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

January 28, 1964

CO REPORT NO. 10/64-1

Title: COMMONWEALTH EDISON CO.
LICENSE NO. DPR-2
Dates of Visits: December 31, 1963, January 7 & 14, 1964

By: H. D. Thornburg, Reactor Inspector

SUMMARY

Several visits were made to the Dresden Nuclear Power Station at Morris, Illinois to ascertain the status of plant operation and to obtain information regarding trends in system activity. The following items of interest were noted:

1. The off-gas activity has leveled off essentially since September. The iodine activity in the primary system has continued to increase reaching a value approximately twice the maximum value noted last year.

2. Critical tests have been performed at Vallecitos using new Type III fuel. It was found that the individual fuel elements were slightly less reactive than predicted. Also the temperature coefficient of the minimum critical core was positive as with Type I fuel.

3. It has not yet been decided whether 96 or 192 Type III fuel elements will be loaded into the core during refueling. This decision will be based upon the observed condition of the fuel presently loaded into the Core II.

4. A series of tests is now under way to locate leaking fuel elements.

5. The IBEW at Dresden has expressed some concern with respect to the implementation and interpretation of Part 55.

6. Activity levels in the innabited areas inside the plant have increased somewhat due to the presence of fission products in the primary system. It does not appear, however, that these levels have reached the proportion of a health hazard.

7. It appears that access to the plant is properly controlled by the present exclusion area arrangements.

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Summary (continued)

8. A sportsman sporadically occupies a cottage located approximately 100 yards from the Dresden exclusion area fence on Commonwealth Edison property.

9. During December, the airborne particulate activity in the sphere approached 3×10^{-10} uc/cc.

No items of noncompliance were noted.

DETAILS

I. Scope of Visits

Visits were made to the Dresden Nuclear Power Station at Morris, Illinois on December 31, 1963 and January 7 and 14, 1964. Discussions were held with union personnel on January 7 and 14. A tour of the exclusion area fence was conducted on January 7. A radiation survey of the plant was performed on January 14. The following personnel were contacted during the course of the visit.

Commonwealth Edison

Mr. Vern Stone	Manager of Production
Mr. I. L. Wade	Administrative Engineer
Mr. Harlan Hoyt	Station Superintendent
Mr. Clifford Zitek	Assistant Station Superintendent
Mr. George Redman	Operating Engineer, Mechanical
Mr. Frank Palmer	Technical Supervisor
Mr. Al Veras	Plant Physicist
Mr. John Hughes	Division Safety and Radiation Protection Engineer
Mr. Warren Kiedaisch	Radiation Protection Engineer
Mr. G. E. Conschac..	Senior Control Operator and Chief Steward, IBEW
Mr. E. D. Moran	Instrument Mechanic and Member of IBEW Executive Council
Mr. J. M. McAsey	Health Physicist and Member of IBEW Executive Council

General Electric

Mr. R. S. Gilbert	Radiation Chemist

II. Results of Visits

A. System Activity

Off-gas activity has remained essentially constant at from 8 to 9×10^{3} uc/sec. at full rated power since mid September 1963.

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Results of Visits (continued)

As stated previously, the results of the sample taken at 6:00 a.m., prior to the morning load increase, are used by plant personnel to follow trends in stack activity. The monthly average of these data is plotted in Figure I.

The primary system gross iodine activity has continued to increase. It does appear, however, that the slope of the line generated by the monthly average data in Figure II may have changed during the month of December 1963. The inspector has noted a more pronounced tendency toward a decrease in the slope of a line drawn through the average of the daily data. The point of inflection corresponds to the end of November.

The peak gross iodine activity detected during the irradiation of Core I at Dresden was approximately 4.5×10^4 cpm/ml. The gross iodine count in the primary system at present is approximately 1.5×10^5 cpm/ml., which corresponds to approximately 0.12 uc/ml. The total activity of the primary system is approximately 0.41 uc/ml. at present. Extrapolating the curve shown Figure II to April 1964, assuming no slope change between December 1963 January 1964, results in a predicted total iodine concentration of more than 10^6 cpm/ml. Assuming that the slope change indicates a trend, the estimated total iodine activity at the end of core life (April 1964) could be expected to reach approximately 4×10^5 cpm/ml.

B. Refueling Plans

It is now predicted that the life of Core II may extend to approximately April 1, 1964. Mr. Veras stated that the burnup of Core II has proceeded at 3 to 4 Mw/week (or 3 to 4×10^3 lbs./week in terms of primary steam flow), which is essentially the same rate observed for Core I. The total life of Core II is expected to be prolonged somewhat by the fact that a more favorable end of life control rod pattern is possible compared to Core I. It should be noted that one control rod (C-7) was disabled in the fully inserted position during the later phases of Core I life.

On January 14, it was observed that full power was not achievable at 8:00 a.m. Full power was reached at 10:00 a.m. after xenon equilibrium was achieved following the scheduled daily load swing. (See attached Figure III for present load schedule.) The plant will be allowed to derate to 130 to 140 Mwe. According to Mr. Veras, care will be taken to leave a sufficient number of control blades in the core to maintain proper flux shape as with the previous core.

End of life physics testing will be performed approximately a month before shutdown; temperature coefficient, void coefficient, and xenon following tests will be performed. The testing will be performed at this time to insure that good counting levels are available for the "sipping" tests.

Following shutdown and the removal of the reactor head, a sampling program will be carried out to identify failed fuel assemblies (by using the "sipping" technique described in previous Compliance (CO) reports). The order

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Results of Visits (continued)

of sampling will be based on flux tilting tests [1] which are presently being performed at the site. G-E personnel are assisting Commonwealth Edison personnel in refining existing techniques. Five suspect regions of the core have been identified in this fashion.

The decision to load one batch (96 assemblies) or two batches of Type III fuel will depend on the condition of sixteen representative elements which initially will be discharged from the core and inspected in the fuel handling basin. Mr. Veras stated that Commonwealth Edison management would prefer to load only one batch based on economic studies, but will load two if the condition of the irradiated fuel should warrant.

The order of loading will be based on power distribution data (see Figures 2 and 3 of Exhibit I included in a letter from I. L. Wade, Commonwealth Edison Co. to Mr. R. L. Lowenstein, Director of DR dated August 5, 1963) and the total burnup of the irradiated fuel. All Type I fuel elements in Core II which have been irradiated in excess of approximately 7500 $Mwd/Ton_{avg.}$ will be discharged. The exposure of the original Type I fuel assemblies at the end of Core II life will range from 5500 to 9000 $Mwd/Ton_{avg.}$ The average exposure of new Type I and Type II assemblies at the end of Core II life should be approximately 2500 $Mwd/Ton_{avg.}$

Mr. Veras stated that the loading procedures would be prepared assuming the loading of a single batch. He stated that the procedures for a double batch would be available. Either procedure might require a degree of revision depending on fuel sampling and inspection results. The loading pattern will proceed symmetrically about the center of the core, with the most highly exposed assembly being discharged from a given cell. Aside from loading pattern, the Core III loading procedure will correspond to the procedure used for Core II, according to Mr. Veras.

No major maintenance or construction activity is scheduled for the shutdown, according to Mr. Palmer. Many jobs of a routine nature will be performed; e.g., packing of leaking valves. Class A maintenance of certain major equipment, etc.

Temperature coefficient and void coefficient tests will be performed prior to power operation with Core III. As noted previously, temperature and void coefficient data combined with the excess reactivity data (number of rods necessary to achieve criticality with the standard withdrawal sequence at a given temperature) for Core III will provide an estimate of Core III life.

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1/ The method depends on the withdrawal of a given control rod and the observing of the resulting off-gas activity. The efficiency of the method is dependent on: location of chamber in the off-gas train, axial flux peak relative to the elevation of the failure, and the radial effect of a given rod on neighboring fuel cells.

Results of Visits (continued)

C. Type III Fuel Experimental Data

Several months ago a minimum critical core was assembled using Type III fuel in a critical facility at the Vallecitos Atomic Laboratory. Mr. Veras was present during much of the testing and stated that the critical testing was performed using the classical critical experiment technique.

In addition to the data shown in Table I, which is a comparison of the three major types of Dresden fuel, fuel enrichment uniformity tests were performed. Roughly the tenth production fuel assembly was set aside for testing in the critical array. It was found that the assemblies tested varied by less than ± 0.02% $\Delta k/k$ in worth.

It should be noted that the temperature coefficient of the minimum critical Type III core was + 2.05×10^{-5} $\Delta k/k/^{\circ}F$ versus + 1.5×10^{-5} $\Delta k/k/^{\circ}F$ for a minimum critical Type I core. Mr. Veras stated that the fully assembled cold clean Type I core had a negative temperature coefficient at room temperature. [2/] He stated further that it was postulated that Type III fuel would demonstrate similar behavior in the full core. Preoperational testing prior to power operation is expected to verify this prediction.

It should also be noted that the predicted uncontrolled K_∞ was 1.154 versus the measured 1.135. The predicted critical array was 22 assemblies versus the actual 24 assemblies. Mr. Veras stated that this difference is expected to reduce the core life of succeeding cycles.

TABLE I

Dresden Fuel Experimental Minimum Critical Data

Fuel Type	Core Size for Minimum Critical: No. of Assemblies	Size	K_∞	Temp. Coef. ($\Delta k/k/^{\circ}F$)
I	28	(4x6) +4	1.125	$+1.5 \times 10^{-5}$
II	28	(4x6) +4	1.113	-1.0×10^{-5}
III	24	(4x5) +4	1.135	$+2.5 \times 10^{-5}$

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2/ The value of the cold clean Core I temperature coefficient was reported as -5×10^{-5} $\Delta k/k/^{\circ}F$ at 250°F and -1.2×10^{-4} $\Delta k/k/^{\circ}F$ at 540°F.

Results of Visits (continued)

D. Radiation Survey of Reactor Facility

On the basis that the concentration of fission products has increased in the primary system to a point exceeding that experienced during Cycle I by a factor of greater than 2 and could increase by as much as a factor of 10 before shutdown, Mr. Hughes and the inspector surveyed the facility. A standard β-γ hand survey instrument was used. Emphasis was placed on surveying only the areas of the plant which are regularly or partially inhabited during operation at power. The following areas, which are locked and posted as High Radiation Areas, were not entered:

1. The four secondary steam generator compartments.
2. The primary steam drum compartment.
3. The subpile room.
4. The area associated with the reactor canal.
5. Both reactor cleanup loop compartments.
6. The pipe tunnel in the turbine building.
7. The three feed water heater and cooler compartments.
8. The turbine high radiation area.
9. Condenser hot well area.
10. Condensate demineralizer compartment.
11. Rad waste and reactor canal filter compartment.

The following areas were surveyed as noted below:

1. General Area - 534' Elevation in Sphere.

    a. General background - less than 1 mrem/hr.

    b. At contact with steam generator compartment doors - less than 1 mrem/hr.

    c. Open area on north side of area - approximately 4 mrem/hr (from scram dump tank on lower level).

    d. On ion chamber access platform along north face of reactor shielding - 10 mrem/hr (from reactor canal level indicator).

2. 547' Elevation in Sphere

    a. A partial wall of shielding blocks approximately 4.5' high has been placed in the vicinity of the steam drum level sensors. A locked gate has been installed at an entrance formed by the shielding blocks. The

Results of Visits (continued)

exposure rate at the top rim of the wall was measured at approximately 20 mrem/hr.

b. General area at cat walk - 4 mrem/hr.

c. "C" instrument room.

(1) Background - 25 mrem.

(2) 100-200 mrem/hr at contact with primary system instruments and sample taps.

(3) 1000 mrem/hr underneath radiation detector pig.

d. "B" instrument room. This area was not surveyed, but is reported by Mr. Hughes to have a background of less than 1 mrem/hr.

3. 502' Elevation in Sphere

a. Contact with scram dump tank - 70 mrem/hr. At contact with tank level sensors - 200 mrem/hr.

b. General background in the vicinity of the scram valves and piping - 15 mrem/hr.

c. The "A" steam generator instrument room is posted as a High Radiation Area and the door is normally locked.

(1) Sample cabinet - 100 mrem/hr at contact with front of cabinet with sample stream flowing and 500 mrem/hr at contact with drain line with sample stream flowing.

(2) General area in room - less than [illegible] mrem/hr.

d. The general storage room was posted as a High Radiation Area and locked. It was noted that irradiated drive components, etc., were stored in the room. No readings in excess of approximately 30 mrem/hr were noted.

e. "B" generator instrument room general background - 5 mrem/hr. No significantly higher readings noted.

4. Bottom Elevation of Sphere

a. General background in the vicinity of scram accumulators - approximately 7 mrem/hr.

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Results of Visits (continued)

b. At entrance to subpile room - approximately 40 mrem/hr.

c. "A" reactor equipment drain tank room is posted as a High Radiation Area and is locked. A field of approximately 100 mrem/hr was detected approximately 3' inside the door which is 16 to 20 feet from the tank.

d. "B" reactor equipment drain tank room is also posted as a High Radiation Area and is locked. The field approximately 3' inside the door was noted to be approximately 40 mrem/hr.

5. Emergency Condenser and Intermediate Elevations. The emergency condenser platform is posted as a High Radiation Area - access to this area is controlled by a locked expanding gate approximately 3' high.

   a. Field at approximately 30" above the two hatch covers leading to the primary drum compartment - 200 to 300 mrem/hr.

   b. General background 4 to 5 mrem/hr.

   c. At contact with shielding blocks over primary drum compartment opening - 3 mrem/hr.

   d. At gate to reactor canal area - 5 mrem/hr.

6. 565' Elevation of Sphere

   a. General background - less than 1 mrem/hr.

7. Turbine Floor of Turbine Building

   a. Maximum field at edge of High Radiation Area fence around front portion of turbine - 20 mrem/hr.

   b. General background in area behind outboard turbine bearing housing - 1-5 mrem/hr.

8. Lower Level of Turbine Building

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<u>Results of Visits</u> (continued)

a. Condensate pump room - 2 mrem/hr general area. No significantly higher fields encountered.

b. The entrances to all three feed water heater compartments were surveyed. Noted fields of from 5 to 10 mrem/hr at contact with portions of louvered doors. Each of the compartments is posted as a High Radiation Area and all doors are maintained locked.

c. The entrance to the condensate demineralizer compartment - 5-10 mrem/hr at 6" from louvered door.

9. Radiation Waste Facility

a. General background in control room - 1-2 mrem/hr.

b. Fan cat walk background - less than 5 mrem/hr.

c. At fence enclosing area above shielding to radiation waste and reactor canal filter compartment - 10-15 mrem/hr.

d. At contact with overhead piping in lower level of radiation waste facility - the maximum was 70 mrem/hr in one location. In general no other significant readings were noted during the survey of the various pumps, piping, valves, etc. It was noted that lead shielding had been placed over portions of the piping and equipment in the radiation waste facility which have been found to be the source of chronically high survey results. It appeared that this local shielding was highly effective.

10. A survey of the maintenance shop, "blue"[3/] tool room, laundry room, and various storage areas in the administrative area disclosed no indication of significant contamination, etc.

The inspector received a total exposure of 20 mrem, as indicated by a pocket dosimeter, during the five-hour tour of the facility. Mr. Hughes received an exposure of 15 mrem during the same period.

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3/ Tools which are designated for use on radiation jobs are painted blue and stored in a separate room.

Results of Visits (continued)

E. Personnel Changes

Mr. I. L. Wade has accepted a position with the Department of State in connection with the construction of the Tarapur plant in India. Mr. Gene Bailey will perform most of Mr. Wade's liaison duties and is scheduled to replace him as Chairman of the Safeguards Committee. Mr. N. A. Kershaw has been promoted to the position of superintendent of the efficiency group. In this capacity, Mr. Kershaw will be a supervisor of all engineering and technical groups in the Commonwealth Edison Company, including Dresden. Mr. Howard Gann, formerly an operating engineer on Mr. Hoyt's staff, has been transferred to the Joliet station as an operating engineer for one of the conventional units there. Mr. George Redman has been promoted from his position as Supervisor of the Technical Group to fill Mr. Kershaw's former position as Operating Engineer, Mechanical. Mr. Frank Palmer has been promoted to Mr. Redman's former position.

During the course of a conversation with Mr. Vern Stone, it was learned that consideration has been given to placing Mr. Kershaw on the Safeguards Committee due to his operating and technical background. Mr. Stone and the inspector discussed various aspects of operational safety. Mr. Stone stated that whenever a question arose with regard to the operational status of the Dresden plant, the views of Mr. Hoyt and Mr. Zitek had precedence over system power demands.

F. Reactor Exclusion Area Access Control

As will be noted in a succeeding section, an unsigned letter was received by the Commission commenting on the control of access to the Dresden plant. See Appendix A. Several months ago as the inspector was leaving the plant, one of the gatemen at the site mentioned that there is no longer a gateman on duty during the midnight shift. On these bases, the inspector made a tour of the perimeter fence with Mr. Hoyt.

The following information was noted:

1. The plant is totally enclosed by a standard chain-link fence which is approximately 8 to 10 feet high.

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Results of Visits (continued)

2. The inspector observed four gates:

   a. The main vehicle gate in front of the administrative area which is normally closed. The gate can be remotely operated by manipulating controls located in the gate house.

   b. The railroad gate located at the point where the rail spur enters the exclusion area. This gate was locked.

   c. A gate adjacent to the transformer yard which is normally locked.

   d. A gate in the fence on side of the fenced area facing the river which is used to gain access to an off-site monitoring station. This gate was locked.

3. The gatehouse is used for pedestrian access to the area. A gateman is stationed in this building at present during the 8-4 and 4-12 shifts each day. On the 12-8 shift, the gatehouse is locked. A PAX phone station is located outside the gatehouse door. Persons wishing access to the area on the 12-8 shift are instructed to call the control room via the PAX phone.

4. The possible areas open to access from the river are the intake and effluent cooling water canals. Eight to ten strands of barbed wire are strung across these openings down to a distance of approximately one foot from the water level.

In general, the fence is well maintained and of solid construction with no holes or open spots beneath the fence. It would appear that access to the exclusion area would require determination on the part of a potential interloper.

Mr. Hoyt stated that the company was faced with the problem of a "squatter" who periodically occupies what appears to be a four or five room hunting lodge on Commonwealth Edison property between the exclusion area fence and the river. The building in question is located approximately 1/2 mile from the reactor and approximately 100 yards outside the exclusion area fence near the discharge canal. The building is occupied sporadically by a sportsman during approximately six months of the year. The sportsman gains access to the building by water.

Mr. Hoyt stated that he has been negotiating with Commonwealth Edison's legal representatives to have the man evicted.

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Results of Visits (continued)

G. Discussions with Union Representatives

The inspector held discussions with union personnel on two separate occasions at the site recently. One was on December 31, 1963 in which Mr. Conschack, the Chief Steward, and the inspector discussed the bypassing of the reactor water low level scram sensors and other information. The second discussion was held on January 14, 1964 with Messrs. McAsey and Moran, members of the union executive council. In the second meeting, discussions were held pertaining to various interpretations of Part 55. The inspector will attempt to describe the discussions and the specific topics covered.

The fact that certain of the operating personnel have questioned management's authority could result in a safety question if it indicated a serious degeneration of morale. In the inspector's opinion, these views are not supported by the majority of personnel; however, the inspector has not canvassed the personnel at the site. Mr. Conschack did not appear to be as extreme in his views as were Messrs. McAsey and Moran.

1. Discussions with Union Personnel Regarding the Bypassing of Scram Sensors

During the course of our discussions on December 31, 1963, the inspector read to Mr. Conschack an excerpt from the CO report dated November 1, 1963 in which the inspector discussed the bypassing of the safety circuit at Dresden. The inspector asked him if this account, in his opinion, represented the true facts of the situation. He stated that it did after some further conversation. The inspector also informed him that members of management had discussed the need for performing the repair of the impulse line with the inspector prior to performing the job. The inspector told Mr. Conschack that at the time the inspector informed management that:

a. One could not be in a position of predetermining whether or not a given operation would be in compliance with the regulations.

b. However, one should feel that he is bound to discuss the situation in the light of his knowledge of the regulations and operating experience. On this basis the inspector informed Commonwealth Edison management that he had operated at a facility where scram sensors were bypassed on occasion. However, the bypassing of

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Results of Visits (continued)

these sensors was performed according to a written procedure which had been approved by management and which contained some of the following elements:

(1) The persons who could authorize the bypassing of safety circuits were specified.

(2) Enumeration of safety circuits which could be bypassed was made.

(3) The permissible length of bypassing a safety circuit was specified.

(4) Continuous auxiliary surveillance which should be provided in conjunction with the bypassing of a given safety was specified.

Mr. Conschack stated that he was personally concerned about the operation because it was performed without a written procedure. The inspector informed him that he had seen a hand written procedure which had been transmitted from Mr. Zitek to the shift engineers who were responsible for performing the operation.

Mr. Conschack then asked the inspector if he had seen a copy of Local 1460's letter to Mr. Lowenstein requesting an interpretation of 10 CFR 55. Mr. Conschack implied that the letter had been written by Mr. Thomas without his direct knowledge. He then asked the inspector's opinion of the letter. The inspector replied that in cases where union personnel wanted to obtain an official interpretation of the Federal Regulations, a formal request for such an interpretation was in order. The inspector reminded him that he could not give an interpretation of any portion of the regulations which would be considered binding on the Commission.

Messrs. Moran and McAsey referred to this incident again on January 14. The inspector outlined the discussion with Mr. Conschack. The ensuring discussions on this matter were directed to a discussion of the responsibility of the operator. The inspector did not respond to the question since a request had been made for an interpretation by the Commission with respect to this point.

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Results of Visits (continued)

The basic argument in this situation revolves about the extent of management's responsibility for safety. Basically, the union maintains that the bypassing of safety circuits, as described in the CO report dated November 1, 1963, was in violation of DPR-2. They maintain further that the Part 55 license of the operator who was requested to operate the reactor with the bypassed safety circuit was placed in jeopardy by management's directive. Management informed union personnel that they (management) take full responsibility for actions which have been approved by Station management and which are performed under the supervision of a licensed shift engineer.

2. Discussions of Certain Other Aspects of 10 CFR 55

Messrs. Moran and McAsey initiated a discussion of a situation involving interpretation of the original Part 55 versus the revision of Part 55 which went into effect July 2, 1963. About a year and a half ago the question arose whether or not a licensed operator was required to manipulate the effluent valve to the river in the radiation waste facility. Union personnel maintained that, under the definition of "controls" and "operator" in the original Part 55, a licensed operator was required to perform the operation in question.

> Part 55.3(b) -"'Controls' means those controls of a production or utilization facility which by manipulation or failure to manipulate singly or in combination could result in the release of atomic energy or radioactive material in amounts determined by the Commission to be sufficient to cause danger to the health and safety of the public;"

> Part 55.3(f) - "'Operator' is any individual who manipulates a control of a facility. An individual is not deemed to manipulate a control within the meaning of this definition if he manipulates the control only under the direction and in the presence of a licensed operator. An individual is deemed to manipulate a control if he directs another to manipulate a control in his presence."

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Results of Visits (continued)

The problem was resolved when the company agreed with the union's interpretation upon the advice of the General Electric Company. Upon the advent of the revision to Part 55, management rescinded the requirement that a licensed operator be present when the valve was manipulated under the new definition of "controls".

> Part 55.4(f) - "'Controls' when used with respect to a nuclear reactor means apparatus and mechanisms the manipulation of which directly affect the reactivity or power level of the reactor. 'Controls' when used with respect to any other facility means apparatus and mechanisms the manipulation of which could affect the chemical, physical, metallurgical, or nuclear process of the facility in such a manner as to affect the protection of health and safety against radiation."

Mr. Moran maintained that a licensed operator is responsible for the discharge of the waste but is not present when the valve is manipulated and therefore feels that the operator is required to sign off with respect to a responsibility without having actually witnessed the manipulation of the valve. The company argues that the licensed operator would have to participate in the analysis of the water to be discharged in order to be in a position where he could certify the disposal of a batch of waste.

From this line of reasoning, Messrs. Moran and McAsey alluded to apparent "loop holes" in Part 55. They cited the enforcement action specified in Section 55.50 which could be taken against those who violated Part 55. They quoted the following sentence: "Any person who willfully violates any provision of the act or of the regulations in this part may be guilty of a crime, and upon conviction, may be punished by fine or imprisonment or both." Messrs. Moran and McAsey stated that the union was alarmed that strict enforcement of that section of Part 55 could result in a threat to the job security of union personnel if conditions were conducive.

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Results of Visits (continued)

They inquired as to what action might be taken against a licensed operator who was involved in an incident. They speculated about what the company might do in such a case. The inspector informed them that it was his opinion, supported by some of the Commission's directives on incident investigations, that the Commission did not normally take action against individuals. In fact, it was pretty much the standard in industry not to fix individual blame unless such a finding was a bit more than obvious.

Messrs. Moran and McAsey cited a case at Shippingport where an operator had failed on two occasions to pass the operator qualifying test established by the Naval Reactors Branch. They indicated that the union had information that Duquesne Power and Light Company was contemplating firing the operator in question. The inspector stated that it was his opinion that the implementation of the Naval Reactor Program Reactor qualifying examination and Part 55 were not closely related.

Messrs. Moran and McAsey stated that the union felt that the assignment of senior operators was unfair to the union in that the original personnel licensed at Dresden were all subject to the same examination, management and union personnel alike. It appeared to them that the only difference between the persons who recently were designated as senior operators and union personnel was the fact that management had designated certain persons to receive waivers for the senior operator's examination. There was also some discussion of whether or not the Examining Branch might maintain some sort of a performance record for each operator in which a record of personal efficiency was maintained.

They questioned whether or not an individual's license might be revoked based on a finding of long term poor performance. The inspector stated that he knew of no such record. The inspector also stated that he had not heard anyone discuss such a procedure nor would he personally think that this sort of procedure was imminent.

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Results of Visits (continued)

Some discussion of paragraph 55.33(2) ensued related to the reissuance of a license to a person who had not been actively engaged in reactor operations on a continuous basis. The inspector stated that it was his opinion that the sense of this statement was to assure that only those persons who regularly operated reactors were in possession of valid operating licenses. The inspector stated further that this was an attempt to make sure that the operating license had functional status and was not maintained as a prestige symbol or sinecure by the licensed operator.

It appears that all the above discussions and arguments lead back to the matter of safety responsibility at the operating level.

3. Discussion of the Unsigned Letter From the "Dresden Community"

The inspector discussed the unsigned letter which had been received by the Commission from the "Dresden Community" with Mr. Conschack. The inspector also discussed the letter and the fact that the inspector had looked into the security of the Dresden plant with Mr. Conschack and a member of the gate force who had previously pointed out to him that the guard force had been removed from the midnight shift. The inspector cited cases where nuclear plants were in operation without a guard force on duty and he also stated that he had toured the fenced area and determined that if the front gate to the plant was locked at night and there was no guard on duty, access to the plant was denied to all but the determined interloper. The inspector stated that he could not establish justification for the Commission to become officially interested in the matter from the standpoint of compliance with the regulations, security of the fissionable material, control of access to radiation areas, etc. The inspector stated that the facts of his study would be included in his next inspection report for consideration by his superiors and other members of the staff. Their review of the facts might result in action not supported by the inspector's opinion.

H. Airborne Activity in the Sphere

Half masks have been used on several occasions by personnel entering the sphere. In each case no credit was taken for the use of respiratory equipment and time that each man spent in the sphere was recorded.

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Results of Visits (continued)

The above situation occurred during the period extending from December 7 to December 31, 1963. It was determined from periodic air samples taken during this period that the airborne particulate activity approached 1×10^{-10} uc/cc on several occasions. Samples were taken using a Whatman No. 72 filter paper and several charcoal filters in tandem. It was found that the Whatman No. 72 paper would retain greater than 33% of the I^{131} collected in the sample train.

On the basis of the above information, all sample results were multiplied by a factor of three during the period in question. It was then considered that data approached 1 MPC in I^{131} during the period.

Toward the end of December it was found that the activity originated from "C" Steam Generator Compartment. The exhaust air flow from that compartment was increased and the sphere activity was reduced to nominal levels and has remained there since.

The maximum time that any person spent in the sphere was approximately 650 minutes during the period in question. The average time was approximately 250 minutes. Approximately 50 persons entered the sphere during this period. All the names and times spent in the sphere appear on plant exposure records.

I. Miscellany

1. The critical rod predictions for Core II are listed in Table II below. It will be noted that essentially all of the predictions were relatively close in determination of numbers of rods until the last critical was performed on November 11, 1963. In this case a discrepancy of about eight rods existed which would amount to a possible discrepancy of less than 0.8% $\Delta k/k$.

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Results of Visits (continued)

TABLE II

Prediction of Critical
Rod Configuration
Core II

Date of Critical	Temperature Predicted	Temperature Actual	No./Control Rod Required to Reach Critical Predicted	No./Control Rod Required to Reach Critical Actual
3/8/63	70		36	36.8
3/9/63	240		37	36.8
3/10/63	350	396	40	38.10
4/24/63	150	140	43	38.4
5/19/63	210	208	42	40.4
5/20/63	450	456	55	54.2
5/27/63	450	412	56	56.7
6/20/63	160	173	43	42.1
8/10/63	225	228	55	54.5
11/11/63	190	190	59	51.2

2. The turbine generator was shut down at 4:27 p.m. on November 9, 1963 to determine the cause of fluctuations in hydraulic oil pressure and noise in the area where the main turbine oil pump is coupled to the turbine spindle. Inspection of this location revealed no apparent cause for this condition. The turbine front standard was reassembled and the unit returned to service. Advantage was taken of this outage to conduct the quarterly rod drive scram tests and to determine temperature coefficient at maximum xenon condition after shutdown.

3. The temperature coefficient was determined to be negative above 320°F. A preliminary review of the raw temperature coefficient data taken at 350°F, 540°F and maximum xenon concentration indicates that the coefficient is only slightly affected by temperature level as is expected and is of the order of $-2 \times 10^{-5}\ \Delta k/k/^{\circ}F$.

(continued)

Results of Visits (continued)

4. The inspector reviewed the buffer time data for the scram tests noted above. The friction test data have been transmitted to the Commission by Commonwealth Edison. Actually the recent buffer time data were compared with all of the 1963 data and it was noted that the longest time to buffer was about 1.77 seconds, which is within specifications. No trend was apparent with respect to time to buffer or time in buffer.

5. The sphere insulation was patched during the summer and fall of 1963. As a rough approximation, 30% of the total insulation was replaced. The job was completed by October before cold weather occurred. The discharge from certain of the ventilating fans has been redirected to assure uniform temperature distribution across the inside surface of the sphere. The nil ductility temperature of the sphere is +10°F. The sphere metal temperature as recorded by a temperature recorder reached a minimum of 40°F during the cold weather experienced in December.

6. Mr. Veras stated that the General Electric Company is currently making studies with respect to the significance of temperature and void coefficient changes that occurred during core lifetime. The studies have not been concluded; however, computer codes have been programed and the work is expected to be concluded within several months.

7. On October 3, 1963 the three air locks were leak tested with a Halide detector. It was found that the leak rate was less than 0.08% of the maximum permissible sphere leakage of 0.05% of the contained volume in 24 hours. Sphere inlet and exhaust isolation valves were checked for leakage and operating times obtained. The leak rate was found to be less than 0.08% of 0.05% of the contained volume in 24 hours. The operating time from full open to the closed position was found to be 6 seconds.

Attachments:
1. Appendix A
2. Figures I - III