

PHILADELPHIA ELECTRIC COMPANY

2301 MARKET STREET

P.O. BOX 8699

PHILADELPHIA, PA. 19101

(215) 841-5001

SHIELDS L. DALTROFF
VICE PRESIDENT
ELECTRIC PRODUCTION

November 15, 1984

Docket Nos. 50-277
50-278

Mr. Jonn F. Stolz, Chief
Operating Reactors Branch No. 4
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUBJECT: Emergency Diesel Generator Fuel Oil
Quality Technical Specification Changes

Reference: (1) Letter to E. G. Bauer, Jr., from
J. F. Stolz, dated September 14, 1984
(2) Application for Amendment of
Operating License Requesting Change
to Peach Bottom Technical Specification
Relating to the Emergency Diesel Generator
Fuel Oil System, filed October 1, 1981

Dear Mr. Stolz:

Your letter to E. G. Bauer, Jr., dated September 14, 1984, requested additional information on Philadelphia Electric Company's proposed Emergency Diesel Generator Fuel Oil Technical Specification Amendment. Philadelphia Electric Company, by phone conversation dated November 2, 1984 from W. M. Alden to Mr. Gerald A. Gears of your staff, requested that our response time to the above referenced letter be extended to 60 days. This extension was found acceptable by Mr. Gears. The information requested and our responses are listed below.

Request

- 1a. Provide detail justification to show that your proposed and/or current technical specifications will result in the maintenance of quality fuel oil stored in the fuel oil storage tanks as being equivalent to fuel oil that is sampled and analyzed in accordance with the guidelines of R.G. 1.137 Positions C.2.a through C.2.c.

8411200295 841115
PDR ADOCK 05000277
PDR

Adol

Response

The four diesel fuel oil storage tanks at Peach Bottom Atomic Power Station are sampled on a quarterly basis in accordance with ASTM D270-75 (Standard Method of Sampling Petroleum and Petroleum Products). The samples are sent to the Philadelphia Electric Company Chemistry Laboratory and are analyzed for all of the parameters listed in ASTM D975-77, Table 1 (Detailed Requirements for Diesel Fuel Oils). Peach Bottom Surveillance Test ST-8.1.7 controls the sampling and testing of the diesel fuel oil storage tanks. ST-8.1.7 is written in accordance with Regulatory Guide 1.137 (Fuel Oil Systems for Standby Diesel Generators) and is issued and performed once per quarter.

Prior to the addition of new fuel oil to the diesel storage tanks, two samples of fuel oil are obtained from the fuel oil delivery truck in accordance with ASTM D270-75. Sample #1 is immediately tested on-site for specific gravity, water and sediment, and viscosity. If any of the limits are exceeded for the on-site test for specific gravity, water and sediment, or viscosity, the fuel oil is returned to the supplier. Sample #2 is sent to the Philadelphia Electric Company Chemistry Laboratory and is analyzed for all of the parameters listed in ASTM D975-77, Table 1. Peach Bottom Surveillance Test ST-8.1.8 controls the sampling and testing of delivery truck fuel oil. ST-8.1.8 is written in accordance with Regulatory Guide 1.137 and is issued and performed for each delivery of diesel fuel oil.

ST-8.1.7 and ST-8.1.8 adequately sample and test diesel fuel oil in accordance with Regulatory Guide 1.137, Sections C.2.a through C.2.c.

Regulatory Guide 1.137, Position C.2.a, among other things, recommends that a diesel generator be declared inoperable if the normal storage tank oil for that diesel generator cannot meet the acceptance criteria for viscosity, or water and sediment as specified in ASTM D975-77, Table 1. The Peach Bottom Plant Operational Review Committee (PORC) reviewed this action statement and concluded that the intent of declaring a diesel generator inoperable can be met by removing the diesel oil storage tank with the suspected oil from service and supplying fuel oil to four diesels from the remaining three storage tanks. The minimum fuel oil volume requirements of the technical specifications can also be met in this configuration. Justification for this position is discussed in more detail in Responses 2a and 2b, below.

Our proposed diesel generator fuel oil Technical Specification 4.9.A.1.d stated the following:

- d. At least once per quarter, a sample of diesel fuel, taken from each main fuel tank in accordance with ASTM-D270-75, shall be checked for quality. The quality shall be within the acceptance limits specified in Table 1 of ASTM-D975-77 when checked for water, sediment and viscosity and logged. If the fuel quality is not within the acceptance limits, then that main fuel oil tank will be isolated from the system with the associated diesel being supplied by one of the remaining main fuel oil tanks.

This will be amended to delete the words, "when checked for water, sediment and viscosity". Presently, we test our diesel fuel oil stored in the four storage tanks for all of the parameters listed in ASTM D975-77, Table 1. By deleting these words from our proposed technical specification, the quarterly samples of diesel fuel oil will continue to be tested in accordance with Regulatory Guide 1.137.

Request

- 1b. Provide clarifications as to why positions C.2.d through C.2.f (removal of accumulated water from the fuel oil tanks and periodic fuel oil tank cleaning) were not included in your proposed technical specifications.

Response

Position C.2.d

In over ten years of diesel generator operation at Peach Bottom, encompassing over 2800 diesel generator surveillance tests, the fuel oil sampling program has not demonstrated any instances of degraded diesel generator operability or diesel generator failures associated with excessive amounts of water in the fuel oil.

The four storage tanks are sampled on a quarterly basis as described in Response 1a. In the event that the quarterly samples indicate excessive amounts of water in the fuel oil, the appropriate action by the station would be to remove the water from the affected tank. In addition, a review of the fuel oil sample analysis results over the last 3 years

indicates that the limit for water in the diesel fuel oil from the storage tanks has not been exceeded.

In light of the above information, Philadelphia Electric Company believes that draining the diesel generator fuel oil storage tanks of accumulated water on a routine basis, as recommended by Regulatory Guide 1.137, Section C.2.d, will not increase the reliability of the diesel generators at Peach Bottom since years of sampling have indicated that accumulated water is not a problem in the diesel fuel oil storage tanks.

Position C.2.e

The four diesel generators at Peach Bottom Atomic Power Station are tested on a weekly basis by running each diesel generator at rated load for one hour. At the completion of the hourly run, a one-liter sample is obtained from the base of the diesel generator day tank. The sample is visually checked for water. If water is present, an additional liter sample is obtained from the base of the day tank and visually checked for water. This process is repeated until no water is present in the sample. A portion of Peach Bottom Surveillance Test ST-8.1 specifies the sampling method described above. ST-8.1 is issued and performed once per week. This sampling is performed in accordance with Regulatory Guide 1.137, Section C.2.e.

Position C.2.f

Once every ten years, the four diesel generator fuel oil storage tanks are drained, any accumulated sediment is removed, and the tanks are cleaned using a sodium hypochlorite solution. Peach Bottom Surveillance Test ST-8.1.4A-D and Maintenance Procedure M-52.13 specify the frequency and method for cleaning the diesel generator fuel oil storage tanks. This cleaning is performed in accordance with Regulatory Guide 1.137, Section C.2.f. All four storage tanks were last drained and cleaned in May-June, 1981.

The effectiveness of the Technical Specifications is enhanced by limiting its scope to the essential operability and surveillance requirements. The benefit of limiting the volume of the Technical Specifications was acknowledged in

the NRC's proposed rule change to 10 CFR 50.36, published March 30, 1982. For this reason, and considering the effectiveness of existing plant procedures, it is not advantageous to incorporate the numerous routine preventive maintenance practices into the Technical Specifications.

Request

- 1c. If the operation of a diesel generator were to be required for a prolonged period resulting in the replenishment of fuel oil without interrupting operation of the diesel generator, what provisions have been made in the design of the fuel oil storage fill system and what operating procedures are in place to minimize the creation of turbulence of the sediment in the bottom of the storage tank? Stirring of this sediment during addition of new fuel appears to have the potential of causing the overall quality of the fuel to become unacceptable and could potentially lead to the degradation or failure of the diesel generator. Considering your system design, provide your intended mode of operation to preclude the above from occurring. (R.G. 1.137 Position C.2.g).

Response

Stirring of sediment during the addition of new fuel oil will not lead to the degradation or failure of the associated diesel generators. As shown on P&ID M-323, a basket strainer is provided on the fill connection to prevent solid particles or debris from entering the fuel oil storage tanks. In addition, a strainer is provided on each diesel oil transfer pump suction line to prevent solid particles or debris from entering the day tank. This is followed by a basket strainer on the suction of the engine-driven and D.C. motor-driven fuel oil pumps, and a duplex filter on the fuel oil pump discharge header. These latter two devices are equipped with differential pressure switches which will actuate alarms at the local control panel and the common diesel generator trouble alarm in the control room before the elements become clogged to the point where fuel oil flow is degraded.

In addition, the fuel oil transfer pump suction is taken approximately four inches from the bottom near one end of the tank. The fill nozzle is located at the opposite end of the tank and discharges through the top of the tank. This is nearly 43 feet horizontally and 12 feet vertically away from the suction line. Sediment will not be stirred when the tank is replenished because agitation of the fuel oil

would be limited to the area directly underneath the fill nozzle.

The combined effect of the strainers, the duplex filter and the tank configuration is such that sediment and turbulence is not a problem at Peach Bottom.

Request

- 2a. Provide an up-to-date fuel oil storage system piping diagram and describe how you comply with GDC-17 independence requirement for on-site ac power systems when operating four diesels from three storage tanks containing a minimum of 104,000 gallons of fuel.

Response

An up-to-date copy of the diesel generator fuel oil storage and transfer system P&ID (P&ID M-323) is provided as Attachment 1 to this response. As shown on this drawing, each of the four diesel generators is provided with a separate fuel oil storage tank, fuel oil day tank, and fuel oil transfer pump. Each fuel oil day tank can be filled from any of the storage tanks using any of the fuel oil transfer pumps. This provision was included in the design so that in the event of fuel oil contamination, or a fuel oil transfer pump failure, the maximum number of diesel generators will still be available to provide emergency power. In the event that unacceptable fuel oil is found in one main tank, PECO believes that the associated diesel generator can remain operable for the following reasons:

1. The associated diesel generator day tank has sufficient capacity to carry the diesel generator for approximately 2 1/2 hours without makeup from the fuel oil storage tank. Provided the unacceptable oil has not reached the day tank, this 2 1/2 hours allows sufficient time for the operators to provide makeup from an alternate fuel oil storage tank.
2. AC power to each diesel engine fuel oil transfer pump is provided by the emergency bus associated with that diesel. Fuel oil cross ties are available to provide suction to each of these independent pumps. This design ensures that the electrical independence required by GDC-17 is maintained should the operation of four diesels from three storage tanks be necessary.

3. PECO believes that declaring a diesel generator inoperable because of an extraneous problem in one of the fuel oil storage tanks is not consistent with the objective of maximizing the availability and reliability of the onsite emergency AC power system.
4. If a diesel generator is declared inoperable because of unacceptable fuel oil in the associated storage tank, then the plant would be required to operate under the existing Technical Specification requirements for three diesel generators in service. These require daily surveillance testing of the remaining diesel generators. This is not consistent with the intent of NRC Generic Letter 84-15, in which the reduction of extraneous diesel surveillance testing is one of the recurring themes for increasing diesel generator reliability.
5. The comprehensive fuel oil sampling and analysis program discussed in Response 1a will provide positive tracking of fuel oil quality in each of the four diesel fuel oil storage tanks. Thus, the station will be provided ample assurance that acceptable fuel oil is present in the remaining tanks, should one tank become unavailable.

In light of the above, we believe that the proposed Technical Specification change meets the intent of GDC-17, while still maximizing the reliability of the diesel generators and the entire standby onsite power system.

Request

- 2b. Describe and provide the results of an analysis to show how the minimum stored fuel of 104,000 gallons meets the technical specification requirement for operation of the four diesels for a period of seven days.

Response

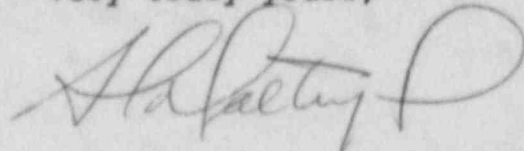
The existing Technical Specification limit for the minimum volume of on-site diesel fuel is in excess of the required amount of fuel oil needed to sustain full-load operation of three diesel generators for a seven day period. As discussed in Updated FSAR Section 8.5 and the Technical Specification Bases, three diesel generators will carry sufficient engineered safeguards equipment to ensure safe shutdown of both units, assuming a hypothetical design basis accident on one unit.

The 104,000 gallon minimum on-site fuel oil requirement is based on the full load operation of three diesel generators for seven days. Each diesel generator consumes approximately 200 gallons per hour at full load operation. Therefore, three diesel generators operating at full load for a period of seven days would consume approximately 100,800 gallons of fuel oil.

The total diesel generator fuel oil available on-site is monitored on a daily basis in Peach Bottom Surveillance Test ST-9.1.2Z. A flag point is established at 122,000 gallons total diesel generator fuel oil on-site. When this flag point is reached, the PECO Fuels Division is contacted to make arrangements for supplying additional fuel oil to the station. This flag point ensures that the total diesel generator fuel oil available on-site is maintained well above the minimum Technical Specification requirement of 104,000 gallons.

If you require further information, please do not hesitate to contact us.

Very truly yours,



Attachment

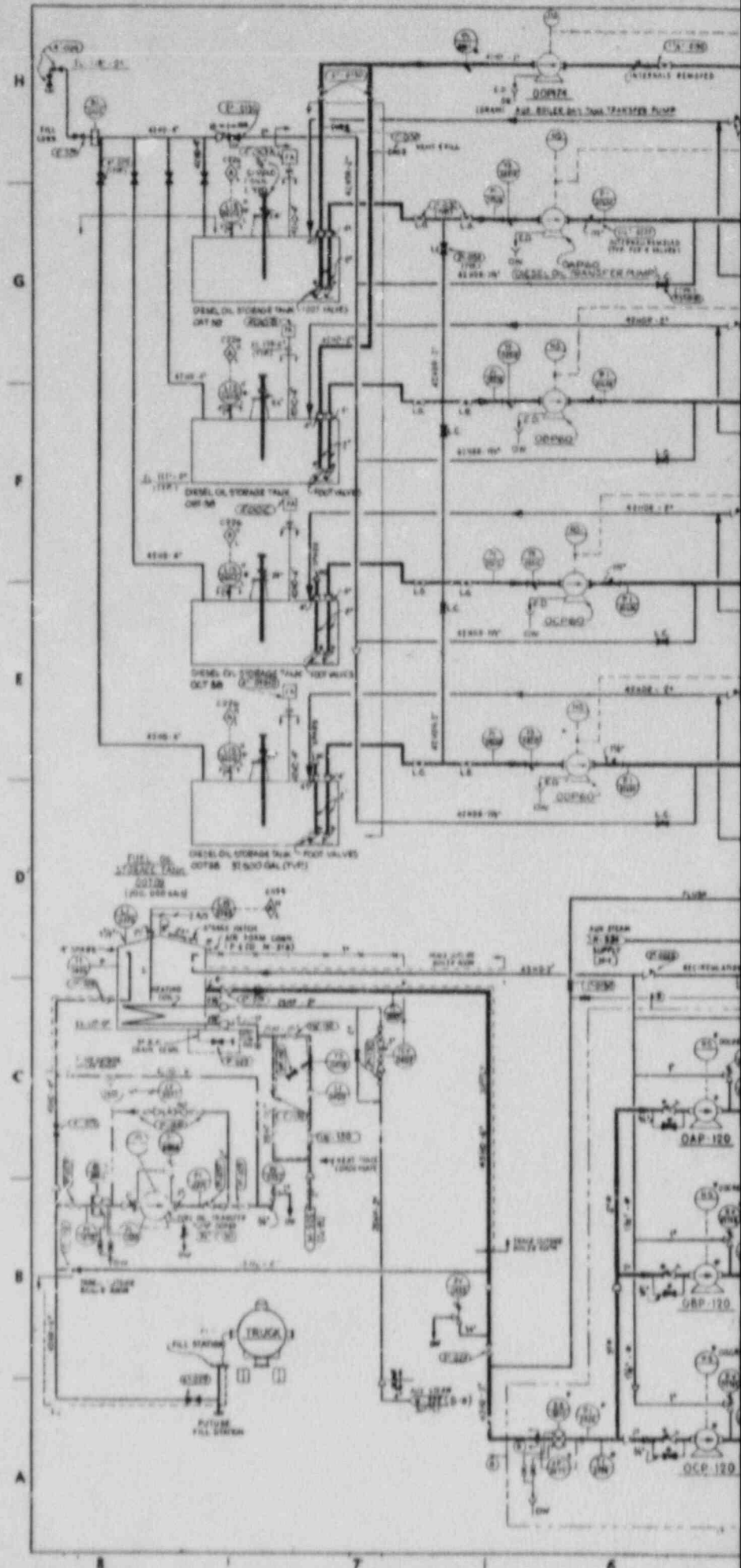
cc: A. R. Blough, Site Inspector
Document Control Desk

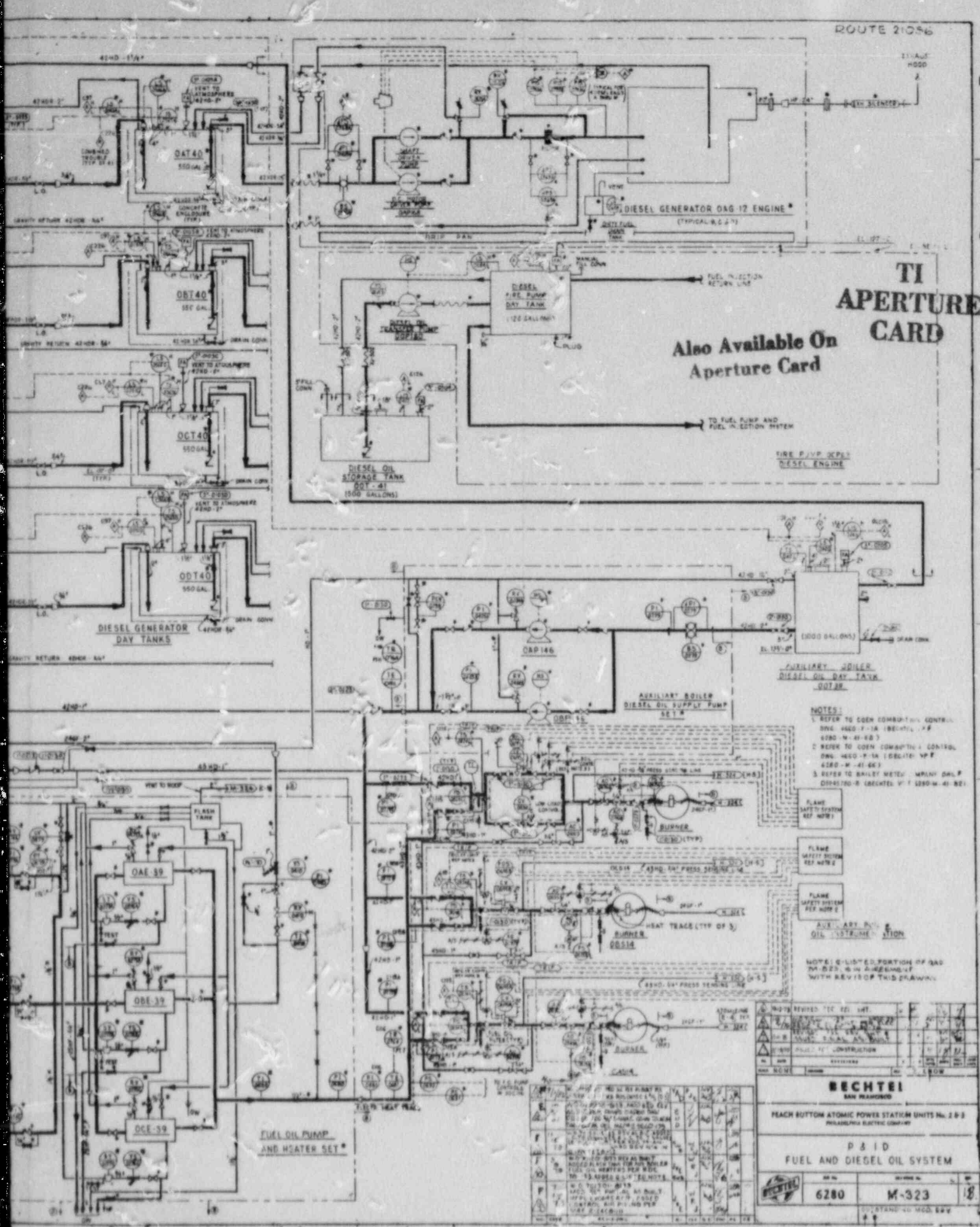
PHILADELPHIA ELECTRIC COMPANY
PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 AND 3
DOCKET NOS. 50-277 AND 50-278

ATTACHMENT 1
PIPING AND INSTRUMENT DRAWING M-323 REVISION 13

SUBMITTED TO
THE UNITED STATES NUCLEAR REGULATORY COMMISSION
AS PART OF
PECO RESPONSE TO NRC QUESTIONS CONCERNING
EMERGENCY DIESEL GENERATOR FUEL OIL QUALITY
TECHNICAL SPECIFICATION CHANGES

NOVEMBER 1984





ROUTE 21056

TI APERTURE CARD

Also Available On Aperture Card

- NOTES:**
1. REFER TO COEN CONTROL CONTROL Dwg. 4650-P-1A (REV. 11-77) 4580-M-41-803
 2. REFER TO COEN CONTROL CONTROL Dwg. 4650-P-1A (REV. 11-77) 4580-M-41-803
 3. REFER TO SKELLET METEOR. WINDMILL Dwg. 02040-10-R (REV. 11-77) 1250-M-41-801

- FLAME SAFETY SYSTEM SEE NOTE 1
 - FLAME SAFETY SYSTEM SEE NOTE 2
 - FLAME SAFETY SYSTEM SEE NOTE 3
 - AUXILIARY PUMP OIL STRAINATION
- NOTE: C-LISTED PORTION OF Dwg. 4650-P-1A (REV. 11-77) WITH REV. OF THIS DRAWING.

REVISED TO SEE Dwg.	DATE	BY	CHKD.
REVISED TO SEE Dwg.	11-77
REVISED TO SEE Dwg.
REVISED TO SEE Dwg.

BECHTEL
MAN PREPARED

PEACH BOTTOM ATOMIC POWER STATION UNITS No. 2 & 3
BECHTEL ELECTRIC COMPANY

P 3 I D
FUEL AND DIESEL OIL SYSTEM

DWG. NO.	6280	REV. NO.	M-323
DATE	...	BY	...

100-100000-1000-1000

NO.	DESCRIPTION	DATE	BY	CHKD.
1
2
3
4
5

8411200295-01