

UNITED STATES ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE

E III 2:55

<p>1. LICENSEE Cotter Corporation P. O. Box 1009 Roswell, New Mexico 88201 <i>(Hazelwood, Missouri)</i></p>	<p>2. REGIONAL OFFICE U. S. Atomic Energy Commission Region III, Division of Compliance 799 Roosevelt Road Glen Ellyn, Illinois 60137</p>
<p>3. LICENSE NUMBER SUD-1022 (40-8035)</p>	<p>4. DATE(S) OF INSPECTION November 17, 1970</p>

5. The following activities under your license (identified in Item No. 3 above) appear to be in noncompliance with AEC regulations or license requirements, as indicated.

Contrary to 10 CFR 20.201(b), "Surveys," air sample surveys were inadequate to determine concentrations of airborne uranium ore materials to which persons were exposed during drying and loading operations at the Hazelwood, Missouri facility.

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Supplementary page None attached. Edgar C. Ashley *Edgar C. Ashley*
AEC Compliance Inspector 12-4-70
Date

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then stored at the St. Louis Airport. Movement of this material

REPORT COMPILED SHEET

Identifying Information

Type Report

(circle)
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- 1. Licensee Cotter Corporation
- 2. Address P.O. Box 1000
ROSWELL, NEW MEXICO 88201
(HAZELWOOD, MISSOURI)
- 3. License No(s) SUB-1022 (40-8035)
- 4. Date of Inspection November 17, 1970
- 5. Inspector E. C. Ashley
- 6. Status of Compliance NONCOMPLIANCE

Items of Noncompliance

- 7. Section of Regulation
or
License Condition

Details Paragraph

- A. 10 CFR 20.201(b)
- B. _____
- C. _____
- D. _____
- E. _____
- F. _____
- G. _____

- A. 28
- B. _____
- C. _____
- D. _____
- E. _____
- F. _____
- G. _____

Classified Information

- 8. This report contains classified or business confidential information.

Yes

No

E. C. Ashley 12-1-70
Inspector Date

J. Miller _____
Reviewer Date

then stored at the St. Louis Airport. Movement of this material

DETAILS

GENERAL INFORMATION

9. This was an announced inspection of this source material licensed program conducted on November 17, 1970. Mr. David P. Marcott, Executive Vice President and General Manager, Cotter Corporation, was notified of this forthcoming inspection by telephone on November 4, 1970.
10. Dr. E. A. Fulgrabe, State of Missouri Department of Health, was notified of this forthcoming inspection on November 10, 1970. The inspector was unaccompanied.
11. Mr. Charles Brokaw, an employee of the B&K Construction Company, St. Ann, Missouri, was interviewed during this inspection of the licensee's source material facilities located at 9200 Latty Avenue, Hazelwood, Missouri. Mr. Brokaw represents the Cotter Corporation at this Hazelwood, Missouri, site, and has the title of Superintendent. Also interviewed during the inspection was Mr. Phillip Feeney, a member of the consultant firm of Ryckman Edgerley, Tomlinson, and Associates. This consultant firm has been contracted to perform the health physics activities for the licensee.

INSPECTION HISTORY

12. In the spring of 1966, the Continental Mining and Milling Company, Chicago, Illinois, purchased from the AEC ore residues which were then stored at the St. Louis Airport. Movement of this material from that site began on or about May 1, 1966, to the 9200 Latty Avenue, Hazelwood, Missouri, site. During this material move, two visits were made by representatives of Region III. At that time, Continental Mining and Milling Company possessed a License No. SMA-862 for this program.

13. In January 1967, the Commercial Discount Corporation of Chicago, Illinois, took physical possession of the Continental Mining Milling Company facilities and source material stockpile. The facilities and materials were repossessed by Commercial Discount Corporation who had acquired a license to cover storage on this material. License No. SMC-907 was issued to Commercial Discount Corporation on December 29, 1966. On June 28, 1967 License No. SMC-907 was amended to allow the removal of material and shipment of the source material from the Hazelwood, Missouri facility, to the Cotter Corporation facilities in Canon City, Colorado. This operation was conducted by Commercial Discount Corporation on and off during 1967 and 1968. It was learned that during that time, approximately 47,000 "wet tons" had been shipped to the Cotter Corporation so far, and that as of May approximately 30,000 "dry tons" of the material remained, according to Commercial Discount Corporation representatives. A visit to the Hazelwood, Missouri, site, was made by Region III in April 1970. At that time, the facility was at a complete standstill and only security guards were on hand and advised that no work had been done at that site during 1969.

14. The remaining source material was sold to the Cotter Corporation at Roswell, New Mexico, in December 1969. For this program, the Corporation obtained License No. SUB-1022.

15. An inspection of the source material program as conducted by Cotter Corporation was conducted on November 17, 1970, and is the subject of this report. All information contained in this report is true in substance unless otherwise indicated.

PROGRAM

16. This licensed program is essentially the same which was conducted by the Commercial Discount Corporation. The use of a drying method is used because of the high cost of shipping the wet source material to Colorado. Mr. Brokaw advised that only 50% of the water content is being removed during this program. The beginning content is

approximately 80% water of the total weight and is removed down to approximately 40% when being shipped. The different types of material being handled at this site include C-slag, unleached barium sulfate, barium sulfate cake, and Colorado raffinates. During this inspection, it was learned that the Colorado raffinates were being dried and shipped at the present time.

17. According to Mr. Brokaw, the normal full day's work usually yields between 350 and 450 "dry tons" which fills between five and six open top coal cars. This current program began August 13, 1970, and according to the licensee's records, materials have been shipped on approximately 50 days since that time. The average quantity of material per day has been approximately 400 tons. In addition to this material, 107 barrels of materials have been shipped to the Colorado facility of Cotter.

ORGANIZATION AND ADMINISTRATIVE CONTROL

18. Cotter Corporation has its home office in Roswell, New Mexico. The source material from the Hazelwood, Missouri, facility, is being shipped to the Cotter Corporation's uranium processing facilities located in Canon City, Colorado. The licensee has a working agreement with the B&K Construction Company of St. Ann, Missouri, to handle all of the materials under this license in Hazelwood. The B&K Construction Company maintains control over the Hazelwood site and is assisted in this function by off-duty policemen serving as security guards. This security guard force is in effect seven days a week, 24 hours a day. At the same time, the licensee has contracted a consultant firm, Ryckman, Edgerley, Tomlinson, and Associates, of St. Louis, Missouri, to handle the health physics activities of this Hazelwood program.

FACILITIES AND EQUIPMENT

19. It was noted that the same facilities and equipment were being used as were noted during the previous inspections of this program. A Norfolk and Western Railway Company industrial map indicates the licensee's facilities are located on a 3.5 acre plot of ground and 7.5 acres which have been leased from the Norfolk and Western Railway Company. This plot of ground is located at 9200 Latty Avenue, Hazelwood, Missouri. At this location, Latty Avenue dead ends at the Cold Water Creek. A spur line from the Norfolk and Western Railway Company bounds the licensee's facility on the west between the licensee's facility and Cold Water Creek. The buildings of the licensee's facility are located on that 3.5 acre plot while the source material is stored on the 7.5 acre lot, which has been leased from the Norfolk and Western Railway Company.

20. The licensee utilizes four buildings. One of these buildings is a permanent flat topped three room building located on the north portion of the site. This building is used as an office building and part-time living quarters and is located outside of the fenced-in area. Directly south of the office building is a metal fabricated building used primarily as equipment and vehicle storage. This building is located within the fenced and restricted area with the north edge of the building being a portion of the fence line. Located to the southeast of the office building, to the northeast of the storage building, is a smaller metal building used for miscellaneous storage and locker room and shower facilities for employees. This particular smaller building is located outside the fenced area with the south and east walls of the building being a portion of the fence line. Directly to the south of the vehicle storage building is a very large building (about four times larger than the vehicle storage building). It is within this building that the licensee performs the drying operation. During this inspection, the licensee's consultant fire

supplied a sketch of the property showing the four buildings, the railroad spur, and the source material storage areas. A copy of this sketch is attached to this report as Exhibit A.

21. The drying equipment consists of three main parts. They are the natural gas Barber-Greene Model 838 dryer, a Barber-Greene Model 858 dust collector, and a Model CN-70 wet scrubber utilizing a recirculated water system. The licensee has dug two large holes directly south of the drying operation. One of these holes is lined with a plastic sheet and is used as a settling pond for the freshly scrubbed drying exhaust. A small trench connects this settling pond with a second pond from which water is drawn and recirculated through the system.
22. Other equipment utilized by the licensee are various pieces of earth-moving equipment.

PROCEDURES

23. A load of the source material is brought into the large building in one of the earth movers where the material is gravity fed onto a conveyor belt and is transferred to the top of the drying unit. The material is allowed to enter a large inclined rotating cylinder and as it falls down and into the inside of the cylinder, the material is dried. When the material reaches the lower end of this rotating cylinder, it is picked up by another conveyor and brought outside of the building to the southwest corner and loaded into open topped railroad cars. Barring any unforeseen interruptions, this is a continuous operation from the time the loader vehicle brings the material into the building and the dry material is put into the cars. The approximately particle size of the newly dried material appears to be somewhat like sand or cinders. When a railroad car has been filled, the material is sprayed with a plastic known as Aerospray 52 Binder which is a water emulsion of a synthetic resin. This spray is to prevent dusting during transport.

POSTING AND LABELLING

24. The licensee has numerous signs posted throughout the area including on the material piles themselves and at several locations on the fence surrounding the entire area. Each of the signs showed the conventional radiation symbol in colors of magenta on yellow and either "Caution, Radioactive Material," or "Caution, Radiation Area."
25. A Form AEC-3, "Notice to Employees," was posted in the office building and in the locker and shower room area.

PERSONNEL MONITORING AND SURVEYS

26. The B&K Construction Company has employed a total of nine persons for this operation. In addition to Mr. Brokaw, the Superintendent, there is one mechanic, four construction engineers, and three laborers. All nine persons are assigned an R. S. Landauer film badge. The film badges are exchanged weekly. A review of the R. S. Landauer film badge reports for nine film badge periods between the end of August and the end of October showed the maximum exposure received by any one person as indicated by the film badge to be 110 millirem. The other film badge results ranged from minimal to 80 millirem for that period.
27. According to Mr. Brokaw, all persons are required to change their clothes daily after working with the source material. Also, respirators are required for three of the persons, namely, the car loader, the pit cleaner, and the person who is assigned to keep the first conveyor clear of rocks. (It was noted that the final conveyor leading to the railroad car was completely covered.)
28. Health physics surveys performed by the licensee's consultant include stream samples, fallout tray samples, radiation level surveys at the fence line, and air sampling of work areas. The maximum downstream sample has shown 30 counts per minute for a 500 milliliter sample of dissolved solids and a maximum of 126 counts per minute of the settled out solids of the 500 milliliter stream sample. Assuming 12 counting

efficiency and 4.4×10^6 dpm/uc for natural uranium, this highest sample result for insoluble uranium shows approximately 0.5×10^{-6} uc/ml. Radiation levels outside the fenced-in area have shown less than 0.6 mr/hr at 18" from the fence. This was confirmed by independent measurements by the AEC representative during the inspection. According to the licensee's consultants, air samples are taken in the working areas during the drying operations using a high vol air sampler. The consultant advised that Wattman filter paper is used for this sampling. Mr. Feeney stated that the air samples and analyses are made in the following manner: A one-hour sample is taken at a rate of 50 cubic feet per minute. The material which is collected on the Wattman filter paper is scraped off and weighed. A slurry is made of this material and plated on a planchet and is counted with a thin window Geiger-Mueller counter and scaler unit. Feeney stated that this counting equipment has a 1% efficiency and that the calibration standard is radium 226. The results of the air samples are reported by the consultant in their survey reports in terms of milligrams/cu. yd. and counts per minute per gram. Both Mr. Feeney and his supervisor, Dr. Edgerley of the consultant firm, were advised that the literature concerning high vol air samplers shows that while using Wattman filter paper, the flow rate which can be expected is between 18 and 25 cu. ft./min. Also, if enough material is collected on the filter paper that it can be scraped off at the end of the sampling period, then it appears that the flow rate would be zero at the end of a sampling time. In addition, it appears that radium 226 would give an erroneous calibration of thin window Geiger-Mueller counter when analyzing for uranium. Based on the above information, the licensee is in noncompliance with 10 CFR 20.201(b) in that air sample surveys have been totally inadequate to determine concentrations of radioactive materials to which persons are exposed pursuant to 10 CFR 20. Some of the data, as reported by the consultant, for air samples are as follows: On September 10, 1970, inside shed shows 6.88 milligrams per cubic yard and in the loading

area, 9.18 milligrams/cu. yd. On September 28, 1970, the same area showed 19.70 milligrams/cu. yd. Mr. Feency stated that 15 milligrams of total material per cubic yard of air. Count was performed on the September 10 inside shed sample and showed 1183 counts/min per gpa.

MANAGEMENT DISCUSSION

29. The results of this inspection were initially discussed with Mr. Charles Brokaw, Superintendent on the site, and with Mr. P. Project Engineer with the licensee's consultant firm. Subsequent to the inspection, Mr. David P. Marcott, Executive Vice President and General Manager, Cotter Corporation, and Dr. Edgerley, principal member of the consultant firm, were contacted by telephone and given the results of this inspection. The licensee representatives were advised of the inadequacies of the air sampling and analyses as performed by the consultant firm. Dr. Edgerley stated that the air sampling methods and analyses methods would be modified to comply with 10 CFR 20, such as shorter duration air sampling to prevent clogging of filter paper, counting of the actual filter paper itself, and calibration of the counting equipment with a uranium standard. The results of the air samples would then be reported in terms of uc/ml of air sampled. Mr. Marcott was advised that the licensee may expect to receive further communication regarding the results of this inspection.

Attachment:
Exhibit A

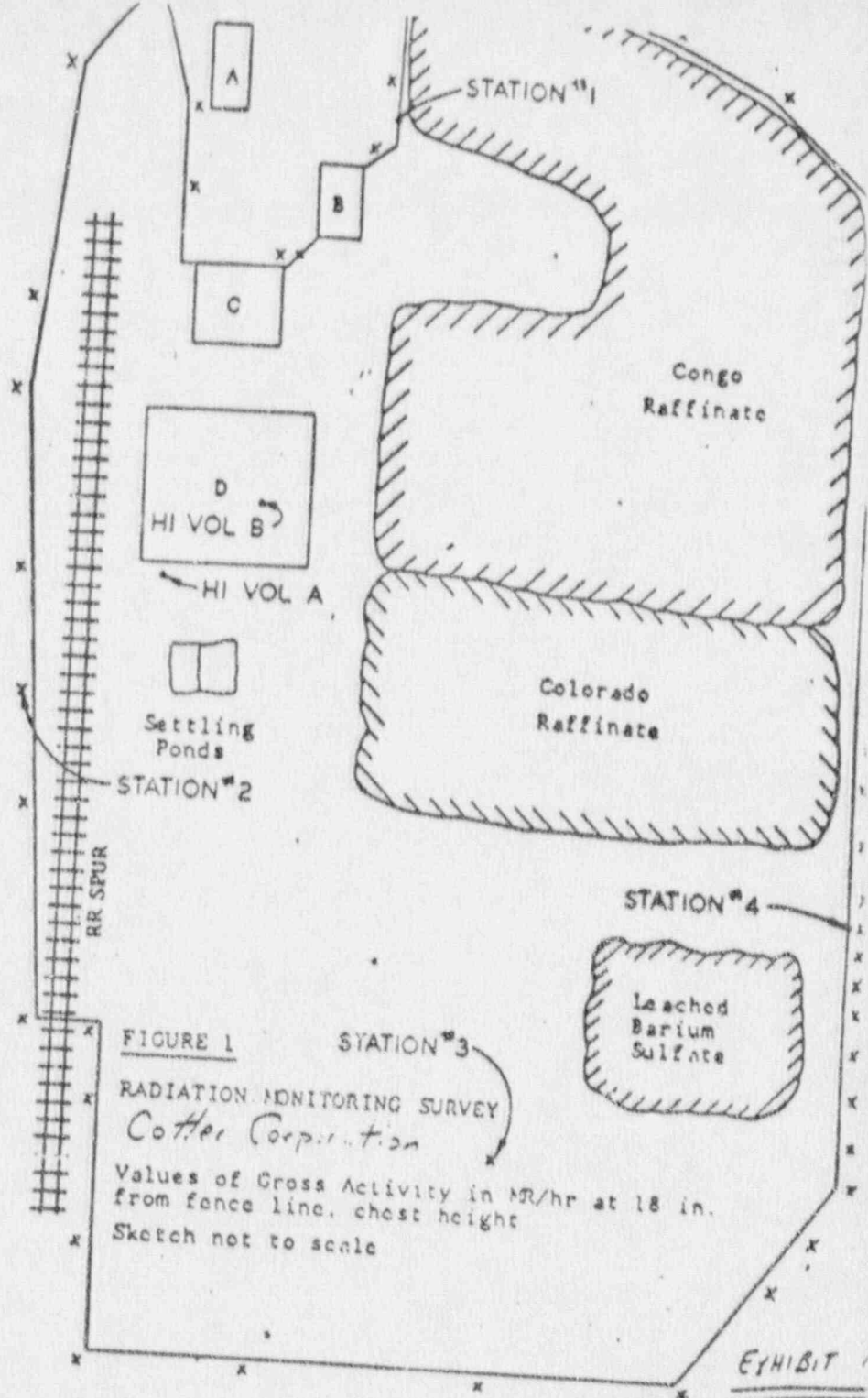


FIGURE 1
 RADIATION MONITORING SURVEY
 Cotter Corporation
 Values of Gross Activity in MR/hr at 18 in.
 from fence line, chest height
 Sketch not to scale

R.E.T.A. 790

EXHIBIT