U. S. ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE
REGION I

Field Notes for:

CO Inspection Report No. 72-01

Subject: Whittaker Corp.
Nuclear Metals Division

License No. SNM-65

Location: West Concord, Mass

Priority 1 1

Category 4(1)

Type of Licensee: Fuel Fabricator

Type of Inspection: ~~Fuel~~ unannounced

Dates of Inspection: July 31 - August 1, 1972.

Dates of Previous Inspection: December 14, 1971

Principal Inspector: W.H. Cockey August 16, 1972
Date

Accompanying Inspectors: None
Date

None
Date

Other Accompanying Personnel: None
Date

Reviewed By:
Date

Proprietary Information: None

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UNITED STATES
ATOMIC ENERGY COMMISSION
DIRECTORATE OF REGULATORY OPERATIONS
REGION 1
970 BROAD STREET
NEWARK, NEW JERSEY 07102

INSPECTOR'S EVALUATION
RO INSPECTION 72-01
WHITTAKER CORPORATION
NUCLEAR METALS DIVISION
WEST CONCORD, MASSACHUSETTS
LICENSE NO. SNM-65

The licensee recently initiated SNM processing operations after approximately one year without SNM operations.

Operations startup was done without a formal employee retraining program. What training was given, was done on an informal, verbal basis. The licensee's criticality safety inspections were also on an informal basis with no documentation on scope, findings, corrective action. Employment has also been reduced from 90 to 50 persons.

I believe the lack of formality and instruction to employees and failure to document training and inspection, is a direct reflection on the low morale at this facility due to layoffs of people.

The simplicity of their fabrication process, and control of SNM at each process station provides a low hazard potential.

I believe a radiological safety inspection should be conducted at this facility no later than October 1, 1972.

I encountered some delays during the course of this inspection because a number of plant personnel were involved at various times with representatives of the General Motors Corporation.

s/ H. W. Crocker 8/25/72

H. W. Crocker
Senior Fuel Facilities Inspector

draft/128

SECTION A

Persons Contacted

The following personnel were contacted during this inspection:

Whittaker Corporation

Ulf Gummeson, General Manager

Alden Gilman, Criticality Officer and Manager of Engineering

Mario Perrella, Health & Safety Engineer

Lincoln Clark, Consultant in Criticality Safety

SECTION B

Organization Changes

1. The primary changes in the plant organization, since the last visit, has been a general reduction in the number of people. The licensee
c currently employs about 50 people. This includes the personnel, who do the non-nuclear work, as well as the personnel who do the nuclear fuel element fabrication. This reduction in force has resulted in the fact that many of the personnel now have additional duties assigned to them. For instance, Mr. Perrella, the Health & Safety Engineer, is now used as a technician on part-time basis in the testing of fuel element materials. Employee morale does not appear to be at a very high level at this time. The licensee is ~~apparently~~ looking for additional work for the plant. In the additional work that is received, will undoubtedly be in the non-nuclear aspects of their

operations. There does not appear to be any additional emphasis by the plant management to obtain additional nuclear fuel fabrication contracts. Licensee organization is described in attachment A.

2.

2. Some delays were experienced in the inspection due to the fact that the licensee had representatives of the General Motors Co. in attendence at the plant at this time. The General Motors' people were confined on the possibility of NuclearMetals doing some support/research and development work for the automobile industry. This possible work contract required the presence of a number of the contacts that the inspector normally maintains on inspections of this plant. In addition, at the time of this inspection, most of the fuel fabrication activities were shutdown as Mr. Huber, ~~Manager of~~ Project Engineering, Mr. Merrian, Manager of Shipping and Stores, Mr. McKay, Manager of Manufacturing, and Mr. Zagarella, Accountability Representative, were all on vacation. ~~The only fuel accountability representative were all on vacation~~. The only fuel activities actually in progress at this time ~~was~~ were centered on the inspection of fuel tube items for the CP-5 Reactor at the ~~Oregon~~ Argonne National Laboratory.

3. The licensee will be operating their fuel fabrication facility for the remainder of this year and through the first quarter of next year on the fabrication of CP-5 fuel elements for Argonne ~~items 4, Oregon~~ National Laboratory. The licensee does not plan to do any other nuclear contract work, during this time.

SECTION C

Operating Procedures

4. The procedures used in the fabrication of fuel elements at this facility are based on two primary documents. The first is the AEC-SNM license and the other is the ~~Oregon~~ Argonne National Laboratory document ANL-7708, "Specification and Procurement of CP-5 Fuel Tubes." Some of the procedures used in the plant are required to be approved by the ~~Oregon~~ Argonne National Laboratory. These procedures include the casting of aluminum-uranium alloy for CP-5, manufacturing procedure for CP-5 fuel element subassemblies, casting of aluminum-magnesium alloy for CP-5, quality control plan for CP-5 fuel element subassemblies, and primary extrutions and sampling of core and inseal stock. Other operating procedures are approved and issued by Mr. Huber. The procedures that require ~~Oregon~~ Argonne approval are generated by Mr. Huber, and co-signed by Mr. Gilman. Two of the procedures were reviewed during this inspection. The first was the procedure for casting aluminum-uranium alloy for CP-5 fuel elements. This procedure is ~~titled~~ numbered, "NMD-CP-5-2". This procedure covers the charge preparation, charge ~~way~~ weighing, equipment preparation, as well as the melting and pouring of the casting and the post-pour operations. The procedure is divided into three sections. The first is the scope, the second is the list of reference documents, and the third section is the fabrication procedure. One of the referenced documents for the procedure is the licensee's memo on safe handling limits for special nuclear material in the fabrication

of CP-5 fuel elements. The operating procedure appeared to be adequately detailed for the operations involved. A copy of this procedure is attaced as Attachment B. The procedure was approved for use on June 5, 1972. A second procedure, titled, "Manaufacturing Procedure for CP-5 Fuel Element Subassembly and Casting of Aluminum--Magnesium for CP-5 Fuel Elements", was also reviewed. This procedure is number NMD-CP-5-1. The procedure was formerly issued on May 22, 1972. It covers the charge, preparation, equipment preparation, melting, pouring, and post-pour operations for the aluminum-magnesium material. Additional procedures will be reviewed during the next inspection. In this inspection of the procedures, the procedures appeared to be of adequate quality; they appear to give adequate directions to personnel performing the jobs. These particular procedures, that were reviewed during this inspection, can only be modified by mutual, written consent, from the ~~Oregon~~ Argonne National Laboratory.

SECTION D

Emergency Procedures, Drills

5. The licensee is required to hold semi-annual criticality or ~~K~~-Fire drills. The licensee just recently, in April of 1972, resumed operation in their nuclear fabrication section. Since the recent startup of nuclear operations, the licensee has not had any evacuation drills. Mr. Ferella

plans to conduct criticality evacuation drills for each shift during August, 1972.

SECTION E

Training

6. Mr. Perrella stated that the training officer for the Concord Fire Department conducted fire training sessions with the Nuclear Metal Fire brigade during the fall of 1971. The training included the use of fire extinguishers, fire hose apparatus, and Scott Air-pack Breathing apparatus. Perrella showed the inspector photographs of some of the training operations conducted at that time. He did not have any written documentation to describe the scope of the training, the persons that were trained, or the evaluation of the training.

7. He also stated Mr. Levin, who is the consultant in radiological matters, instructed all the nuclear fabrication personnel on radiation problems in the fall of 1971. Mr. Perrella did not have any written documentation to define the scope of training, the persons trained, or the evaluation of the training.

8. Dr. Seeler also instructed plant personnel in the toxicity of Beryllium and other heavy elements, during the fall of 1971. Again Mr. Perrella did not have any documentation which described the scope or personnel also trained. In the current training, Mr. Perrella stated that he, Mr. Merrian, Mr. Wellet, Mr. Fasano, and Mrs. Fasano, are currently attending a first-aid course under the Red Cross. Under license

condition No. 8, which incorporates their authorized licensed submittal, Section II(B), Page 11-12, states that fire brigade meetings and training sessions are to be held quarterly to acquaint brigade members with proper emergency procedures, techniques, and equipment. The licensee has not had any such meetings with the fire brigade during 1972. This deficiency is in noncompliance with the above requirement.

9. Mr. Gilman stated that prior to the startup of the CP-5 fuel element fabrication activities he personally instructed each of the workers in the proper handling of special nuclear materials for their operations. Mr. Gilman has not made any written documentation of the instructions which he gave the men nor what men were instructedd.

10. Mr. Perfella and Mr. Gilman were advised by the inspector that the lack of written documentation to describe the scope of employee training and the listing of employees trained was in noncomplaince with AEC requirements. The inspector pointed out to these men that he realized that the licensee has a small number of people involved in the nuclear work. However, the lack of written evidence to support the training requirements raises the question of whether or not such training was really given to the people. The inspector informed the men that training of personnel should be well-documentated as to the scope of the training, who was trained, and the evaluation of the training.

The inspector comment to Gilman and Perfella that failure to provide documentation on training may well ~~contribute to~~ result in the failure of providing adequate training to all employees. T

SECTION F

Criticality Safety Controls and Audits

11. ~~Here~~ Mr. Gilman serves as the Administrative Criticality Officer at this facility. Mr. Lincoln Clark, of Mass. Institute of Technology, serves as the consultant for criticality and serves as the Criticality Officer as required by license No. SNM-65. Clark's duties in this regard require his physical presence at the facilities for certain plant operations. According to Mr. Clark, prior to the initial processing of the CP-5 fuel elements he came to the site and inspected the ~~Buckler~~ Butler Storage Facility, the preparations in the plant area for actual fuel element processing, and he generated and issued the safe handling limits for each of the processing areas prior to this startup. (Attachment C) Mr. Clark stated that he comes to the plant about once every two weeks to inspect process areas for safe handling limits. Clark also stated that he inspects the ~~Buckler~~ Butler Storage Facility prior to the receipt of any special nuclear material shipments to insure that the storage facility is capable of storing the material that is to be received. Clark performed his nuclear safety audits on approximately a two-week basis. In each case, he observes each processing area for

safe handling limits, however, he does not generate any written documentation of the scope of his inspection, the findings of his inspection, or any required corrective actions. Clark stated that so far in his inspections he has not observed any deficiencies in the safe handling of U-235, however, he stated that if he did observe any deficiencies he would document that information. The inspector pointed out to Mr. Clark the need to provide written documentations coveringshis audits. The inspector pointed out to Clark that without documentation there is no way for the AEC or licensee management to really determine whether or not audits were actually conducted, what the scope of the audits were, what were the observations of the audits, and when deficiencies are found what are the corrective actions that have been taken. Mr. Clark expressed his agreement to provide written documentation for his nuclear safety audits in the future.

12. Mr. Gilman also stated that prior to thesstartup of the CP-5 fuel element fabrication job that he set up the exclusion areas at the various job sites, and that he worked with Mr. Clark in the generation of the safe handling limits for U-235 at each of the job positions. Mr. Gilman also stated that he is on the processing floor each day of the week and that he checks each processing area to assure that safe handling limits for Uranium-235 are not exceeded. Gilman stated that in his inspections, during this period of time since startup of the CP-5 fuel operations, he has not observed any violations in handling of the

material. He also stated that one of the reasons that control of the material is relatively easy in this particular plant is that Mr. Zagarella, the Accountability Representative, has the prime authority in the movement of SNM throughout the plant. No SNM can be moved from one operating station or vault without specific approval by Mr. Zagarella, who maintains a control board which designates the exact amount of material that is in each station throughout the plant. The inspector is familiar with Zagarella's duties and has during previous inspections observed his operation with the control board to insure that SNM limits are observed at the stations. Zagarella does, indeed, appear to be on top of his job and is very conscientious in his assignments of fuel to each of the processing areas. Mr. Zagarella was on vacation at the time of this inspection and no discussions were possible with him. Gilman also stated that while he does make audits of the area on a daily basis for safe handling limits of uranium-235, he does not provide any written documentation. Both Mr. Gilman and Mr. Clark were advised by the inspector that their failure to provide documentation on their criticality safety audits of the plant operations was in noncompliance with the AEC requirements. Both men stated that they would in the future documentation of the criticality safety audits.

13. It is the inspector's opinion that Mr. Clark is well-qualified to serve as the Criticality Safety Consultant to this facility. It is also the

inspector's opinion that Mr. Gilman is capable of performing the plant inspection that he performs on a daily basis. The primary technical ponfidence for criticality safety evaluations does, of course, lie with Mr. Clark.

14. The Nuclear Emergency Committee at this facility has as its primary function the responsibility to meet on specific nuclear emergency problems. The committee does not hold routine meetings. The committee is currently composed of the following; Mr. Gumpeson, Mr. Gilman, Mr. Lowenstein, Mr. Clark, Mr. Sawyer, and Mr. McKay. This committee has not meet since the startup of the recent CP-5 fuel element fabrication job.

SECTION G

Radioactive Material Operations

15. The inspector made an examination of the fuel processing areas. This included the casting furnace area, the heating furnace area, the No. 5 ~~haxsaw~~ hacksaw, the extrusion press, the lathe room, the ultrasonic test area, the x-ray area, and the inspection areas. The casting furnace, No. 5 ~~Haxsaw~~ hacksaw, lathe area, X-ray, ultrasonic test area, and inspection area were each observed to be properly roped off and posted as exclusion areas with the proper SNM limits. The inspection area was in operation during this particular visit. Work procedures, approved by Mr. Huber, were at this station for the operator's use. The other areas, which were properly roped off, will be back in operations as soon as the affected plant personnel return from vacation in approximately 10 days.

All the SNM processing areas were observed to be neat and orderly. The SNM fuel was being utilized in the inspection area. The other processing areas of the plants did not contain fuel at this time.

SECTION H

Radioactive Material Storage

16, An examination was made of the ~~Buckler~~ Butler Building Storage area. The inspect~~ion~~or observed that all SNM fuel was properly labeled and properly stored in the storage racks. There have been no changes in the storage facility since the last inspection. Access to the storage area is controlled by a locked gate. Mr. Zagarella and the Security Officer have access to the lock combination. No other plant personnel have access to this storage area. Entrance to the ~~Buckler~~ Butler Storage Building itself is controlled by a key-lock door. Mr. Zagarella is the custodiam fpr the Butler Building and is the person who has the key to control access to this building.

SECTION I

Radioactive Material Shipping

17. The licensee's SNM shipments were reviewed for the period, March 1, 1970, through the date of this inspection. The licensee made approximately 5 shipments during 1970. One of these shipments was a small sample shipment of U-235 which was sent parcel post. The other four shipments

during 1970, were fissile Class 2 shipments bearing the yellow Class 2 label. These shipments varied from 1.6 kilograms of U-235 to 4.07 kilograms of U-235, and from 3 to 11 shipping drums were made from each of the shipments. One shipment was also made in 1971, which consisted of 10-55-gallon drums of CP-5 scrap, as were the other shipments. This particular shipment contained 2.3 kilograms of U-235. ~~The above shipments were made in 6M Specs containers.~~ In June and July of 1972, the licensee made two shipments of U-235 samples by parcel post. These contained 2.6 and 3.5 grams of U-235 each. The licensee currently has on hand a supply of DOT Special Permit No. 4969 containers, which will be used in CP-5 fuel element shipments later in September. Each of the radioactive material shipments made during 1970, 1971, and 1972, were surveyed by Mr. Parfella, and his log book contains the record of the survey for each survey. Due to Mr. Zagarella's absence, some of the other shipping data on packaging of the material was not available for examination. This material will be examined during the next inspection of the facility. The empty ~~DOT~~ DOT No. 4969 containers, (attachment D) that are at the plant site, each bear the Model No. 2823. Mr. Gilman stated that as shipments are made he personally spot checks the containers to be sure that proper ~~unit~~ criticality limit packaging has been made. However, he does not keep any records on this particular check. He stated that Mr. ~~XXXXXX~~ Zagarella maintains the records on the shipments.

SECTION J

Criticality Monitoring System

18. The licensee's criticality monitoring system utilizes the Tracer Lab area monitor instruments, which are capable of detecting radiation levels from background to 100r per hour. The inspector examined the location of the criticality monitors in the plant process area. One monitor is in the upper storage building vault to cover the storage facility. Four monitors, located throughout the processing area to provide coverage of the entire fuel processing area. The monitoring units were observed to be in operating order, and each ~~were~~ was set to alarm at 10mr per hour. These alarms are checked for operationson ~~a~~ per week at the guard post. The records at the guard log were checked and observed to show that the alarms had been checked once each week as required. In addition, the guards checked the fire alarm for operability once each week also. Security guard protection is provided around the clock at this facility. Each guard oneeach shift fills out the Safety Check List. This list includes such things as the guard'shecheck for fumes, sprinkler system operation, files, safes, telephone operability, elevator operability, accountability of visitors, and security. Records of the guard's check-off=list were reviewed for ~~the past several months~~ 1972.

SECTION T

Unusual Occurrences

19.

19. Mr. Gilman and Mr. Parrella had stated that there had been no unusual

occurrences at the plant since the last inspection. They also stated that there had been no losses or thefts of SNM.

SECTION U

Employee Interviews

20. During the examination of the processing areas, the inspector observed that the inspection technician was working on fuel element inspection. At this time, the inspector questioned the technician on the job he was doing. The technician showed the inspector his procedures for inspecting the fuel tubes, and in the discussion it was apparent to the inspector that the technician thoroughly understood the job he was performing.

SECTION V

Management Interview

21. The management interview for this inspection is described in that section of the inspection report.