

BEFORE THE

UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of :
: Docket Nos. 50-277
PHILADELPHIA ELECTRIC COMPANY : 50-278

APPLICATION FOR AMENDMENT
OF
FACILITY OPERATING LICENSES

DPR-44
DPR-56

Eugene J. Bradley
2301 Market Street
Philadelphia, Pennsylvania 19101

Attorney for
Philadelphia Electric Company

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Philadelphia Electric Company, Licensee under Facility Operating Licenses DPR-44 and DPR-56 for the Peach Bottom Atomic Power Station Unit No. 2 and Unit No. 3, respectively, hereby requests that the Technical Specifications contained in Appendix A of the Operating License be amended by revising pages 240h, 240o and 240q as indicated by vertical bars on the attached pages. The proposed changes reflect a modification (No. 2390) to the Diesel Generator Building Carbon Dioxide Fire Suppression (Cardox) System to correct design deficiencies. The design deficiencies created the potential for inadvertent diesel

generator trips, and were the subject of LER 2-87-28 (Revision 2 dated August 1, 1988). Licensee respectfully requests that the License Amendment requested herein be issued expeditiously because of the benefits that will be realized by the proposed improvements to the Diesel Generator Cardox System.

System Discussion:

There are four diesel generators at Peach Bottom common to Unit 2 and Unit 3. Each is housed in a separate room of the Diesel Generator Building (Seismic Class I). The fifth room of the Diesel Generator Building, the Cardox Room, houses the Cardox System carbon dioxide storage tank, refrigeration equipment, master selector valves and batteries that provide back up power to the Cardox control components. This room also contains pumps and fans unrelated to the Cardox System.

The original Cardox System was not classified as safety related or seismic. Yet, this system provides a trip signal to diesel generators upon Cardox actuation. This trip exists because each diesel generator engine draws combustion air from within its room. Consequently, in the event of a fire and carbon dioxide discharge into a diesel generator room, the diesel engine would draw in carbon dioxide. This could result in loss of the diesel due to suffocation of the engine, and reduction of the carbon dioxide concentration in the room to the point where the fire may not be extinguished.

A diesel generator is tripped by the Cardox System when the system actuates in its room. There are four combination fixed temperature and rate-of-rise heat detectors in each diesel room. Only one of the four heat detectors in the room need to actuate to initiate a Cardox discharge and diesel generator trip. This is not in conformance with the design. The FSAR and other design documents/drawings specify that two of the four detectors need to actuate to initiate the system; however, it was recently discovered that the installation is such that any one detector can initiate the system. A diesel generator is not affected by Cardox actuation in another diesel generator room. Automatic Cardox actuation and diesel generator trip signal is not blocked by indications of a Loss of Offsite Power, but is blocked by a Loss of Coolant Accident (LOCA) signal.

Discussion of Modification 2390 and
Proposed Technical Specification Changes:

Modification 2390 will eliminate the possibility of a common mode seismic-induced actuation of the Cardox system and/or diesel generator trips by replacing the current Cardox system controls and heat detectors with seismically qualified, safety related components. This will also reduce the probability of a spurious Cardox actuation and/or diesel generator trip due to Cardox component failure. The existing heat detectors, control cabinets, master selector valves, electro manual pilot valve cabinets, and push button stations will be replaced with seismically qualified safety related components. The diesel

generator Cardox actuation trip will be retained and the automatic actuation of Cardox will still be blocked by a LOCA signal.

The four heat detectors in each diesel generator room will be replaced with sixteen seismically qualified, safety related rate compensation heat detectors at eight locations, referred to as "zones", in each diesel generator room (two detectors in close proximity to each other at each location). The original type of heat detectors are not being installed because they are not available with seismic qualification. The increased number of detectors is necessary to comply with fire protection standards using the new type of detectors.

To activate a carbon dioxide discharge and trip the diesel generator, both detectors in any one zone must actuate. This two-detector scheme minimizes the possibility of inadvertent carbon dioxide system actuation due to a detector failure, but does not inhibit quick detection because the detectors in a zone will be located in close proximity to each other. The rate compensation heat detectors will be located in accordance with the requirements of National Fire Protection Association (NFPA) 72E, "Standard on Automatic Fire Detectors". The revised layout ensures that a fast developing fire will be quickly detected. A fast developing, high heat output fire is the most likely type to occur in a diesel room because the prominent combustibles in the rooms are oil and diesel fuel.

The electro-manual pilot valves will be located in accordance with the existing design criteria such that a fire in the Cardox room will not result in an inadvertent carbon dioxide discharge in the diesel generator rooms.

The replacement Cardox components will be supplied by the same manufacturer as the original system components. The components will be Underwriters Laboratories listed. Separate power feeds to each of the four diesel generator Cardox panels from the existing power distribution panel will be installed. The new Cardox control cabinets will use solid state logic and contain batteries for back-up power. The current batteries in the Cardox Room will be removed.

Licensee requests that the Technical Specifications be revised to reflect an increased number of detectors in each diesel generator room and the revised detection logic scheme. Currently, Limiting Condition for Operation (LCO) 3.14.B.3 requires that four heat detectors in each diesel generator room be operable when the diesel generators are required to be operable, but permits one of the four detectors to be inoperable for no more than seven days without compensatory measures. Licensee proposes to change LCO 3.14.B.3 such that it requires the sixteen new detectors (two in each of eight zones) to be operable when the diesel generators are required to be operable, except that one detector or both detectors in one zone of the eight zones may be inoperable for no more than seven days without compensatory measures. Also, Licensee proposes that Table 3.14.C.1 be revised to include the new detector numbers, and that

the Bases on page 240q be amended to clarify the minimum number of detectors required to be operable.

Safety Assessment:

Modification 2390 replaces non-safety related Cardox System components with safety related, seismically qualified components. The results of this modification will be increased availability of the diesel generators. Increasing diesel generator availability decreases the probability that reactor core damage would occur. The potential common mode failure of the diesel generators during a seismic event will be eliminated by making the Cardox System components safety related and seismic. Also, the potential for a spurious Cardox actuation and diesel generator trip will be minimized by restoring the logic to a two-detector scheme as the original design specifies (however more detectors will be used). Two detectors will have to actuate to initiate the system. Detectors will be located in eight locations, as compared to the current four locations.

The proposed LCO for the new heat detectors is at least as restrictive as the current LCO. Currently, if one of the four heat detectors in a room are inoperable for more than seven days, compensatory measures are required. Licensee is proposing that if one detector or both detectors in one zone of the eight zones in a room is inoperable, compensatory measures be required. With one pair in a room inoperable, the remaining seven pairs of detectors (fourteen detectors in total) provide at least as much

fire detection capability as three of the original four heat detectors.

Significant Hazards Consideration Determination:

The NRC has provided guidance concerning the application of the standards for determining whether license amendments involve significant hazards considerations. An example (51 FR 7751, example ix) of a change that does not involve a significant hazards consideration is restated below.

- (ix) A repair or replacement of a major component or system important to safety, if the following conditions are met:
 - (1) The repair or replacement process involves practices which have been successfully implemented at least once on similar components or systems elsewhere in the nuclear industry or in other industries, and does not involve a significant increase in the probability or consequences of an accident previously evaluated or create the possibility of a new or different kind of accident from any accident previously evaluated; and
 - (2) The repaired or replacement component or system does not result in a significant change in its safety function or a significant reduction in any safety limit (or limiting condition of operation) associated with the component or system.

In part, Modification 2390 conforms to this example (component reclassification and replacement) because 1) the Cardox System component replacement process involves design practices typical of the nuclear power industry and conforming to required fire protection standards; 2) the changes do not result in any significant changes in the functions of the Cardox System components; and 3) the changes do not reduce any safety limit or LCO, do not create the possibility of any new or different kind of accident, do not affect the probability of previously evaluated accidents, and are likely to reduce the consequences of previously evaluated accidents by improving diesel generator availability. These assertions are supported by previous discussions herein of Modification 2390 and by the significant hazards consideration determination below.

Modification 2390 and the associated Technical Specification changes proposed herein do not involve significant hazards considerations for the following reasons.

- i) The proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed changes will increase diesel generator availability by correcting diesel generator building Cardox System design deficiencies which created the possibility of unnecessary diesel generator trip signals and inadvertent Cardox actuations that could suffocate diesel engines. The availability of standby ac power

(in the event of loss of offsite power) is critical for mitigating the consequences of an accident. Previous licensing accident analyses assumed that systems which could trip the diesel generators were classified as safety related; thus, the proposed upgrades to the Cardox System will assure that the plant configuration is as assumed in previous analyses. Because the diesel generators are intended only to mitigate the consequences of an accident and have no impact on the probability of occurrence of an accident, the probability of an accident is not increased by the proposed changes. The design deficiencies will be corrected while maintaining or enhancing the level of fire protection. The proposed upgrades replace non-safety related non-seismic components with safety related seismically qualified components functionally similar to the original components. The new components will be subject to Quality Assurance controls as specified for safety related components to maintain a high level of reliability.

The intent of the proposed LCO for the new heat detectors is the same as the intent of the current LCO and is at least as conservative as the current LCO.

- ii) The proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed changes will increase the reliability of the Cardox System and consequently increase availability of the diesel generators, while satisfying applicable fire protection requirements. Modification 2390 does not affect any system other than the diesel generators and Cardox. Replacing the Cardox System components with safety related seismically qualified components and increasing the number of detectors does not create any accident precursors. The new components perform the same function as the original components.

The proposed LCO merely reflects the increased number of detectors and the two-out-of-sixteen logic without creating any new type of operating mode. Thus, the possibility of a new or different kind of accident will not be created.

- iii) The proposed revisions do not involve a significant reduction in a margin of safety.

The proposed changes restore margins of safety to the margins determined from previous analyses by correcting the design deficiencies while maintaining or enhancing the level of fire protection without adversely affecting any systems important to safety. Modification 2390 corrects design deficiencies that clearly had a negative effect on safety. The probability of an unnecessary diesel generator trip signal from the Cardox System or a spurious Cardox System discharge that could suffocate

the diesel engine will be reduced by making the Cardox components safety related and seismically qualified and restoring the logic to a two detector scheme.

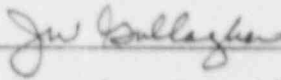
Environmental Impact:

An environmental impact assessment is not required for the changes proposed by this Application because the changes conform to the criteria for "actions eligible for categorical exclusion" as specified in 10 CFR 51.22(c)(9). The proposed changes do not involve any systems that have a direct relationship with the environment. Only the diesel generators and the Cardox System are involved. The carbon dioxide storage and refrigeration equipment will not be affected. The Application involves no significant hazards consideration as demonstrated in the preceding section. The Application involves no significant change in the types or significant increase in the amounts of any effluents that may be released offsite, and there is no significant increase in individual or cumulative occupational radiation exposure.

Conclusions:

The Plant Operations Review Committee and Nuclear Review Board have reviewed this License Amendment Application and concluded that neither an unreviewed safety question nor a significant hazards consideration is involved and that the proposed changes will not endanger the health or safety of the public.

Respectfully submitted,
PHILADELPHIA ELECTRIC COMPANY

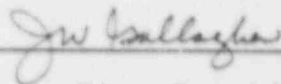


Vice President

COMMONWEALTH OF PENNSYLVANIA :
: SS.
COUNTY OF PHILADELPHIA :

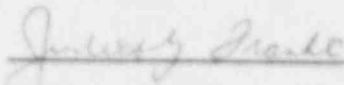
J. W. Gallagher, being first duly sworn, deposes and says:

That he is Vice President of Philadelphia Electric Company, the Applicant herein; that he has read the foregoing Application for Amendment of Facility Operating Licenses DPR-44 and DPR-56 which concerns the Diesel Generator Carbon Dioxide Fire Suppression System, and knows the contents thereof; and that the statements and matters set forth therein are true and correct to the best of his knowledge, information and belief.



Vice President

Subscribed and sworn to
before me this 30th day
of August, 1988



Notary Public

JUDITH Y. FRANKLIN
Notary Public, Phila., Phila. Co.
My Commission Expires July 28, 1991