



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA ST., N.W., SUITE 3100  
ATLANTA, GEORGIA 30303

MAY - 7 1980

Report No. 70-1201/80-06

Licensee: Babcock and Wilcox  
Commercial Nuclear Fuel Plant  
Lynchburg, VA 24505

Facility Name: Commercial Nuclear Fuel Plant

Docket No. 70-1201

License No. SNM-1168

Inspection at Commercial Nuclear Fuel Plant

Inspector: William J. Millsap  
W. J. Millsap

7 May 80  
Date Signed

Approved by: A. F. Gibson  
A. F. Gibson, Section Chief, FFMS Branch

May 7, 1980  
Date Signed

SUMMARY

Inspection on March 30 - April 4, 1980

Areas Inspected

This routine, unannounced inspection involved 36 inspector-hours onsite in the areas of followup on previous inspection findings, internal exposure control, external exposure control, respiratory protection, health physics training, instrument calibrations, radiation work permits, and reports and notices to workers.

Results

Of the eight areas inspected, no items of noncompliance or deviations were identified.

## DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*W. F. Heer, Manager, Virginia Operations
- \*D. W. Zeff, Manager, Safety and Licensing
- \*R. A. Vinton, Health Physicist
- P. A. Cure, Associate Health Physicist
- K. E. Shy, Foreman, Health and Safety
- T. McDaniel, Health and Safety Specialist

Other licensee employees contacted included two technicians and three operators.

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on April 4, 1980 with those persons indicated in Paragraph 1 above. A licensee representative made those commitments discussed in paragraph 6.a, 6.b(2), 6.c(3), and 10.

### 3. Licensee Action on Previous Inspection Findings

(Closed) (79-02-03) Deficiency: Failure to include Pelletizing Recirculation System Damper Effluent in the Semi-Annual Effluent Report. This item was first discussed in Region II Report 70-1201/79-02 and later discussed in Region II Report 70-1201/80-01. The inspector discussed with a licensee representative the method presently used to determine the quantity of airborne radioactive material released to unrestricted areas by this pathway. The calculational method presently used assumes a 5% damper leakage and that, during periods when the damper is open, 45% of the recirculation system volume discharges through the damper; the method further utilizes weekly average concentrations of airborne radioactive material in the recirculation system as well as measured values of recirculation system volume flow. The inspector agreed with the licensee's method of calculation and asked that it be recorded in some fashion useful to another person; a licensee representative agreed to do so.

(Closed) (79-15-04) Open Item: Revise Respiratory Protection Procedure to Include a Statement Concerning Exceeded Protection Factors. The inspector reviewed Procedure No. AS-1109 Rev. 7 "Respiratory Protection Program", dated 2-25-80, and noted the following statement in paragraph 5.2.2: "If a respiratory protection factor is exceeded, an evaluation will be performed and documented with actions taken as necessary". This fulfills the licensee's commitment and this item is closed.

(Closed) (79-15-01) Infraction: Failure to Resample a Worker whose Urinalysis Result Exceeded a Procedural Action Level. The inspector discussed this with a licensee representative and reviewed the results of a urinalysis sample taken on December 14, 1979. These results (fluorometric, 7 ug U/l; radiometric, less than 5 DPM/l) were far below the licensee's internal action point. This fulfills the licensee's commitment and this item is closed.

(Closed) (79-15-02) Open Item: Mechanical stops on QC Hoods to Insure Adequate Face Velocity. The inspector checked the hood doors on the four QC hoods and noted that they were mechanically prevented from being raised past the point which prevents proper hood face velocity. This item is closed.

(Closed) (79-15-03) Open Item: Air Sampling near the Opening on the Dried Pellet Turntable Hood. The inspector discussed this item with a licensee and reviewed the results of the air sampling study which had been run. The air sampling had been carried out for a representative period of time during representative work both with the door open and the door closed. The results with the door open were about 7% MPC and with the door closed about 6% MPC; these levels warranted no further action by the licensee. This item is closed.

5. Tour of the Pelletizing Area

The inspector, accompanied by a licensee representative, toured those areas of the plant handling unclad uranium and observed the general radiological working conditions. The inspector noted that protective clothing was being used properly; that the hand monitor in the change room was functioning; and that numerous static air samples appeared to be working properly. The inspector observed one job in progress, whereby stuck fuel pellets were being removed from pins in a manner likely to generate airborne radioactive material. The inspector discussed the radiological controls for this job with one of the workers, who stated that, prior to the start of the job, the air flow into the air capture devices on the machines had been checked; that the static air sampler filter patches had been changed; and that each worker had been fitted with a lapel air sampler. This appeared to the inspector to be proper control of this job and he had no further questions concerning these matters.

6. Internal Exposure Control

a. In-Vivo Analyses

The inspector reviewed the results of all in-vivo analyses performed during the last eleven count periods which cover the time period from May, 1977, to March, 1980. The inspector observed no case where the licensee's internal action level for in-vivo analyses of 125 ug U-235, described in Procedure No. AS-1121 Rev. 3 "Uranium Bio-assay Program", was exceeded. A review of the data for trends yielded one individual who, in a recent lung count, showed a substantial increase in lung

contamination. At the time of the exit interview, a licensee representative stated that this individual would be recounted at the next opportunity and that, in the meantime, his work habits would be observed and this problem would be discussed with him. The inspector stated he would continue his review of this situation during a subsequent inspection (80-06-01).

b. Urinalyses

(1) Review of Recent Results

The inspector reviewed the records entitled "Bioassay Record" for the urinalyses results for all people for whom MPC-hour records were kept for the year 1979 and compared the results against the 15 ug/l and/or 50 DPM/l action level described in Procedure No. AS-1121 "Uranium Bioassay Program"; any urinalysis result in excess of these limits requires that the individual be resampled, the results evaluated, and corrective action taken if warranted. The inspector observed no case, occurring since the last inspection, where the above action level was exceeded. The inspector had no further questions concerning this matter.

(2) Urinalysis Spike Program

The inspector reviewed the results, for the four quarters of 1979 as well as the first quarter of 1980, of the quarterly spiked urine samples sent to the licensee's vendor for analysis. The inspector noted that the results obtained by the licensee and those obtained by the vendor did not appear to be strongly correlated. This, as well as possible sources of error in this program, were discussed with a licensee representative who stated that the licensee had recently changed laboratories and that it would be necessary to develop further results in order to properly check the correlation with this new laboratory. At the time of the exit interview, it was decided, in order to check the vendor's internal consistency, to have the vendor assay a spiked sample and to then use this sample to further spike additional samples. The inspector stated that he would continue his review of this matter during a subsequent inspection (80-06-02).

c. Sampling of Airborne Radioactive Material

(1) MPC-Hour Records

The inspector reviewed the records entitled "MPC Hour Record" for the fourth quarter of 1979 for all persons for whom these records are kept. The inspector observed no instance of an individual exceeding the 40 MPC-hour control measure described in 10 CFR 20.103(b)(2) or the quarterly exposure limits described in 10 CFR 20.103(a)(1). The inspector had no further questions concerning this matter.

(2) Control Limits on Static Samplers

The inspector reviewed the records entitled "Air Sample Quarterly Averages", which give the quarterly averages of the concentrations of airborne radioactive material as measured by static air samples, for the fourth quarter of 1979 and compared the results against the air sampling action levels described in paragraph 8.2.3 of section V of the license application. The first of these action levels requires that if the average airborne concentration of radioactive material exceeds 25% of MPC it be reported to the Manager of Safety and Licensing, the operation and containment be evaluated, and to increase air sampling frequency if indicated. The inspector observed no case in which the 25% MPC control limit was exceeded and he had no further questions concerning this matter.

(3) Location of Static Air Samplers

The inspector, accompanied by a licensee representative, toured the pelletizing area; observed the locations of fifteen static air samplers at various work station; and discussed with a licensee representative the placement of these air samplers with respect to the workers' breathing zones. Of the fifteen samplers observed, the inspector questioned the placement of two (Walking Beam Furnace #2 loading and unloading hoods) noting that perhaps they might be placed to be more representative of the workers' breathing zones. A licensee representative stated that special air sampling studies would be conducted at these locations to see if better locations could be found (80-06-03). This commitment was confirmed at the exit interview and the inspector stated that he would continue his review of this matter during a subsequent inspection.

d. Control of Airborne Radioactive Material

(1) Hood and Elephant Trunk Face Velocity Surveys

The inspector reviewed the records entitled "Hood and Elephant Trunk Air Flow Audit" from January 4 to March 26, 1980 and compared the results against the requirements of paragraph 8.2.2 of section V of the license application which states that face velocities for hoods and similar enclosures shall be 100 LPM unless it can be demonstrated by air sampling techniques that a lower capture velocity will result in no significant increase in airborne activity and that the minimum velocity at the point of entrance to "elephant trunk" drops in the pelletizing area will be 1300 LPM. This condition also states that hood face velocities and elephant trunks entrance velocities will be measured weekly. The inspector observed no case where the hoods and elephant trunks failed to meet the minimum face velocity requirements and no case where they were not measured at the proper frequency. The inspector had no further questions concerning these records.

(2) Negative Pressure Surveys

The inspector reviewed the records entitled "Negative Pressure Audit" for the period from January 3 to March 31, 1980 and compared the results against the following requirements of paragraphs 8.2.1 and 8.2.2. of section V of the license application: (i) General area exhaust units will be operated to maintain areas of greater contamination at a slight negative pressure with respect to the lesser contaminated areas; (ii) Exhaust flow rates from gloveboxes shall be such that a minimum negative pressure of 0.25 inches of water is maintained. The above records showed by smoke tests and manometer readings that the areas of greater contamination were being held at a negative pressure with respect to lesser contaminated areas and that, by manometer readings, a minimum negative pressure of 0.25 inches of water was being maintained on the blender glovebox. The inspector had no further questions concerning these records.

7. External Exposure Control

The inspector reviewed the vendor TLD reports for December, 1979, for all individuals on a monthly badging schedule and the TLD reports for the fourth quarter of 1979 to all individuals on a quarterly badging schedule, paying particular attention to the cumulative results for the year 1979. In only one case did the yearly cumulative results exceed the quarterly limits described in 10 CFR 20.101 (a) and, in this case, no limit was exceeded in any particular quarter. The inspector had no further questions concerning external exposure.

8. Respiratory Protection

a. Procedure Review

The inspector reviewed Procedure No. 1109 "Respiratory Protection Program" for recent changes as documented in the "Record of Revisions", dated February 25, 1980. Of those changes reviewed, the inspector questioned only one statement, in paragraph 5.2.3, "Requalification by a physician is required once during each calendar year". The inspector noted that this statement allows almost 24 months between reviews of each user's medical status which is contrary to Regulatory Guide 8.15, "Acceptable Program for Respiratory Protection", which requires an annual review of each user's medical status; in this case, "annual" means each 12 months. In order to assess the licensee's performance in this area, the inspector reviewed the records for the time periods between the last two, sometimes three, physical exams for fifteen workers; in no case did the time period between the physical exams exceed fourteen months. At the time of the exit interview, the inspector stated that he felt that a maximum of fifteen months between these reviews of medical status allows for operating flexibility as well as met the intent of the regulation. The inspector had no further questions concerning this matter.

b. Examination of Respirators

The inspector chose two respirators from a shelf of respirators readied for use and examined the respirators for general cleanliness and physical condition. Both respirators appeared to be in serviceable condition and the inspector had no further questions concerning this matter.

9. Health Physics Training

The inspector discussed with a licensee representative the general radiation safety training given to three classes of workers: radiation workers, non-radiation workers, and radiation monitors.

a. Radiation Safety Training Program

The licensee's radiation safety training program is contained in Procedure No. AS-1101, Revision 5, "Employee Safety Training", which the inspector reviewed making the following observations: (i) paragraph 6.1 discusses the initial training of radiation and non-radiation workers as well as further training to be provided by the employee's immediate supervisor as required by paragraph 6.3, "Personnel Training" of Section V of the license application; (ii) paragraph 6.2 requires formal annual retraining of radiation workers as required by paragraph 6.3 of Section V of the license application; (iii) Exhibit B "Safety Training Outline" covers those requirements listed in paragraphs 6.3.1 A and B of Section V of the license application; (iv) paragraph C, "Radiation Monitor" of Exhibit C, "Specialized Training Outline", covers those requirements listed in paragraph 6.3.2 of Section V of the license application.

b. Training Records of Radiation Workers

The inspector chose five individuals who had been employed for several years as radiation workers and reviewed the record entitled "Employee Training Record" of their health and safety training. All five had apparently received initial as well as some annual retraining on pertinent subjects as required by paragraph 6.3 of Section V of the licensee application. The inspector obtained from the licensee's personnel department a list of employees hired in the year 1979 and chose from this list five radiation workers and reviewed their training records for the initial training as well as the training provided by supervisors required by paragraph 6.3 of Section V of the license application. The inspector observed no items of noncompliance or deviations.

c. Training of Non-radiation Workers

The inspector chose, from a list of employees hired in 1979, six non-radiation workers and reviewed their training records for the initial training required by paragraph 6.3 of Section V of the license application. In all cases the required training had been documented.

d. Safety Indoctrination of Non-CNFP Employees Working in the Controlled Area

Procedure No. AS-1123 Rev. 3, "Radiation Work Permit Program" paragraph 6.2.2 requires a health and safety indoctrination for vendors, contractors, and service personnel working in the controlled area. The inspector discussed this with a licensee representative and reviewed the records of indoctrination given to two groups in 1979. The inspector had no further questions concerning this matter.

e. Training of Radiation Monitors

The inspector reviewed, with a licensee representative, the training provided to radiation monitors including the outline of the formal training entitled "Health Safety Monitor Training". A licensee representative stated that this training had been provided to all but one new monitor. The inspector reviewed records entitled, "Employee Training Record" for all monitors, noting that each had received documented training at some frequency. The inspector questioned a licensee representative about his actions taken to satisfy the following statement in paragraph 6.3 of the license application concerning the training of Health-Safety monitoring personnel: "The degree of proficiency will be determined on an individual basis by practical and written examinations, the results of which will be maintained on file by Health-Safety". The licensee representative showed the inspector written examinations which had been given to each monitor which satisfies half of the above requirement. However, due to the illness of a key licensee employee, the inspector was not able to properly assess the licensee's use of practical examinations and this matter was left open at the exit interview. The inspector further discussed this matter with a licensee representative during a telephone conversation on April 10, 1980 at which time the licensee representative stated that means to improve the use of practical examinations were being considered (80-06-04). The inspector stated that he would continue to review this matter during a subsequent inspection.

10. Instrument Calibrations

The inspector chose three portable radiation protection instruments (PAC-4G #3342; E-120 #1934; and E-530 #607) from those readied for use and reviewed the record entitled "Portable Radiation Survey Instrument Calibration Record", noting that these instruments had been calibrated within the period specified in paragraph 8.3.4 of the license application. The inspector examined two newly purchased personnel air samplers and noted that they were on yearly calibration frequencies. The inspector discussed this with a licensee representative and stated that it appeared to him that that frequency was not adequate to ensure proper functioning of these devices. At the time of the exit interview, a licensee representative stated that tests would be run to determine the proper calibration frequency for these devices (80-06-05). The inspector stated that he would continue his review of this situation during a subsequent inspection.



11. Review of Radiation Work Permits

The inspector reviewed six recent radiation work permits (RWP's 80-01, 80-04, 80-05, 80-08, 80-13 and 80-16) and discussed them with a licensee representative. These discussions revealed that the protective requirements appeared to be adequate for the particular task at hand and that the requirements of Procedure No. AS-1123 Rev. 3, "Radiation Work Permit Program" appeared to have been met. The inspector had no further questions concerning this matter.

12. Postings and Reports

- a. The inspector examined the licensee's posting of notices to workers as required by 10 CFR 19.11. These postings were present and met the requirements of 10 CFR 19.11. The inspector had no further questions concerning this matter.
- b. The inspector obtained, from the plant personnel office, a list of people who had terminated in the years 1979 and 1980, and the dates which they terminated. The inspector then reviewed the termination reports for these people and noted that they had been issued in a timely manner and that the requirements of 10 CFR 19.13 and 10 CFR 20.408 had been met. The inspector had no further questions concerning this matter.