UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION
HAROLD R. DENTON, DIRECTOR

In the Matter of	)	
	)	
PHILADELPHIA ELECTRIC COMPANY	)	Docket Nos. 50-352
(Limerick Nuclear Generating	)	and 50-353
Station, Units 1 & 2)	)	

DIRECTOR'S DECISION UNDER 10 CFR 2.206

By letter dated April 12, 1979, Frank Romano of Ambler, Pennsylvania, requested that the Commission investigate whether blasting at a quarry near the site of the Philadelphia Electric Company's (PECO) Limerick Generating Station has a deleterious effect on the site. Mr. Romano's letter has been treated as a request under 10 CFR 2.206 of the Commission's regulations. Notice of receipt of Mr. Romano's April 12th letter was published in the Federal Register 44 Fed. Reg. 33987 (June 13, 1979). In letters dated May 14 and June 12, 1979, Mr. Romano also raised concerns related to (1) concrete void/honeycomb in a structure at the Limerick facility, (2) the computer analysis used in the seismic design of safety-related piping, (3) the discovery of insufficient gaps between seismic Category I structures, and (4) a request for information from the NRC sent to PECO on April 14, 1978, regarding the design of safety-related components in the containment building. Mr. Romano requested that repair of concrete void/honeycomb be included in his request for an investigation of blasting near the Limerick site.

While the subject of the blasting was covered during the preparation of the Safety Evaluation Report on the preliminary design, it is not clear that two particular issues were adequately treated. One issue is whether the design

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ground motion adopted for the Limerick plant is adequate to envelop the spectra motion that includes the effect of blasting. The second issue is the potential for displacement along the faults under the facility due to the blasting. Before the Staff can affirm its previous conclusion that the nearby blasting would not have a detrimental effect on the facility, the Staff must investigate these matters.[1/]

Thus, I have determined that an investigation should be conducted of the effects of blasting at the quarry near the site of the Limerick facility. A geotechnical engineer was sent to the site area in May 1979 and discussed this concern with personnel from NRC's Office of Inspection and Enforcement. In addition the NRC staff has enlisted the assistance of technical experts from the U. S. Geological Survey.

The U. S. Geological Survey has been requested to evaluate the two specific items described above: (1) whether the present seismic design bases (ground motions) are adequate to account for the effects of the nearby blasting and (2) the likelihood that the nearby blasting will reactivate old faults at the site. The NRC staff requested that the U. S. Geological Survey complete its evaluation by December 31, 1979. However, completion by this date is dependent on the availability of U. S. Geological Survey reviewers and possible need for acquisition of required data from the applicant.

1/ In this respect the Staff disagrees with the applicant's position in this matter. In a letter of August 22, 1979, from its counsel, Troy B. Conner, Jr., the licensee stated that the record concerning the issuance of the construction permits indicated that the potential effects of blasting had been fully explored.

The other concerns expressed in Mr. Romano's April 12, 1979 letter relating to site geology, fracture zones and the adequacy of the foundations have been addressed in the Safety Evaluation Report issued in November 1971 and in the staff's evaluation of faulting in the excavation issued January 23, 1975. In these previous reviews of faulting at the Limerick site the staff concluded that (1) the faults were not capable faults and (2) the methods used to repair the fracture zones were acceptable. At this time I find no reason to alter these conclusions. In any event, review of the Limerick Final Safety Analysis Report will again consider these issues as part of our consideration of PECO's application for operating licenses.

I have determined that a further investigation of concrete void/honeycomb at the Limerick facility is not warranted at this time. Certain concrete void/honeycomb were discovered in the Unit No. 1 containment building while the structure was being built in 1976. These defects in the concrete were located in seven areas around the personnel air lock penetration and the control rod drive mechanism penetrations. The voids were caused in part by the congestion of reinforcing steel around these penetrations which made it difficult to place the concrete. The locations of the defects are listed in Enclosure 1 (IE Inspection Report No. 50-352/77-01). In repairing the containment wall, the defective concrete was removed; the steel reinforcing and sound concrete were left in the area.

The overriding criteria for repairing the concrete are proper placement and strength. Grout, a mixture of sand, water and cement, was the material chosen for the repairs. By design the grout did not contain coarse aggregates (stones) that are normally a part of concrete. The use of coarse aggregates

in concrete reduces the amount of cement required; this makes concrete a more economical building material when used in large quantities. However, the omission of the coarse aggregates enhances the grout's ability to penetrate the crevices in the surfaces to which the grout is applied. Also, the omission of the coarse aggregates does not lead to a material that has a lower compressive strength than that of the concrete used for the containment walls. To verify that the grout achieved the required compressive strength, test samples were made at the time of grout placement. The samples were allowed to cure and were subsequently tested by PECO. The compressive strength of the samples was equal to or greater than that required.

The NRC's Office of Inspection and Enforcement investigated the matter of the concrete void/honeycomb at the Limerick plant. Inspection personnel followed the matter from the discovery of the voids/honeycomb to the repair of the containment walls. The inspection efforts on this matter are documented in Inspection Reports 50-352/76-08, 50-352/76-09, 50-352/77-01 and 50-352/77-15, copies of which are enclosed as Enclosure 1. In summary, the Office of Inspection and Enforcement concluded that PECO's resolution of the problem was acceptable; therefore, I find that further investigation at this time is not warranted. Of course, should new information become available concerning additional honeycombing in concrete at the Limerick facility, the Commission will not hestitate to investigate such problems or take appropriate action to assure that such deficiencies, if any, are corrected.

Although specific action was not requested with respect to the other concerns raised by Mr. Romano in his letters, the remainder of this decision addresses those concerns. Each of these items involves matters subject to

either ongoing or future review by the NRC. The item regarding computer analysis and the seismic design of piping systems is the subject of IE Bulletin 79-14 (Enclosure 2). This bulletin requested that PECO, among other licensees, take certain actions and report the results to NRC within 120 days of the bulletin. PECO's response was submitted on August 1, 1979. In addition to PECO's response to the bulletin, we will review the seismic design of safety-related piping systems during our review of the Final Safety Analysis (FSAR) for the Limerick plant. We expect the FSAR to be submitted by PECO during the spring of 1980, and our review of that document will probably start shortly thereafter.

The NRC requested information on April 14, 1978, related to dynamic loads on the containment that were not explicitly considered with the seismic loads at the preliminary design stage. This request for additional information was sent out to all plants under construction that utilize the Mark II pressure suppression containment. The request is a part of our reassessment of the Mark II containment design which began in 1975. In 1975, new pool dynamic loads on the containment were discovered by General Electric (the originator of the Mark II containment). Our reassessment also covers the operation of safety/relief valves. Experience at several operating reactors with pressure suppression containment had shown that damage to wetwall interval structures occurred during steam blowdown through the safety/relief valves. This blowdown produces a dynamic load on components in or attached to the suppression pool. In the FSAR for the Limerick plant, PECO must show that the Limerick design can withstand the effects of combinations of seismic loads and each of the dynamic loads.

Mr. Romano's final concern dealt with the separation gaps between structures at the Limerick plant. In the Preliminary Safety Analysis Report (PSAR), PECO committed to make the separation gaps between seismic Category I structures twice the distance determined by seismic analysis of the structures. However, during construction PECO found that some of the separation gaps did not meet this commitment; PECO reported this matter to the NRC in compliance with 10 CFR 50.55(e). During PECO's study of this matter, a reanalysis of the seismic design was performed. As described in PECO's final report dated June 13, 1978, (Enclosure 3) this reanalysis included "realistic consideration of temperature and pressure transients; structural material and soil properties; soil-structure interaction; and structural and soil damping." Based on the reanalysis, PECO found that some of the gaps which would be unacceptable under the original analysis were acceptable; the balance of the insufficient gaps were increased to meet the PSAR commitment. Mr. Romano's May 14th letter suggested that the reanalysis to justify the as-built gaps resulted in an unacceptable removal of conservatism. This is not necessarily the case. When an applicant uses realistic or "as built" parameters, conservative analysis techniques, and factors of safety applied to the results of the analysis, an acceptable result can be obtained. Again, our review of the FSAR for the Limerick plant must conclude that the design of the plant is acceptable before the plant can go into operation.

A copy of this decision will be placed in the Commission's Public Document Room at 1717 H Street, N. W., Washington, D. C. 20555, and the local public document room for the Limerick Nuclear Generating Station at the Pottstown Public Library, 500 High Street, Pottstown, Pennsylvania 19464. A copy of

this decision will also be filed with the Secretary of the Commission for its review in accordance with 10 CFR 2.206(c) of the Commission's regulations.

As provided in 10 CFR 2.206(c) this decision will constitute the final action of the Commission 20 days after the date of issuance, unless the Commission on its own motion institutes review of this decision within that time.

FOR THE NUCLEAR REGULATORY COMMISSION,

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland
this 9th day of Oct, 1979

Enclosures:
1. IE Inspection Reports: 50-352/76-08, 76-09, 77-01 and 77-15
2. IE Bulletin 79-14 and Revision No. 1; Supplement Nos. 1 and 2
3. PECO Report (6/14/78)

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

PHILADELPHIA ELECTRIC COMPANY (Limerick Nuclear Generating Station, Units 1 and 2)	)	Docket Nos. 50-352 and 50-353 (10 CFR 2.206)

NOTICE OF ISSUANCE OF DIRECTOR'S DECISION
UNDER 10 CFR 2.206

By letter dated April 12, 1979, Frank Romano of Amber, Pennsylvania, requested that the Commission investigate the effects of blasting at a nearby quarry on the site of the Philadelphia Electric Company's Limerick Nuclear Generating Station. Notice of receipt of Mr. Romano's April 12th letter was published in the Federal Register, 44 Fed. Reg. 33987 (June 13, 1979). In letters dated May 14 and June 12, 1979, Mr. Romano raised additional concerns regarding the Limerick facility and further requested that repair of concrete voids in structures be investigated.

On review of the information presented by Mr. Romano, I have determined that the effects of blasting on the Limerick site should be conducted. Because deficiencies associated with concrete voids and their repair have been previously investigated and resolved, I have also determined that a further investigation into this matter is not warranted at this time.

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A copy of the decision in the matter will be placed in the Commission's Public Document Room at 1717 H Street, N. W., Washington, D. C. 20555 and in the local public document room for the Limerick Generating Station at the Pottstown Public Library, 500 High Street, Pottstown, Pennsylvania 19464.

Dated at Bethesda, Maryland
this 9th day of October, 1979

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