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STATEMENT OF CORDELL C. WILLIAMS

TO THE

SUBCOMMITTEE ON ENVIRONMENT, ENERGY, AND NATURAL RESOURCES

OF THE

COMMITTEE ON GOVERNMENT OPERATIONS

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Good Morning Mr. Chairman and other members of the Subcommittee.

It is a pleasure to appear before your Subcommittee this morning, to present testimony on the Nuclear Regulatory Commission (NRC) inspection activities at the Marble Hill Nuclear Facility. I am Cordell C. Williams, Construction Project Section Chief in the NRC Region III Office of Inspection and Enforcement, located in Glen Ellyn, Illinois.

My testimony has been prepared in response to the interests of the Subcommittee as set forth Mr. Chairman, in your letter to James G. Keppler, Director, Region III, Office of Inspection and Enforcement.

My testimony is divided into three sections: The first section provides you with historic construction milestones of the Marble Hill Plant Site. The second section summarizes the more significant NRC inspection findings beginning in the spring of 1979 when construction was approximately 19% complete for Unit 1 and 5% complete for Unit 2 and ending with the issuance of the NRC Confirmatory Order dated August 15, 1979, which in effect terminated all safety related construction activity at the site. The third section summarizes the major corrective actions which the licensee, Public Service of Indiana, must establish and implement before the NRC will permit construction activities to resume.

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## I - Construction Milestones

### A. Location and Description

The Marble Hill facility is located in southern Indiana immediately west of the Ohio River and approximately 10 miles south of Madison, Indiana. It will utilize two, four loop Westinghouse designed pressurized water reactors capable of producing a net electrical output of approximately 1130 megawatts each.

(Note: Show slides of the site)

### B. Marble Hill Construction Milestones and Related NRC Inspection

1. Initial, non safety related site preparation and construction was authorized by a Limited Work Authorization (LWA-1) issued by the NRC on August 24, 1977.
2. The Marble Hill Construction Permit was issued on April 4 1978.
3. During 1978, the NRC conducted ten (10) inspections involving approximately 422 man-hours of onsite inspection to monitor construction activities. Some noncompliances were identified, however, escalated enforcement actions were not considered necessary.

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4. Prior to April 1, 1979, the type and number of regulatory problems observed at this plant site were typical of those found at other construction sites.
5. Beginning in early April 1979 concerns for concrete quality were identified by our inspection program. A followup inspection in late April and early May identified recurring concrete quality problems which raised concerns about the effectiveness of the licensee's Quality Assurance program. Escalated enforcement action in the form of an Enforcement Conference was initiated by NRC Region III.
6. Between January 1979 and August 15, 1979 the date when all safety related construction was terminated, NRC conducted twelve (12) construction inspections and one (1) investigation involving in the aggregate approximately 1200 inspector hours on the plant site. These inspection activities resulted in the identification of eighteen (18) items of noncompliance. All of the noncompliances were identified since March 1979.

## II - Significant NRC Inspection Findings; 1979

- A. During an NRC inspection on April 3-6, 1979, noncompliances involving concrete placement, repair and inspection were identified by Region III inspectors. Seven separate issues of nonconforming activities dealing with civil and concrete work were highlighted. Included in these findings were technical deficiencies dealing with the inspection, identification,

tagging and proper repair of defective concrete (honeycombing). These activities are also the essential substance of the subsequent allegation of the possible criminal coverup of improper concrete repair currently being investigated by the Justice Department.

(Note: Show slides of honeycombing)

- B. During the NRC followup inspection dated April 30 through May 3, 1979, four (4) items of noncompliance were identified which included nine (9) examples of nonconforming civil or concrete construction activities, six (6) examples of which were repeats of the noncompliances identified during the previous inspection.

(Note: Show slides of rebar and preplacement areas)

- C. As a direct result of the above inspection findings related to concrete work, Region III conducted an Enforcement Conference with the President/Chief Executive officer and other senior staff of the utility. This meeting was held on May 15, 1979. The purpose of the meeting was to emphasize to the licensee that the noncompliances identified during the previous inspections were viewed as serious and that management action was needed to correct these problems and prevent their recurrence. Additionally, Region III instructed the licensee to test and evaluate selected volumes of in-place auxiliary building concrete, in order to provide confidence that no internal voids or honeycomb were present in the completed structure.

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It should be noted that the April and May inspections, which were conducted close together, and the related management meeting were planned actions intended to deal with the concrete problems on a timely basis.

At the time of the management meeting, Unit 1 was approximately 19% complete and Unit 2 was 5% complete.

- D. It is also important to note that on May 8, 1979, 7 days prior to the enforcement conference outline above, a construction craftsman employed by the site concrete contractor (G. K. Newberg), made a sworn statement to a public interest group (Save the Valley) alleging that (1) concrete repairs were improper, and (2) Newberg construction management was aware of these deficiencies and had covered-up these conditions. The construction craftsman making the allegations established with the public interest group that his sworn statement would not be released to anyone for 30 days so that he could resign and find other employment. Consequently the NRC did not become aware of these allegations until mid-June, 1979.
- E. On June 12, 1979, 28 days after the NRC May 15, 1979 Enforcement Conference with PSI, the attorney for the public interest group (Save the Valley) submitted allegations to the NRC in the form of a sworn statement by Mr. C. E. Cutshall, a former employee of the site concrete contractor, G. K. Newberg. Some of the problem areas identified in the allegations were already known through NRC's inspection program. However, the allegations suggested that the extent of the improper concrete repair was considerably greater than that previously identified by the NRC inspectors.

- F. On June 21, 1979, PSI reported to Region III, that numerous defective concrete patches had been discovered as a result of their follow up on Mr. C. E. Cutshall's allegations which were released on June 12, 1979.
- G. On June 22, 1979, an NRC investigation of Mr. C. E. Cutshall's allegations was initiated at the plant site. Additional defective concrete repairs as well as other noncompliances were identified during this investigation. Prior to initiating the investigation attempts were made to contact Mr. C. E. Cutshall to obtain clarifying information relative to his sworn statement and to see if he had any additional information regarding quality problems at the site. The NRC commenced its investigation in parallel with attempts to meet with Mr. C. E. Cutshall.
- H. On June 26, 1979 Region III initiated another meeting with PSI management at the site to review initial investigation findings. Based on this meeting, PSI terminated concrete activities for safety related structures. PSI also agreed to initiate action to (1) perform non-destructive and destructive examination of in-place concrete, (2) identify and evaluate concrete repairs for adequacy, and (3) review its entire quality assurance program for site concrete activities. These actions were documented in an Immediate Action Letter issued by Region III on June 27, 1979.
- I. On June 27 through 29 and July 2 through 7, 1979, on-site inspections were conducted to followup PSI's resolution of the matters addressed

in the June 27, 1979, Immediate Action Letter. Based on the results of this inspection effort, Region III permitted the resumption of safety related concrete placement under the conditions outlined in a letter from Region III to PSI dated July 13, 1979. Fundamentally, the conditions required PSI to duplicate all Newberg inspection activities and to obtain NRC's concurrence prior to placement of safety related concrete. In addition, the licensee was told that the nondestructive evaluations of existing concrete should be accomplished expeditiously.

- J. On June 28, 1979, concurrent with NRC's investigation, two NRC staff members met with Congressman Deckard who informed them of the existence of additional allegations involving improper concrete testing activities. The broad areas of concern were incorporated into our special inspection effort. The specific documented allegations were later provided by Congressman Deckard to the Department of Justice on August 28, 1979. NRC is cooperating with the Department of Justice in the investigation of these matters.
  
- K. On July 7, 1979, Mr. C. E. Cutshall, was provided expenses by the NRC to come from Texas, his current residence, to the Marble Hill plant site to assist in the identification of the alleged nonconforming patches. Mr. Cutshall identified 19 patched areas of which he had personal knowledge. All but 1 of these proved to be defective upon destructive testing witnessed by the NRC.

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- L. Subsequent NRC inspections on July 9, through 27, 1979 of concrete preplacement and placement activities, which included 100% overview by NRC inspectors, identified additional noncompliances and weaknesses in the Quality Assurance and Quality Control program. As a result, on July 20, 1979, Region III initiated another meeting with PSI management at the site. Based on the observed ineffectiveness of PSI in directing Newberg to meet the quality requirements of the job, Region III concluded that safety related concrete work should be stopped again, PSI concurred in this assessment. A second Immediate Action Letter confirming this action was issued on July 23, 1979.
- M. On July 25, 1979, upon request of the NRC, the U.S. Army, Corp of Engineers, Waterways Experiment Station initiated an inspection of the concrete testing activities performed at the site. This independent inspection effort was initiated to followup on the general allegations learned through Congressman Deckard.
- N. On July 25, 1979, the NRC learned that an inspection conducted at Marble Hill by the National Board of Boiler and Pressure Vessel Inspectors on June 12 through 14, 1979, had identified numerous nonconformances in piping, materials qualification, certification documents, and the QA program. Recognizing that safety related piping was in the initial stages of construction (approximately 3% complete), this inspection effort by the National Board suggested that quality problems at the site were broader than just concrete work and appeared to corroborate NRC observations of unacceptable non-safety related work during an inspection on July 10 through 13, 1979.

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0. Based on the results of the NRC inspection and investigation findings relative to the lack of control over concrete work and confirmation of similar findings by the National Board, it was concluded that serious deficiencies existed in the management controls of the construction at the Marble Hill plant site.

On July 26, 27, and July 31 through August 3, 1979, a special inspection utilizing two supervisory and three senior inspectors was conducted by the NRC with the purpose of identifying the underlying causes of the nonconforming conditions identified to date.

Symptomatic deficiencies had been previously noted in the number, qualifications, and nuclear construction experience of personnel in the site organizations responsible for the management, Quality Assurance/Control, and engineering. This current effort focused on an assessment of the practical capability of these organizations, their method of operation and interfacing for controlling the construction activities.

As a result of this inspection effort, the NRC concluded that the implementation of the Marble Hill Quality Assurance Program for construction was not effective.

The principal causes of these adverse conditions and noncompliances were judged to be (1) insufficient management and management support, (2) insufficient number of key personnel, (3) insufficient technical qualification of personnel, and (4) insufficiently experienced personnel.

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On August 1, 1979, a PSI management representative at his request met with Region III representatives and was briefed on the findings of the NRC special inspection to date. He was told that the NRC's initial findings could result in the termination of all safety related work. On August 2, 1979, PSI informed Region III that a Stop Work Order was being issued for all safety related construction, to be effective on August 7, 1979. An Order confirming this suspension of construction was issued by the NRC Director of the Office of Inspection and Enforcement on August 15, 1979.

- P. On August 15, 1979, Region III conducted a meeting in the Region III regional offices with the licensee to discuss the specifics of the confirming Order.

### III Corrective Action Considerations

The NRC order identified the significant management shortcomings that were prevalent in the construction activities at the Marble Hill plant site. Before resumption of safety related construction is authorized, the Order requires the licensee to submit in writing under oath to the Director of Inspection and Enforcement a description of the licensee's revised Quality Assurance Program and of the steps taken to assure that safety related construction is conducted in accordance with the Commission's requirements. The Director must confirm in writing that reasonable assurance exists that safety related construction will be conducted in accordance with such requirements. In reaching this determination the NRC will consider among other things whether and the extent to which the licensee has:

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- A. Conducted a comprehensive management analysis of all organizations responsible for management of Marble Hill construction activity.
- B. Reorganized as necessary all such organizations to facilitate adequate control of construction activity.
- C. Provided an adequate number of qualified and experienced personnel at levels commensurate with the responsibility for all activities involving safety related work.
- D. Provided documented procedures and instructions which comprehensively address and facilitate the quality assurance and control of all safety related activities.
- E. Provided through rigorous demonstration and analysis, assurance that existing safety related structures meet quality and design requirements.
- F. Resolved all identified deficiencies and nonconformancies as documented by NRC and other jurisdictional authorities.

Confirmation by the Director may extend in whole or in part to the suspended construction activities.

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of

PUBLIC SERVICE COMPANY OF INDIANA  
(Marble Hill Nuclear Generating  
Station, Units 1 and 2)

Docket Nos. 50-546  
50-547

ORDER CONFIRMING SUSPENSION OF CONSTRUCTION

I

The Public Service Company of Indiana (PSI or licensee) is the holder of Construction Permits, Nos. CPPR-170 and CPPR-171, issued on April 4, 1978. These permits authorize in accordance with their provisions construction of the Marble Hill Nuclear Generating Station, Units 1 and 2. Over the past few months, serious problems have been identified at the Marble Hill facility concerning the adequacy of the licensee's quality assurance program and, in particular, the adequacy of concrete placement which requires escalated enforcement action.

II

As a result of an inspection conducted on April 3-6, 1979, a Notice of Violation was issued to the licensee on May 4, 1979. One item in the Notice identified noncompliance with Criterion X of Appendix B to 10 CFR Part 50 related to poor control of the quality of concrete placement activities at the site. During another inspection conducted on April 30 through May 3, 1979, additional items of noncompliance were identified. Another Notice of Violation was issued on May 29, 1979, which included an additional citation against Criterion X related to inadequate control of concrete placement activities as well as a citation against Criterion X of Appendix B to 10 CFR Part 50 on the basis of improper curing.

On June 12, 1979, Thomas Dattilo

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