Mr. Harold R. Denton, Director
NRC Office of Nuclear Reactor Regulation
Washington, D.C. 20555

Box 186 Moylan, Pa. 19065
Re: Phila Elec. Limerick Gen. Sta
Docket No. 50-352, 353

2/25/85

Dear Mr. Denton,

This is a response to your letter of February 13, 1985. In answering our petition of 12/23/84, asking that NRC issue a show cause order on the revoking of the low power operating license issued to PECo on 10/26/84, you say that your preliminary review indicates that we have provided no new information to prompt such an order and that none of these matters requires the immediate action we requested, and you decline to take immediate action in response to our petition.

NECESSITY FOR IMMEDIATE ACTION TO REVOKE THE LICNESE.

We respectfully ask that you reconsider your decision not to issue a show cause order. Furthermore, we submit here additional information from the NRC records on Limerick systems, plant, and operation which demonstrate conclusively that the Limerick plant is deficient in vital safety equipment and procedures, is not in compliance with a number of essential NRC regulations, has had and a series of PECo personnel errors and supervisory lapses since the start of fuel loading, to the present, which demonstrate that PECo is not able at this time to operate the plant without continuing nuclear accident probabilities which threaten the health and safety of the public and PECo employees, and NRC staff.

SYSTEMATIC ASSESSMENT OF LICENSEE PERFORMANCE 12/1/83- 11/30/84 (Dated 1/14/85 NRC)

TABLE 3. Violations of NRC regulations, Severity Level IV = 16, Level V- 10= total 26

Since the start of fuel loading, in October, through Nov.'84 - 8 violations involving Startup Testing, Operational readiness, and Security.

There were a total of 22 Construction Deficiency Reports caused by Personnel error, Design error, Component error, and Construction error. (TABLE 1.)

page 10. "..performance in the area of preservice inspection was weaker than that in other construction areas." This weakness in preparation to operate is reinforced by:

p. 16: .." a summary of weaknesses identified at each exit meeting.." :
" 1. Additional training..needed...control room logic.."
2. Increased training..... manual scrams..
3. Additional training..area of fire fighting,..radiation monitoring..refueling..
4. An overal weakness..current simulator text materials.. "

PECO RESPONSE TO FOUR VIOLATIONS RECORDED IN NRC INSPECTION 84-65, 84-14 (2/11/85)

"TABLE 1.-CAUSES OF INCIDENTS." PECo classifies the Licensee Events which it reported from the start of fuel loading, 10/26/84 to 12/31/84, and the events from 1/1/85 to 1/31/85; 48 and 26 Events respectively, = 74 Total.

This is an average of one Event/ 1.35 Days - 10/26 to 12/31
/ 1.2 " 1/1 to 1/31/85

It appears that each of these Events had the potential to precipitate a nuclear accident, and the rate at which they are happening increased in January 1985.

Attach. p. 3 & 4 "Personnel Error= 27 ; Design..Deficiencey= 31 ; Procedure and Other Deficiencies = 16" Total = 74.

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The total of 74 Licensee Events in the 96 days since PECo started to load nuclear fuel to the end of January, constitutes a warning that PECO is not qualified to conduct the nuclear reaction process safely. One third of the Events were caused by personnel error and more than a third were caused by deficiencies in the plant. PECo appears unable to control the former category and many design deficiencies cannot be changed, it appears.

M.J.Cooney (PECo), App.A p. 1. expresses the company's concern but offers no specific plan of action to correct the errors. He merely says that PECo will " stress to employees that they must take sufficient time to properly evaluate and perform tasks independent of schedule needs. "

There appears to be no assurance that Findings on Violations B,C, and D, App.A,p.5-7 will not be repeated: operators starting recirculation pump without the required tests and verification, floor drain tank released to blowdown line, and restoring the Reactor Protection supply breakers without following the established procedures, and Violation A, p. 3,"disassembly and removal of required pipe whip restraints..".

REVIEW OF NRC INSPECTION REPORTS -SEPTEMBER 1984 to JANUARY 1985

NRC's SALP Report, 1/14/85, TABLE 3, p.3-5 records 12 Violations of NRC regulations through Report 84-68. Reports 85-01 and 85-08 add two more violations and one Deviation through 1/21/85.

These reports testify as to PECo's inability to operate the Limerick reactor safely. In addition to the violations there are a series of exceptions and deviations which remain open. We are not aware of any summary which closed out these open items, especially the ones required before initial criticality. Some of the inspectors' warnings about PECo's unsatisfactory operation follow:

Insp. 84-65 (1/11/85) p.1. " In addition I note that since the start of fuel load activities there have been several instances of problems which apparently have involved personnel errors.... they may be indicative of an adverse trend. "

84-70 (2/7/85) para 8. " .. shift turnover activities resulted in a very noisy and distracted period, principally due to the various work groups and other personnel not displaying the discipline that should be exercised in the control room."

85-01 (1/22/85) p.1. "... the problem with the two containment isolation valves resulted from a personnel error which occurred during the preoperational test program.... we are concerned that the error has gone undetected by both the Quality Assurance and plant testing programs. "

85-08 (2/1/85) p.1. " ..an error made by a licensed operator. This error was not detected and promptly corrected by the senior-licensed supervisors on shift. We are concerned about the apparent weakness in the controls exercised by these supervisors over licensed operator activities..."

84-65. M.J.Cooney to NRC (2/11/85, App.A. p.1. "PECo mamagement has also been concerned with the number of License Event Reports and suspected licensee event reports... "

It appears, also, that the NRC Commissioners have been aware of these errors since the issuance of a low power license to PECo. From transcript of 1/8/85 Commission meeting (p.35) " Commissioner Zech: My review of the Limerick performance during their low power testing indicates that they have been having some problems mainly due- it seems to me - in the area of personnel errors, perhaps a few more than we might expect."

OTHER DEFICIENCIES IN PLANT SAFETY BASED ON NRC INSPECTION EXCEPTIONS AND DEVIATIONS

Some of the predominant deficiencies carried as unresolved items in the Inspection Reports are summarized below. In this section and the following sections we attempt to make the connections between Limerick's deficient equipment and procedures which, in interaction with poorly trained personnel and questionable supervision, have combined to produce such an alarming series of licensee events, and which are headed in the direction of nuclear accidents if PECO is allowed to continue to operate the reactor under the current conditions.

We sense that the disjointed activities at Limerick under the low power license have been brought about largely by the lack of confidence of the personnel in their own training and the workability and safety of the plant. The dangerous operating and/maintenance mistakes have involved the control room, the reactor primary containment and the automatic safety systems. Testing and monitoring procedures and activity have afforded the setting for mistakes as well.

Inspection	Violations, exceptions, deviations	Plant location or System
84-53	cables	control room
84-57	Emergency ventilation .detectors . access doors solid, liquid, gas monitoring post accident standby gas treatment	" " reactor bldg.
84-66	sampling (16 unresolved items) Residual Heat Removal pump valves	" " "
84-64	Fuel bundle channel severely scratched in handling * 28 open test exceptions; 11 closed by PECo, no NRC review	refueling floor
	*(Also fuel bundle hit pool wall, 8/22/84. Insp. 84-43, 9/21/84, para.6.)	
84-65	equipment for habitability, unresolved personnel errors: pipe whip restraints, recirculating pump without required test, floor drain release, improper restoring service Loss of -20 VDC neutron monitoring	control room reactor building reactor protection
84- 70	ventilation 31 open test exceptions (practically the same items as 84-64, above.)	control room
84-72	equipment failure, emergency ventilation discrepancy, inboard and outboard valve isolation loss of -20VDC power, caused by technician shorting	control room reactor water cleanup reactor bldg.
85-01	testing, rework and inspection error wiring error in monitor relay. This necessitated verifying documentation for all secondary containment isolation for automatic closure from all isolation signals	containment isolation refueling area
85-08	operator error: both containment isolation valves rendered inoperable for seven minutes	reactor water cleanup

SAFETY EVALUATION REVIEW BEFORE INITIAL CRITICALITY

We have no indication that there was any summary or review of open inspection items, exceptions, violations or deviations which were required to be resolved before the # 1 reactor fission process was started on 12/22/84 and initial criticality reached. We have no assurance that the items in the inspection reports (above) to be which were resolved before initial criticality, were resolved, and that some of them still may be open at this time. Lacking the fulfillment of all requirements for criticality, we assert the reactor operation is not in compliance with NRC regulations and the low power license should be revoked immediately.

INEVITABILITY OF ERROR AND ACCIDENT IN THE LIMERICK NUCLEAR OPERATION

PECo's analysis of the causes of the incidents (potential accidents) at Limerick , from 10/26/84 to 1/31/85 , total = 74, (Cooney PECo response to NRC Insp. 84-65, 2/11/85 Attachment, p 3,4.) assigns 27 to Personnel Error, 31 to Design Manufacturing, Construction/Installation Deficiency, and 16 to Procedure Deficiency and Other Causes.

Under Personnel Error the general categories are:

Failure to follow procedure.rules,regulations	10
Failure to communicate,observe changing conditions,interpret information	8
Failure to perform required inspections/tests	5
Other Personnel Errors	4

We assume that many of these errors derive from the complexity of the plant and will continue to occur because the processes and equipment will never be successfully understood by the operators and maintenance workers. It should be noted that PECo's reliance on training at its Peach Bottom plant could cause false confidence since the difference in complexity of the two plants can make much of the experience not transferrable.

Under Design..Deficiencies there may be some factors which can be corrected or modified,but many of these deficiencies will continue to interact with,and augment personnel errors. They can continue to bring about employee disillusionment and carelessness.

Under Procedure Deficiencies and Other there are factors which can mislead employees,or subject them to blame for errors in observation or judgment. Here there is, also ,the potential for continued degrading of personnel morale.

The record of 74 incidents (potential accidents) in 96 days afford a measure of the design and construction deficiencies and the personnel errors. On closer examination they show that there is no cure and that the"incidents" will continue to accumulate as long as the deficiencies in plant and personnel persist in the present form.

There can be so solution without a revoking of the license and shutting down the reaction process,followed by a radical review of and correction of and replacement of all construction and procedure deficiencies. In addition there will have to be a re-defining and simplification of operating procedures with re-education and requalification of operators and supervisors.

For the present there is no way to overcome the deficiencies or to rebuild the ability of the personnel to function safely in an environment where they do not have confidence in the plant or their understanding of the process or their effectiveness to handle it. As examples of the factors which have undermined morale we cite the demoralizing effect on employees of :

22 unexpexpected automatic isolations during the first 75 days with fuel in the reactor,
10 incidents during surveillance tests, and
5 complete automatic shut downs of the reactor.

Repeated incidents have occured,isolating the control room because of the breaking of the tape on a monitor. LERs(84-06,08,10,20,28,33, 46)

Mysterious isolation of the reactor enclosure occured,apparently as the result of a monitor recording high winds outside the plant. (84-45, 85-5)

Automatic isolation of the Reactor Water Cleanup System resulted 6 times when operaters switched the monitor to "Read". (84-12,26,34,35,36 , 85-01)
To overcome this repeated malfunctioning the operators opened both inboard and outboard power breakers of the isolation valves for the reactor water cleanup system. This left the system for 7 minutes without isolation protection on 1/15/85,

in direct violation of NRC regulations.

Had the reactor been operating at higher power at the time of this incident there would have been the potential for release of considerable radioactivity to the building in case of a nuclear accident.(NRC Insp.85-08, dated 2/1/85 ,para.3.)

RELATIONSHIP OF INCIDENTS (LERs) TO LICENSE REQUIREMENTS AND EXEMPTIONS.

There are undoubtedly many causal connections between faulty construction and faulty procedures which we have not had time to relate to specific incidents, but the PECo letter(above) with Attachment,Table 2 sets forth the deficiencies under these categories: Inadequate application of design principles, Construction/installation error, Poor workmanship, Testing not facilitated by design, HVAC air balancing not performed.

Most of the 31 categories of design and construction deficiencies listed in Table 2 (above) have contributed to operating incidents and will accelerate to more serious safety breaches if PECo is allowed to continue operation of the reactor.

We further find that NRC must be held responsible for the lack of review of all the surveillance tests required before initial criticality as set forth in License NPF 27 , 10/26/84, Attachment 1. There are 11 categories (para.1.) and 4 categories (para. 2.)

These tests are listed in Appendix B,(NRC Insp. 84-70, 2/7/85). Para 6. specifies a total of 120 surveillance tests required prior to initial criticality. In this inspection we find that the inspector reviewed only a sample, "12 selected completed surveillance (denoted by R in Appendix B)for specific compliance with the technical specifications and also reviewed seven selected procedures (denoted by P in the appendix).."

We are not aware of any certification that the remaining 101 surveillance tests were reviewed by NRC. In NRC Insp. 84-72, 1/21/85, Initial Criticality Preparation ,para. 6.1, there is this general statement : "All test exceptions designated as initial criticality items were satisfactorily resolved prior to commencing the reactor startup. " We have seen no record to substantiate that the requirements of Attachment 1 ,to License NPF 27, relating to tests and test exceptions were fulfilled prior to initial criticality.PECo and NRC are,therefore, not in compliance with NRC regulations and the public is being subjected to consequent risks because of deficient safety facilities and protections . The license should be revoked.

The connections with incomplete tests,exceptions,violations and unresolved safety items show up in the record of incidents through 1/10/85. There are 10 connected with the control room, 9 connected with the reactor enclosure, and 11 connected with reactor water cleanup system. The exemptions improperly granted in LicenseNPF 27 also make these areas more vulnerable : remote control panel missing for the control room; incomplete isolation protection for the hydrogen recombiner, deferred inspection of airlock doors, and absence of standby gas treatment to the refueling floor for the reactor enclosure.

FURTHER UNCERTAINTY OVER DESIGN AND CONSTRUCTION.

The Independent Design Review of the Limerick No 1 Core Spray System,commissioned by PECo and completed by Torrey Pines Technology in November 1984, concludes that the system was probably constructed and will function as planned. There are two disturbing features,however, which cast a cloud over the design work at Limerick done by G.E. and the planning and calculation for safety features by Bechtel Power Corp.

The G.E. design control program was missing 10 items for the Core Spray System design,needed to authenticate the design adequacy review. Despite G.E.'s attempt

at a"technical review"of the 10 items, we are not persuaded that the possibility of design flaws have been ruled out. This part of the Core Spray System is,therefore,suspect.(Torrey Pines Report, Vol. 2 p.29)More far reaching,however, is the uncertainty about other G.E. designs for Limerick of the same period in which a design adequacy review may be hampered by the lack of documentation of a G.E. design control program. We have not seen any documentation to warrant the Report's optimistic conclusion (p.29): "These procedures and description,coupled with affidavits....provided a high degree of assurance that all required reviews were performed and documented..."

The Limerick operating license should be revoked until proper verification of this aspect of G.E.'s design for equipment and systems has been completed.

The Torrey Pines study also brought to light serious flaws in the Limerick "plant safe shutdown capability following postulated breaks in the core spray line." (PFR's 2524-023 and 2524-024, p. 56) The study found errors in evaluating safe shutdown because of " (a) taking credit for instruments which could also be lost as a consequence of a line break; (b) taking credit for instruments which were not identified on the instrument list and not in the plant design; and (c) not assuming the worst case single active failure with the line break."

The study discovered that these errors applied to theAutomatic Depressurizing System,the Reactor Protection System and the Containment Isolation System as well as the Core Spray System, but concluded :"Determining the impact of these various errors would have required a knowledge of all plant systems and components..."

The Torrey Pines study was not authorized to make a design adequacy review of any of the safety systems for safe shut down , except the Core Spray System. The warning in its report,however, should have caused NRC to stop PECo from bringing the reactor to initial criticality, and should have suspended the license since the safe shutdown capability was thrown into question because of the"errors and inconsistencies in the analysis that was used to show plant safe shutdown.."(p.56 The conclusive evidence was:

.." Because Torrey Pines (TPT) was unable to assess the impact of these errors,and because the repetitive nature of the errors suggested that other errors might occur, the two PFRs were classified as findings. "

The corrective action proposed by PECo (p.56) " safety evaluation calculations associated with jet impingement " does not address Torrey Pines questions about "all plant systems and components" and " taking credit for instruments which could also be lost,..instruments... not in the plant design " and the other"errors and inconsistencies" (p.56)

As a result of the Torrey Pines Report NRC should have insisted on a complete review of design and construction of all systems and components related to the plant safe shutdown capability before approving operating the reactor. This it must now require, and the license must be suspended during this process.

We believe that we have presented conclusive proof that PECo's present operation of the Limerick reactor is a threat to the safety and health of the public, PECo employees and the NRC Staff,and is not in compliance with the requirements of license NPF 27.

We urgently repeat our petition to NRC to immediately institute proceedings for the issuance of a show cause order why the NRC license issued to PECo to operate the No 1 reactor at limerick should not now be revoked.

cc: NRC LB,AB,Staff Counsel,Docketing Serv.
PECo, LEA, F.Romano,Others on Serv.List
Senator Arlen Specter,Sen. John Heinz
Congressmen Robert Edgar, Peter Kostmayer,
William Grey, Lawrence Coughlin

Respectfully yours,

Robert L. Anthony

Box 186 Moylan,Pa. 19065