U. S. ATOMIC ENERGY COMMISSION
DIRECTORATE OF REGULATORY OPERATIONS

REGION III

RO Inspection Report No. 050-010/73-03

Licensee: Commonwealth Edison Company
P. O. Box 767
Chicago, Illinois 60690

Dresden Nuclear Power Station, Unit 1
Morris, Illinois

License No. DPR-2
Category: C

Type of Licensee: GE, BWR, 210 Mwe

Type of Inspection: Routine, Unannounced

Date of Inspection: August 8, 9, 16, 17 and 21, 1973

Date of Previous Inspection: April 17, 19, 20, 23-25, 1973

Principal Inspector: F. Maura F. Maura 9/13/73
(Date)

Accompanying Inspector: None

Other Accompanying Personnel: None

Reviewed By: H. C. Dance H. C. Dance, Senior Reactor Inspector
BWR Operations

9/13/73
(Date)

SUMMARY OF FINDINGS

Enforcement Action

A. Contrary to paragraph J.5.c(1) of the Technical Specifications, the licensee failed to report to the Commission several cases of nuclear instrumentation power range channels scram setpoint drift above the limit established in the Technical Specifications. (Paragraphs 4.a and 4.b)

B. Contrary to 10 CFR Part 50, Appendix B, Criterion V, the licensee failed to:

1. Follow Administrative Procedure Q.C.P. 8-51.1/8-52.1, Revision 0, during the replacement of the motor on emergency condenser condensate valve MO-101 on April 15, 1973. (Paragraph 7.b)

2. Follow Commonwealth Edison Company Q.A. Manual Quality Requirement No. 11.0 following the replacement of the original diesel of Unit 1 diesel fire pump with a new unit of different manufacture. (Paragraph 7.a)

Licensee Action on Previously Identified Enforcement Items

The corrective actions listed in the licensee's response to our letter of enforcement dated May 25, 1973, were reviewed. The items are considered resolved. (Paragraphs 2.a and 2.b)

Unusual Occurrences

A. Primary steam isolation valve MO-169 failed to close. (Paragraph 3)

B. Nuclear instrumentation power range channels scram setpoint drift. (Paragraph 4.b)

C. Unit 1 diesel fire pump failed to start during surveillance testing. (Paragraph 7.a)

D. Core spray valve CS-17 failed to open twice during surveillance testing. (Paragraph 7.b)

E. Emergency condenser condensate valve MO-101 failed to open. (Paragraph 7.b)

Other Significant Findings

A. Current Findings

1. The unit is operating at approximately 75 Mwe (35 percent power) with a chimney gaseous release of 38,000 uCi/sec. Two of the recirculation loops are isolated due to gasket flange leaks in their pumps.

2. A three-month refueling outage is scheduled to start on September 30, 1973. A containment type A leak rate test is scheduled for the sphere during this outage. Such a test has not been performed on the Unit 1 sphere since October 1969.

B. Status of Previously Reported Unresolved Items: None

Management Interview

The following subjects were discussed at the conclusion of the inspection on August 21, 1973, with Messrs. W. Worden, Station Superintendent; A. Roberts, Supervising Engineer, Technical Staff; T. Watts, Operating Engineer, Unit 1; and R. Williams, Engineer.

A. The inspector stated that the operator retraining program appears to meet the requirements of proposed Appendix A to 10 CFR Part 55, but that the following shortcomings were noted:

1. The short exams given at the end of each lecture do not necessarily cover events experienced at the site, especially where human errors contributed to the event.

2. The program seems to be oriented toward Units 2 and 3, and it appears Unit 1 may not be properly covered.

3. The licensee appears to be reluctant to grade or somehow rate their personnel based on their performance. There is no way to determine who the "poor performers" are in order to improve their performance through additional training.

The inspector noted that while reviewing the system, a few suggestions on ways to improve it had been made to Mr. Joyce. The licensee stated the program is relatively new and they are striving to improve the system; therefore, they welcome our suggestions. (Paragraph 2.a)

B. The inspector stated that with respect to the coming type A leak rate testing of the containment sphere the licensee will be inspected against Appendix J to 10 CFR Part 50. The licensee noted that they were trying to obtain a waiver from sections of Appendix J from the Directorate of Licensing. The inspector stated that where the request was due to the physical impossibility to perform a certain penetration test such deviations from Appendix J would be noted, but that otherwise in the absence of a specific exemption by the Commission as stated in 10 CFR Part 50.12, the test would have to meet the requirements of Appendix J.

In addition, the inspector requested that Region III be notified, approximately two days in advance, of when the test is to start.

C. The inspector noted that the diesel generator low lube oil temperature annunciation had been accomplished, indirectly, by monitoring the cooling jacket water temperature. Also that it is his understanding that both systems, cooling water and lube oil, are always being circulated while the diesel is in standby. The licensee concurred with the above statements. The inspector then stated we have no further questions at this time regarding the monitoring of the diesel generator lube oil temperature. (Paragraph 8)

D. The inspector stated that the licensee's actions concerning the non-compliance items covered in our letter of May 25, 1973, were reviewed. We consider the items resolved, although some are yet to be completed. Their completion will be verified during a future inspection. (Paragraph 2.b)

E. The inspector stated that a review of the surveillance records indicate that the nuclear power range instruments have experienced a significant amount of scram setpoint drift, much more than the licensee stated in their letter of June 25, 1973, to the Directorate of Licensing, and that such drift had not been reported as required by the license. Specifically, drift above the Technical Specification limits that went unreported was experienced on May 19, 1973; April 12, 1973; March 16, 1973; December 19, 1972; December 5, 1972; October 19, 1972; July 28, 1972; and June 10, 1972. The licensee stated they were unaware of these events, but would investigate. (Paragraph 4.a and 4.b)

F. The inspector noted that the resolution of motor operated valve failures appears to have a low priority rating in the licensee's overall program. For example:

1. The claim that a torque switch setting of "2" is correct for MO-169 cannot be substantiated since the licensee doesn't know the valve manufacturer's recommended torque for such a valve and doesn't have the required data from the operator manufacturer to determine what a setting of "2" means in foot-pounds.

2. Since our last inspection on Units 2 and 3, less than 10 percent of the motor operated valves torque switch settings have been identified and compared against manufacturer recommended torque settings, in foot-pounds. It would appear that in light of the number of past and present valve failures, such a program would rate considerable more effort than it is receiving on <u>all three</u> units.

3. The failed motor of valve MO-101 was still at the station, four months after its failure and the licensee informing Licensing that the motor was to be shipped offsite for failure evaluation.

The licensee stated each item would be checked, and that failure to ship the motor offsite for failure evaluation was because the station Electrical Department had not yet informed the site where the investigation was to be performed. (Paragraphs 3 and 7.b)

G. The inspector stated that violations of 10 CFR Part 50, Appendix B and the Commonwealth Edison Company Q.A. Manual appear to have occurred in that:

1. Following diesel fire pump prime mover replacement tests to insure conformance with design and performance criteria were either not performed or documented until one month after the unit had been in service. (Paragraph 7.a)

2. Site records failed to demonstrate that the replacement motor used on valve MO-101 was of identifical characteristic to the replaced motor. (Paragraph 7.b)

REPORT DETAILS

1. Personnel Contacted

W. Worden, Station Superintendent
F. Morris, Assistant Station Superintendent
T. Watts, Operating Engineer, Unit 1
A. Roberts, Supervising Engineer, Technical Staff
O. Dodd, Maintenance Engineer
R. Williams, Engineer
J. Bowers, Engineer, Technical Staff
T. Suchocki, Engineer, Technical Staff
R. Canalas, Engineer, Technical Staff
R. Meadows, Engineer, Technical Staff
R. Cozzi, Engineering Assistant, Surveillance
D. Jeffers, Engineering Assistant, Maintenance
N. Jackiw, Q. C. Engineer, Technical Staff
E. Budzechowski, Q. A. Engineer
R. Mefford, Instrument Foreman
R. Thomas, Control and Instrument Technician
W. Joyce, Training Supervisor

2. Organization and Administration

a. Retraining

The retraining program for operating personnel at the Dresden site consists of a series of formal lectures given by the site's technical staff, a simulator refresher course at the General Electric Co. Simulator, and on-the-job training.

The formal program of lectures was first introduced during 1972 with the "school" year running from September 1972 to May 1973. It consisted of 18 formal sessions of one day each repeated five times in order to cover all shifts. A short examination is given at the end of each session. During the 1973/74 school year the number of sessions has been reduced to 12, but a review of the lecture program indicates that the requirements of proposed Appendix A to 10 CFR Part 55 and ANSI 18.1 are being met. Because of vacation, illness, etc., the licensee does not expect all operating personnel will be able to attend all 12 lectures. The program requires that each person attend a minimum of five sessions a year so that every two years the requirements of Appendix A are met. In addition, the program intends to cover all plant systems every five years. Records are being maintained for each man which show the sessions attended, and a cross reference exists to show the requalification requirements covered by each lecture.

The licensee does not grade the exams given at the end of each session, nor does it rate its personnel based on their performance. There appears to be some reluctance to do so, and it is not clear to the inspector how the "poor performers" are either weeded out or given additional instruction.

In addition to the formal lectures each licensed RO and SRO in the Operations Department attended a three-day simulator refresher course at the General Electric BWR simulator during the last school year. A similar program is planned for the 73/74 retraining year.

The inspector asked how is Unit 1 covered by the retraining program since it appears the program covers mainly Units 2 and 3. The licensee stated that while discussing a specific system or component on the newer units, the applicability of the discussion to Unit 1 is brought out. If a similar system does not exist in Unit 1, or if the system is different than the one described for Unit 2/3 during the lecture, then the dissimilarities are discussed.

Individual training records for Operating Department personnel are being kept at the Training Center. Records for all other station personnel are presently being maintained by their respective departments. According to the licensee all training records will eventually be kept at the Training Building as soon as filing space becomes available.

Informal training is conducted as follows:

(1) Plant modifications. selected operating orders, and procedure changes are placed on video tape and are made available for shift personnel to review. Records are maintained which identify all personnel who have viewed the tapes.

(2) Deviation reports are now routed to all shift personnel for their review. The licensee plans to video tape deviation reports in the future in a program similar to what it now does for modifications and operating orders.

(3) A shift engineer has been assigned to assist in the initial training of equipment attendants.

The inspector viewed two of the tapes in use regarding plant modifications and operating orders. It was suggested to the licensee that whenever possible, the taped presentation should include the reason why the order or modification was required.

b. Response to Items of Noncompliance

The corrective measures to items of noncompliance outlined in the licensee's letter (Lee to Grier) of June 22, 1973, were inspected. The following findings were noted.

(1) Surveillance Documentation

Semi-annual audits of the surveillance records to determine if any documentation is missing, and if so to locate it, are being performed by the individual in charge of maintaining such records.

(2) AO's Reports to Manager of Production

The licensee is now transmitting all Deviation Reports, which include all abnormal occurrences, to its Headquarters by telecopier. The procedure referred to in the licensee's response is not yet available.

With respect to the SRB's review of the incident of April 9, 1973, it should be pointed out that Mr. Worden acting as Station Superintendent appointed the committee to review and report the event. The SRB did not review the event until nine days after its occurrence.

(3) Probable Maximum Flood Procedure

The procedure is now in draft form. The licensee indicated during the management interview the final version would be issued within 30 days.

(4) Battery Bank Surveillance Tests

The new data sheet referred to in the licensee's response, and RO Inspection Report No. 050-010/73-02, has been incorporated into the Unit 1 manual.

c. Record Review

(1) Shift Engineers Log, July 1, 1973 to August 8, 1973

(2) Unit 1 Operators Log, August 2-8, 1973

(3) SRB minutes for meetings No. 486 to 501, 518 and 520

(4) Deviation Reports 1-73-19 thru 1-73-33

The inspector noted that Deviation Reports 1-73-19 (which covers an event that occurred on April 26), 1-73-21 (May 30) and 1-73-23 (June 14) were still in the "paper mill" and had not been issued. The licensee plans to expedite such reports and to try to keep as current as possible.

3. Reactor Coolant System

On April 11, 1973, the primary steam isolation valve MO-169 failed to close after having been cycled closed and opened once. The reactor was in cold shutdown. The event was reviewed by the SRB at its 478th meeting and reported to Directorate of Licensing on May 9, 1973. The licensee checked the torque switches in the valve operator and found the closing direction switch set at "2". The licensee claims this is the correct setting but upon investigation, the inspector found the licensee has no basis for making such a determination. Specifically: (a) the licensee doesn't know the torque in ft-lbs recommended by the valve manufacturer, and (b) the licensee has no data from the valve operator manufacturer to determine, for the particular torque switch in question, what a setting of "2" means in ft-lbs of applied torque.

4. Reactivity and Power Control

a. Technical Specifications Requirements

Item	T/S Requirement	Period Inspected	Results
Temperature coefficient	1) Max. reactivity addition $<$ 100 cents 2) Max. temperature at which coefficient is positive $<$ 550F	6/19/73	1) Reactivity gain 100F to 270F $\sim$ 34 cents 2) Max. temperature at which reactivity is positive $\sim$ 270F
MCHFR Calculations	$\geq$ 1.5 at 125% of rated power	7/73	3 to 4 at 125% rated power. (Performed daily)
Rod following verification	Weekly	6/4/73-8/5/73	Satisfactory
Rod withdrawal sequence and predicated critical configuration	Each startup	1973	Satisfactory
Control Rod blade following verification during startup.	Each startup	1973	Unverified blades inserted if worth $>$ 1.0%. Also inserted when criticality was not attained as predicted plus one blade on 4/15/73

Scram dump tank high level scram	4 ft - 4 1/2 ± 1" above base line	1973	Satisfactory
Short period	>4 seconds	1973	Satisfactory
Power channels hi neutron flux	120 ± 3% of rated power	6/1/72-7/31/73	6/10/72-CH.1 @ 125% CH.3 @ 124% CH.5 @ 125% 7/28/72-CH.4 @ 125% 9/29/72-CH.2 @ 136% CH.4 @ 126% CH.6 @ 130% 10/19/72-CH.6 @ 126% 12/5/72-CH.2 @ 125% 12/19/72-CH.6 @ 124% 3/16/73-CH.3 @ 124% 4/12/73-CH.1 @ 126% 5/19/73-CH.5 @ 125% 6/16/73-CH.5 @ 140% 6/20/73-CH.5 @ 124% 7/26/73-CH.5 @ 127% Licensee failed to report drift prior to 6/16/73.

b. Power Range Channels Set Point Drift

On June 16, 1973, the licensee found that nuclear instrument power range channel 5 high level trip setting was set at 140 percent of rated power. The Technical Specification requires a setting of 120 ± 3 percent. The setting was left at 120 percent and on June 21, 1973, it was found to have drifted back to 124 percent. The events were reviewed by the SRB and reported to the Directorate of Licensing on June 25 and June 29, 1973.

A review of the licensee's records for 1972 and 1973 indicated several occasions of set point drift in either direction, ranging from as low as 86 percent to as high as 140 percent. While most upper direction drift cases involved only one of the six channels available, in two occasions, September 29, 1972, and June 10, 1972, three channels were found to have drifted above the 123 percent limit.

The licensee proposes to replace the present trip point potentiometer which has an adjustable range of only 90° with a more sensitive eight turn pot. The modification has been approved in accordance with the Company's QA Manual and will be completed as soon as all parts arrive. A modification to replace all six power range channels with new ones of more reliable solid state design is presently being evaluated by CE Co. Engineering under Mod. M-12-1-73-42.

5. Core and Internals

a. Core ΔP

A review of the core ΔP history for fuel cycle VIII confirmed what was previously noted during cycle VII, a considerable improvement when compared to cycle VI. It appears that since the retubing of the main condenser and the redesign of the fuel inlet nozzle, the crud buildup problem of earlier fuel cycles has disappeared.

A comparison of core ΔP for the last three fuel cycles follows:

	3 loop operation	4 loop operation
End of Cycle VI (1969	10.4 psi	14.4 psi
Start of Cycle VII (Jan 1970)	5.0	6.9
November 1970	--	9.0
April 1971	5.5	--
Start of Cycle VIII (Feb 72	--	6.6
November 1972	--	7.7
January 1973	5.0	--

During July with the plant operating on two loops, the core ΔP is approximately 3 psi.

b. Reactor Vessel Irradiation Specimen Program

According to the licensee at least five holders with several samples of parent vessel metal per holder are located at different radial locations inside the reactor vessel. The last removal of samples occurred in 1971. These samples have not been tested and are still in the spent fuel pool. The licensee stated that Commonwealth Edison is negotiating with various companies on a program to test the samples removed during 1971 and also all future samples. The next removal of irradiated samples is scheduled for 1978, and the next and final group is scheduled to come out in 1992.

According to the licensee, all the data on samples removed prior to 1971 is contained in General Electric's report GECR 5165 dated May 1966, "Dresden Reactor Vessel Steel Surveillance Program." In the report, G.E. predicts that by the year 2000 NDT temperature of the vessel will be 225°F. The licensee presently is using the 1970 prediction of 180°F. A description of the surveillance program can be found in General Electric's report GECR 4352-2 dated May 1965, titled, "Environmental Exposure of Materials at the Dresden Nuclear Power Station."

6. Containment

The licensee has performed local leak rate penetration tests at a pressure of 20 psig. The results, which are summarized below, have been extrapolated to 37 psig and are given in percentage of maximum allowable leakage limit of 0.5 weight percent per day.

Penetration	2/73	6/73
Ventilation exhaust valves	1.329*	--
Ventilation supply valves	0.226	--
Equipment lock	2.55	3.75
Escape lock	0.11	0
Personnel lock	0.198	0.388
Primary steam isolation valves	58.20*	--
Primary feedwater isolation valves	11.80*	--
Emergency condenser manheads	0.25*	--
Transfer tube cover	0.173*	--
16-foot bolted equipment cover	0.985	--
	75.83%	

* Results from last test in 1972

A full sphere leakage test (Type A) at 20 psig is scheduled to be performed during the October-December 1973 refueling outage.

7. ECCS

a. Unit 1 Diesel Fire Pump

On June 12, 1973, the Unit 1 diesel fire pump failed to start during a surveillance test of the fire protection system. Because the system, which feeds water to the Unit 1 core spray system, could not be repaired within 48 hours, the reactor was brought to cold shutdown on June 14, 1973. A review of the records showed that the licensee demonstrated that the Unit 2/3 diesel fire pump and associated motor operated valves were operable on June 12 and 13 as required by the Technical Specifications. The event was

reviewed by the SRB during its 495th meeting and reported to the Directorate of Licensing on June 21, 1973. As a result of the failure, the licensee replaced the old diesel engine with a Detroit Diesel Co., four cylinder, 115 HP at 1800 rpm prime mover. The licensee stated that the new diesel meets the National Fire Protection Association regulations and is accepted by the Underwriters Laboratory for fire protection service.

A test was conducted on July 18, 1973, which demonstrated that the new unit can pump the following volume at the noted discharge pressure:

800 gpm at 112 psig

1000 gpm at 104 psig

1100 gpm at 97 psig

The original diesel had a rating of 110 HP at 1760 rpm and in combination with the existing pump was capable of 1000 gpm at 100 psig. The inspector questioned why the test was performed approximately one month after the equipment had been installed and placed in service. The inspector noted that the Q. A. Manual Quality Requirement No. 11.0 states that test programs will be established to assure that design and performance criteria have been satisfied and that the test program will include tests following plant maintenance. It also states that the test procedure, data, and review, including acceptability of test results by a responsible person, will be documented. The licensee stated that a similar test had been performed following the prime mover installation, but had not been documented.

The licensee is presently changing its procedures to reflect the change in the diesel control panel.

b. Failure of Motor Operated Valves

On April 14, 1973, and July 14, 1973, the licensee experienced failures of core spray valve CS-17 to open during surveillance testing of the motor operated valves in the system. The problem has been identified to be caused by an improperly set limit switch on valve CS-16 which is interlocked electrically with CS-17 to ensure that CS-16 is closed before CS-17 is opened. The events were reviewed by the SRB at its 478th and 520th meetings and reported to Directorate of Licensing on May 5, 1973, and August 14, 1973. During the investigation the licensee noted that the local control panel for valve CS-17 was not interlocked with CS-16 and a modification is being processed to include the local panel in the interlock circuit. The licensee stated that local panels are seldom included in the interlock schemes for most systems.

The licensee is preparing a procedure which will include a number of checks to be made whenever a valve fails before the evidence is destroyed by the efforts made trying to make the system operable again.

On April 15, 1973, the capability of the emergency condenser was reduced when condensate return valve MO-101 failed to open. The valve motor had burned out. The event was reviewed by the SRB at its 470th meeting and reported to the Directorate of Licensing on April 24, 1973.

The burned out motor was replaced with supposedly a similar motor although the site records do not show what was used. The lack of such records is contrary to Administrative Procedure Q.C.P. 8-51.1/8-52.1, which requires that the second part of the two-part tag, attached to each safety related item, be attached to the work request for records and traceability. The failed motor is still at the site, four months after the licensee informed Licensing that it was to be forwarded to the Engineering Department for failure evaluation. The licensee stated it is awaiting instructions from its Engineering Department as to where to ship the motor for failure evaluation.

c. Equipment Availability History

A review of the maintenance records for some of the ECCS equipment appears to indicate that the following items have an excellent availability record.

(1) Post incident containment cooling pumps - no maintenance required in their approximately 13 years of standby service.

(2) Unit 2 diesel fire pump - no outages for maintenance. Starting batteries replaced December 1971.

(3) Unit 1 core spray pumps - no maintenance required during their first year in standby service.

d. Core Spray Pump 1C Controls

In response to a letter from the Directorate of Licensing, the licensee stated in letters dated May 15, 1973 and July 13, 1973, that signs would be placed on core spray pump 1C contractors 5A-2 and 6A-2 warning personnel that removal of either contactor would render the pump inoperable. The inspector noted that the signs had been made but had not been installed as of August 21, 1973. On August 23, 1973, the licensee informed the inspector that the signs had been permanently installed on that day.

e. Technical Specifications Surveillance Requirements

Item	T/S Requirement	Period Inspected	Results
Pump operability	Monthly	1/73-7/73	Satisfactory
Valve operability	Monthly	1/73-7/73	CS-11 failed 1/12 CS-17 failed 4/14 and 7/14
Operability of both Unit 1 screen wash pumps	Weekly	6/1/73-8/6/73	Satisfactory
Unit 1 diesel fire pump operability	Weekly	6/1/73-8/6/73	Satisfactory
Fire protection system motor operated valves operability	Weekly	5/1/73-7/8/73	Satisfactory
Unit 2/3 diesel fire pump operability	Weekly	5/1/73-7/8/73	Satisfactory
High sphere pressure	$\leq$ 2 psig	10/20/72, 4/13/73	Satisfactory. Set at approx. 1.5 psig
Low reactor v vel	$\geq$43' above	10/21/72	tory
Low steam drum water level	$\leq$ 12 $\pm$ 1"	10/23/72	Satisfactory
Post incident containment cooling pumps operability	--	1/73-8/73	Satisfactory. Test performed monthly
Post incident containment cooling valves operability	--	1/73-8/73	Satisfactory. Test performed monthly

8. Emergency Power

Diesel Generator

The licensee has installed an alarm which monitors the cooling jacket water temperature and annunciates on decreasing temperature at 110F. This alarm indirectly monitors the temperature of the diesel lube oil, since both the lube oil and the cooling water are continuously circulated through the unit, and should help prevent a recurrence of the diesel start failure due to low lube oil temperature which occured on January 5, 1972. This item is considered resolved.

UNITED STATES
ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE
REGION III
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A. RO Inspection Report No. 050-010/73-03

Transmittal Date : September 14, 1973

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B. RO Inquiry Report No. _____

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C. Incident Notification From: _____
(Licensee & Docket No. (or License No.)

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