, 1964. The results of these samples are also given in the table.

Location	$\times 10^{-13}$ $\mu\text{Ci/cc}$	
	1962 avg	Results of samples in 5-4-65
Top of Moab Canyon	0.129	0.05
Arches Monument	0.081	0.28
⊗ Scale House	2.22	0.05
⊗ West End of Shls	1.57	0.50
⊗ Stockpile Area	0.46	0.05
⊗ South End of Shls	0.11	0.30
U R C Boat House	0.62	0.86
U R C Ball Field	0.36	0.57
Moab End of Bridge	0.09	0.57
Old Ranch House	0.12	0.94
Slaven's Lumber Co.	0.14	0.17
Below Hospital	0.10	0.17
Mouth of Mill Creek	0.10	0.57
Miller's Super Market	0.08	0.29
Junction Old Highway	0.15 0.19	0.23
Above City Dump	0.14 0.07	0.37
Old Cemetery	0.09 0.09	0.06
1st North & 4th East	0.09 0.22	0.57
High School	0.04 0.04	0.54
New City Park	0.04 0.06	0.23
Top of Blue Hill	0.06 0.17	0.11

⊗ essentially at permiite of mill

While these samples provide no evidence of concentrations exceeding the limits for unrestricted areas, stack samples, particularly the hearth stack, have shown quite high concentrations being discharged. ~~Concentrations~~ Concentrations discharged from the hearth

stack routinely are in the range of 10^{-9} to 10^{-10} $\mu\text{C}/\text{cc}$. The environmental sampling program was discussed at the end of the inspection with Hollis, Izzo, Baty, and Hoff. It was suggested that more frequent sampling (than evidenced in the past $1\frac{1}{2}$ yr.), perhaps each quarter at fewer, but selected sampling stations to provide more substantial evidence that concentrations at the perimeter of the mill did not exceed the applicable limits. Hollis indicated his agreement with this approach.

Liquid Effluents

(10) The tailings pond effluent sampling results for 1963 were submitted on 1-28-64 as required by the license amendment issued 11-23-62 and as supplemented & corrected by the letter to the licensee dated 4-15-63. The results averaged over the year showed compliance with the amendment conditions. By amendment dated 4-7-64, the conditions ~~for~~ ~~and~~ for effluent discharge concentrations were modified. Results available at the time of the inspection for 1964 are as follows:

		Ra^{226}	Th^{230}	Li
1-64	1043 gpm (avg)	0.19×10^{-8}	0.011×10^{-6}	0.26×10^{-5}
2-64	1040 gal/min (avg)	2.49×10^{-8}	0.081×10^{-6}	0.17×10^{-5}
3-64	1285	0.68×10^{-8}	0.230×10^{-6}	0.13×10^{-5}

Independent samples were obtained at the effluent discharge, upstream, & downstream of the Colorado (1 mile up, 10 miles down). A supplement of these results will be added to this report.

Methods of sampling and analysis were as reported in the previous report. It was again noted that the ~~all~~ samples are filtered for the radium analysis (aliquots for the Th^{230} & Li samples are not filtered but ~~are allowed~~ the solids are allowed to settle out).

Analyses of the solids according to Baty's records are as follows:

	Ra^{226}	Th^{230}	Li
1-64	7.94×10^{-8}	0.058×10^{-6}	0.0003×10^{-5}
2-64	20.5×10^{-8}	-	-
3-64	10.1×10^{-8}	-	-

One effluent sample sent to ID for analysis with a request to duplicate Baty's procedure of filtering - results to be reported with supplement.

Kilm Bodge Program

- ⑩ See letter for license to AEC dated 4-15-63 and 5-6-63. Kilm Bodge reports retained by licensee confirmed data reported. Kilm Bodge not worn by mill

employees since then. No evidence noted or observed that would alter conclusions of licensee report.

Posting

- (12) Observed that mill compound and tailings pond area were posted as ~~proposed~~ described in previous report and as required.
④ YC area posted in accord with 20.203(d)(2)

Employee Instructions

- (13) AEC-3 posted; ~~the~~ radiation safety topics discussed at monthly safety meetings. Overexposures discussed with men - causes, work habit, ~~new~~ method for reducing exposures, etc.

Meeting With Management

Meeting at end of inspection with Hallis, Dyzio, Baty, and Goff. Clear form AEC-591 issued.