

April 30, 1990

Docket No. 50-440

DISTRIBUTION:

<u>Docket Files</u>	NRC & Local PDRs
PDIII-3 r/f	JHannon
JZwolinski	PKreutzer
TColburn	OGC-WF1
DHagan	EJordan
PDIII-3 Gray	GHill(4)
WandaJones	JCalvo
ACRS(10)	GPA/PA
ARM/LFMB	

Mr. Alvin Kaplan, Vice President  
Nuclear Group  
The Cleveland Electric Illuminating  
Company  
10 Center Road  
Perry, Ohio 44081

Dear Mr. Kaplan:

SUBJECT: AMENDMENT NO. 27 TO FACILITY OPERATING LICENSE NO. NPF-58  
(TAC NO. 73105)

The Commission has issued the enclosed Amendment No. 27 to Facility Operating License No. NPF-58 for the Perry Nuclear Power Plant, Unit No. 1. This amendment revises the Technical Specifications to complete response to your application dated February 9, 1988.

This amendment modifies Table 4.8.1.1.2-1 of the Technical Specifications (TS) related to testing frequency of the Emergency Diesel Generators so as to allow returning to a regular monthly testing schedule from an increased test frequency when seven consecutive failure-free demands have been performed and the number of failures in the last 20 valid demands has been reduced to less than or equal to one regardless of which failure criteria in Table 4.8.1.1.2-1 have resulted in the increased testing frequency.

A copy of the Safety Evaluation is also enclosed. Notice of issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

/s/

Timothy G. Colburn, Sr. Project Manager  
Project Directorate III-3  
Division of Reactor Projects - III, IV, V  
& Special Projects  
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 27 to License No. NPF-58
2. Safety Evaluation

cc w/enclosures:  
See next page

Office: LA/PDIII-3  
Surname: PKreutzer  
Date: 4/18/90

*Rec*  
PM/PDIII-3  
TColburn/tg  
4/19/90

*mgr* *FR*  
PD/PDIII-3 SELB  
for JHannon FRosa  
4/19/90 4/20/90

*OGC-WF1*  
*Bath*  
4/23/90

*CP-1*  
*JFH*  
*1/11*

Mr. Alvin Kaplan  
The Cleveland Electric  
Illuminating Company

cc: Jay E. Silberg, Esq.  
Shaw, Pittman, Potts & Trowbridge  
2300 N Street, N.W.  
Washington, D.C. 20037

David E. Burke  
The Cleveland Electric  
Illuminating Company  
P.O. Box 5000  
Cleveland, Ohio 44101

Resident Inspector's Office  
U.S. Nuclear Regulatory Commission  
Parmly at Center Road  
Perry, Ohio 44081

Regional Administrator, Region III  
U.S. Nuclear Regulatory Commission  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137

Frank P. Weiss, Esq.  
Assistant Prosecuting Attorney  
105 Main Street  
Lake County Administration Center  
Painesville, Ohio 44077

Ms. Sue Hiatt  
OCRE Interim Representative  
8275 Munson  
Mentor, Ohio 44060

Terry J. Lodge, Esq.  
618 N. Michigan Street  
Suite 105  
Toledo, Ohio 43624

John G. Cardinal, Esq.  
Prosecuting Attorney  
Ashtabula County Courthouse  
Jefferson, Ohio 44047

Robert A. Newkirk  
Cleveland Electric  
Illuminating Company  
Perry Nuclear Power Plant  
P. O. Box 97 E-210  
Perry, Ohio 44081

Perry Nuclear Power Plant  
Unit 1

Mr. James W. Harris, Director  
Division of Power Generation  
Ohio Department of Industrial  
Relations  
P. O. Box 825  
Columbus, Ohio 43216

The Honorable Lawrence Logan  
Mayor, Village of Perry  
4203 Harper Street  
Perry, Ohio 44081

The Honorable Robert V. Orosz  
Mayor, Village of North Perry  
North Perry Village Hall  
4778 Lockwood Road  
North Perry Village, Ohio 44081

Attorney General  
Department of Attorney General  
30 East Broad Street  
Columbus, Ohio 43216

Radiological Health Program  
Ohio Department of Health  
1224 Kinnear Road  
Columbus, Ohio 43212

Ohio Environmental Protection  
Agency  
DERR--Compliance Unit  
PO Box 1049  
1800 Watermark Drive  
ATTN: Zack A. Clayton  
Columbus, Ohio 43266-0149

Mr. Phillip S. Haskell, Chairman  
Perry Township Board of Trustees  
Box 65  
4171 Main Street  
Perry, Ohio 44081

State of Ohio  
Public Utilities Commission  
180 East Broad Street  
Columbus, Ohio 43266-0573

Michael D. Lyster  
Cleveland Electric  
Illuminating Company  
Perry Nuclear Power Plant  
P. O. Box 97 SB306  
Perry, Ohio 44081



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY, ET AL.

DOCKET NO. 50-440

PERRY NUCLEAR POWER PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 27  
License No. NPF-58

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by The Cleveland Electric Illuminating Company, Duquesne Light Company, Ohio Edison Company, Pennsylvania Power Company, and Toledo Edison Company (the licensees) dated February 9, 1988 complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-58 is hereby amended to read as follows:

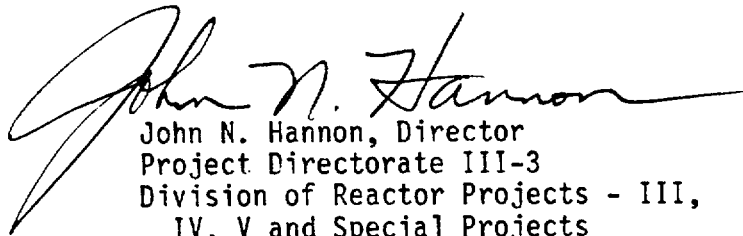
9005080340 900430  
PDR ADDCK 05000440  
P PIC

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 27 are hereby incorporated into this license. The Cleveland Electric Illuminating Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



John N. Hannon, Director  
Project Directorate III-3  
Division of Reactor Projects - III,  
IV, V and Special Projects  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: April 30, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 27

FACILITY OPERATING LICENSE NO. NPF-58

DOCKET NO. 50-440

Replace the following page of the Appendix "A" Technical Specifications with the attached page. The revised page is identified by amendment number and contains vertical lines indicating the area of change. The overleaf page is provided to maintain document completeness.

Remove

3/4 8-10

Insert

3/4 8-10

## ELECTRICAL POWER SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

---

- to standby operation, and (2) automatically energizes the emergency loads with offsite power.
12. Verifying that each fuel transfer pump transfers fuel from the fuel storage tank to the day tank of each diesel.
  13. Verifying that the automatic load sequence timers are OPERABLE with the interval between each load block within  $\pm 10\%$  of its design interval for diesel generators Div 1 and Div 2.
  14. Verifying that the following diesel generator lockout features prevent diesel generator starting only when required:
    - a. For diesel generators Div 1 and Div 2:
      - 1) Control room switch in pull-to-lock (with local/remote switch in remote).
      - 2) Local/remote switch in local
      - 3) Barring device engaged
      - 4) Inop/Normal switch in inop
    - b. For diesel generator Div 3:
      - 1) Emergency run/stop switch in stop
      - 2) Maintenance/auto/test switch in maintenance
- f. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting all three diesel generators simultaneously, during shutdown, and verifying that all three diesel generators accelerate to at least 441 rpm for diesel generators Div 1 and Div 2 and 882 rpm for diesel generator Div 3 in less than or equal to 10 seconds.
- g. At least once per 10 years by:
1. Draining each fuel oil storage tank, removing the accumulated sediment and cleaning the tank using a sodium hypochlorite or equivalent solution, and
  2. Performing a pressure test of those portions of the diesel fuel oil system designed to Section III, subsection ND of the ASME Code in accordance with ASME Code Section 11 Article IWD-5000.

4.8.1.1.3 Reports - All diesel generator failures, valid or non-valid, shall be reported to the Commission pursuant to Specification 6.9.2 within 30 days. Reports of diesel generator failures shall include the information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977. If the number of failures in the last 100 valid tests of any diesel generator is greater than or equal to seven, the report shall be supplemented to include the additional information recommended in Regulatory Position C.3.b of Regulatory Guide 1.108, Revision 1, August 1977.

TABLE 4.8.1.1.2-1

ML 1. 27  
 NPF-58  
 40

DIESEL GENERATOR TEST SCHEDULE

<u>Number of Failures in Last 20 Valid Tests*</u>	<u>Number of Failures in Last 100 Valid Tests*</u>	<u>Test Frequency</u>
≤ 1	≤ 4	Once per 31 days
≥ 2	≥ 5	Once per 7 days**

\*Criteria for determining number of failures and number of valid tests shall be in accordance with Regulatory Position C.2.e of Regulatory Guide 1.108, but determined on a per diesel generator basis.

For the purposes of determining the required test frequency, the previous test failure count may be reduced to zero if a complete diesel overhaul# to like-new condition is completed, provided that the overhaul including appropriate post-maintenance operation and testing, is specifically approved by the manufacturer and if acceptable reliability has been demonstrated. The reliability criterion shall be the successful completion of 14 consecutive tests in a single series. Ten of these tests shall be in accordance with the routine Surveillance Requirement 4.8.1.1.a.4 and 4.8.1.1.2.a.5, four tests, in accordance with the 184-day testing requirement of Surveillance Requirements 4.8.1.1.2.a.4 and 4.8.1.1.a.5. If this criterion is not satisfied during the first series of tests, any alternate criterion to be used to transvalue the failure count to zero requires NRC approval.

\*\*The test frequency shall be maintained until seven consecutive failure free demands have been performed and the number of failures in the last 20 valid demands has been reduced to less than or equal to one.

#A one-time waiver to the requirement for performance of a complete diesel generator overhaul to like-new condition has been granted in order to rezero four control air related diesel generator failures (valid failures Nos. 3 through 6 which occurred on 8/11/86, 2/27/87, 3/17/87 and 10/15/87 respectively).



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 27 TO FACILITY OPERATING LICENSE NO. NPF-58

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY, ET AL.

PERRY NUCLEAR POWER PLANT, UNIT NO. 1

DOCKET NO. 50-440

INTRODUCTION

By letter dated February 9, 1988, The Cleveland Electric Illuminating Company, Duquesne Light Company, Ohio Edison Company, Pennsylvania Power Company and Toledo Edison Company (the licensees) requested an amendment to Facility Operating License No. NPF-58 for the Perry Nuclear Power Plant, Unit No. 1. The proposed amendment would revise the criteria contained in the footnote to Table 4.8.1.1.2-1 of the Technical Specifications (TS) for rezeroing the failure count on previous tests of the diesel generators. It would also clarify the footnote concerning test frequency for the diesel generators in Table 4.8.1.1.2-1 and would modify the reporting requirements of TS 4.8.1.1.3 to be on a per-diesel-generator basis rather than a per-nuclear-unit basis.

All of the above items were granted by Amendment No. 12 to License No. NPF-58 dated May 18, 1988, except the clarification to the footnote of Table 4.8.1.1.2-1 of the TS concerning test frequency for the diesel generators. That portion of the requested amendment was held in abeyance pending further staff review. The NRC staff has now completed its review of that portion of the requested amendment.

DISCUSSION

TS Table 4.8.1.1.2-1, "Diesel Generator Test Schedule," is a table which defines test frequency of the individual diesel generators based on the number of valid failures in the last 20 and last 100 valid tests. A note to the table explains that for the case of 2 or more failures in the last 20 valid tests, the increased test frequency shall be maintained until 7 consecutive failure-free demands have been performed and the number of failures in the last 20 valid demands has been reduced to less than or equal to one. No such provision currently exists for exiting from the increased testing frequency requirements required when 5 or more failures occur in the last 100 valid tests. Thus, a diesel generator which experienced 5 or more failures in the last 100 valid tests could be required to maintain the increased testing frequency significantly longer than in the previous case after repairs had restored the diesel generator to its former reliability. The licensees'



proposed change merely seeks to use the same criteria for demonstration of restored reliability regardless of the circumstances which resulted in the increased testing frequency requirement.

On July 2, 1984, the staff issued Generic Letter 84-15 (G.L. 84-15) to all licensees of operating reactors, applicants for an operating license, and holders of construction permits. The intent of G.L. 84-15 was to provide licensees with guidance on improving diesel generator reliability by reducing the number of cold fast starts for diesel generators, obtaining diesel generator reliability data and attaining and maintaining a diesel generator reliability goal. Enclosure 1 to G.L. 84-15 described the basis for reducing cold fast starts and its resultant improvement in diesel generator reliability and also discussed the correlation between excessive diesel generator testing (other than cold fast starts) and its resultant degradation of diesel engines. This was primarily aimed at some older plants whose TS required testing of diesel generators each time subsystems of the emergency core cooling system became inoperable.

Enclosure 3 to G.L. 84-15 described an acceptable example of a performance program for attaining and maintaining diesel generator reliability above the threshold level of concern. It included increased surveillance frequency where previous testing indicated failure counts in excess of a specified value until restored reliability was demonstrated. It also considered disqualification and subsequent requalification of the diesel generator in accordance with a prescriptive testing program, including 7 consecutive successful demands without a failure within 30 days, and 14 successful consecutive demands within 75 days of the diesel generator being restored to operable status. Certain more restrictive criteria applied should a failure occur during the above testing.

While increased testing frequency was and still is determined by the staff to be an acceptable method to demonstrate restored reliability of the diesel generator, the discussions in Enclosure 1 to G.L. 84-15 regarding reduction of unnecessary testing and changes to the Standard TS as described in Appendix A of G.L. 84-15, such as changing the previous 3-day test frequency to 7 days, clearly indicate that unnecessary diesel generator testing should be avoided if other methods of demonstrating and/or restoring diesel generator reliability exist.

The licensees' proposal seeks to avoid the possibility of a situation occurring which would require continued diesel generator testing even after demonstration that reliability has been restored. Such testing is deemed by the licensees to be excessive and not in keeping with the intent of G.L. 84-15.

The staff's April 25, 1985 Safety Evaluation (SE) supporting issuance of Amendment No. 48 to the North Anna Unit 2 operating license discusses the reliability goals, the accelerated testing frequency and the incentives for engine overhaul and their relation to improvement in reliability. As stated in the SE, the original accelerated testing frequency for North Anna was based

upon number of failures in the last 100 starts. The expansion of the accelerated test frequency table to include the number of failures in the last 20 starts was to provide early indication (of 2 or more failures in the last 20 starts) of a .90 or lower reliability.

To enter accelerated testing at this point would provide a better sensitivity to the possibility of abrupt diesel generator degradation and provide a timely response. Increasing the test frequency would provide a faster accumulation of test data upon which to judge the reliability of the diesel. This additional data could then be used to distinguish between failures which occur close together simply due to random chance and such failures that are indicative of an abrupt decline in the actual reliability. The weekly test schedule would be continued until two conditions have been satisfied. First, seven consecutive successful tests have been accumulated. Second, the failures in the most recent 20 tests have been reduced to one. Seven successful tests indicate a reliability of at least 0.90/demand but at only the 50% confidence level. Continuing the accelerated testing until the number of failures is 1 out of 20 adds further assurance that the diesel generator has not degraded below the 0.90/demand level. This relaxation to the normal testing interval of once per 31 days upon satisfying the two conditions above was only applicable to the case where 2 or more failures occurred in the last 20 starts, not the case where 5 or more failures occurred in the last 100 starts.

Instead, the licensee for North Anna Unit 2 proposed an explicit direct incentive for the utility to take major corrective action on the diesel generator. If the licensee performs a thorough and comprehensive complete overhaul of the diesel that is approved by the manufacturer, the diesel would be rebuilt to like-new conditions. Following such an overhaul, the diesel would become operable after it successfully passed the appropriate surveillance tests one time. However, in return for the overhaul, the utility would receive the benefit of wiping the slate clean of all previous failures on that diesel generator if an acceptable reliability could be demonstrated. With "no previous failures" in the past 20 or 100 tests, the diesel generator would re-enter the test schedule at the monthly test frequency. Accelerated testing (weekly) would not become required until either 2 failures in 20 tests or 5 failures in 100 tests occur. In contrast, when one considers how long it could take to work back up the table after having a series of failures (i.e., many months and possibly years), the magnitude of this incentive becomes more obvious. However, an engine overhaul would focus on the internal components and therefore not necessarily address the statistically most prevalent failures.

In the staff's May 18, 1988 SE related to Amendment No. 12 to Facility Operating License No. NPF-58 for Perry Unit 1, the staff indicated that it was unable at that time to weigh the relative benefits of reducing what might become unnecessary tests of the diesel against the reduction in incentive to perform a complete overhaul of the diesel as a means to restore reliability. For Perry, the licensees proposed to address the exit condition for increased testing frequency in the case of 5 or more failures in the last 100 tests, by applying the same criteria as in the case of 2 or more failures in the last 20 tests.

The staff recognizes that periodic overhauls of the diesel are currently scheduled at Perry Unit 1 and that, as stated previously, complete overhauls of the diesel may not significantly contribute to a reduction of the most statistically prevalent failures which are not related to the internals of the engine. Further, as precedence has already been established for performing other than a complete overhaul to rezero test failures (by performing a partial overhaul) in Amendment 12, the reduction in incentive for performing a complete overhaul already exists. Therefore, after further consideration, the staff finds the licensees' proposed change to be acceptable.

#### ENVIRONMENTAL CONSIDERATION

This amendment involves a change to a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or a change to a surveillance requirement. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

#### CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: T. Colburn

Dated: April 30, 1990