

August 23, 1973



FLORIDA POWER & LIGHT COMPANY

Mr. John F. O'Leary, Director
Directorate of Licensing
U.S. Atomic Energy Commission
Washington, D. C. 20545

TURKEY POINT UNIT NO. 4
DOCKET NUMBER 50 - 251
ABNORMAL OCCURRENCE NO. 4-73-10
INSERTION OF PART LENGTH CONTROL RODS

Dear Mr. O'Leary:

I. INTRODUCTION

This report is submitted in accordance with Technical Specification 6.6.2.a for Turkey Point Unit No. 4, Operating License No. DPR-41. This Abnormal Occurrence Report No. 4-73-10 describes an abnormal occurrence which was identified on August 15, 1973. The Directorate of Regulatory Operations was notified on August 15, 1973.

II. DESCRIPTION OF OCCURRENCE

On August 15, 1973, in preparation for performing test number T-0201.12-ROD CONTROL CLUSTER ASSEMBLY PSEUDO EJECTION TEST AT 50% REACTOR POWER LEVEL, the part length control rods were inserted in No. 4 reactor core to a position 81 steps above the bottom of the core.

Changes to Turkey Point Unit Nos. 3 and 4 Technical Specifications prohibit the insertion of part length control rods during the first fuel cycle, except for low power physics tests and axial offset calibration tests performed below 75% of rated power. Therefore, the insertion of part length control rods for the performance of test number T-0201.12 is a violation of Technical Specification 3.2.1.e.

8304110060 730912
PDR ADDCK 05000251
S PDR

Mr. John F. O'Leary, Director

August 23, 1973

III. ANALYSIS OF THE OCCURRENCE

Turkey Point Unit No. 4 is still undergoing startup and power escalation tests which are performed to verify nuclear design predictions and specifications. Test number T-0201.12 was designed to verify nuclear design predictions of effects on core reactivity and power distribution when a rod control cluster assembly has been "ejected" from the controlling bank. A similar test was performed at approximately 5% reactor power level.

The procedure for test number T-0201.12 was identical to the test performed on No. 3 reactor to verify nuclear design predictions. However, No. 3 reactor test was completed before the Technical Specifications were changed to consider the effects of fuel densification and the procedure had not been reviewed to determine if the procedure conformed to the revised Technical Specifications.

IV. CORRECTIVE ACTION TO PREVENT RECURRENCE

Immediate corrective action was to withdraw the part length control rods from No. 4 reactor core.

The part length control rods have been placed under administrative control in accordance with Administrative Procedure 0103.5. This action will prevent inadvertent insertion of the part length control rods.

A knowledgeable plant staff member has been assigned the responsibility to review the impact of technical specification changes on procedures and to recommend changes to procedures as required by the revised technical specifications.

These actions will minimize the probability of a recurrence of this and similar incidents.

V. ANALYSIS AND EVALUATION OF SAFETY IMPLICATIONS OF THE OCCURRENCE

An evaluation of the results of analyses on the effects of fuel densification concluded that limitations on

Mr. John F. O'Leary, Director

August 23, 1973

operation of Turkey Point Unit Nos. 3 and 4 should be imposed. Accordingly, Technical Specifications were changed to provide for protection against the effects of fuel densification. These changes included limitations on the maximum reactor power level permitted, limitations on fuel residence time for Cycle 1, increased surveillance requirements to prevent operation with misaligned control rods, inoperable control rods, and control rod insertion below the insertion limit. In addition, insertion of part length control rods was prohibited during fuel Cycle 1 except for axial offset calibration tests below 75% rated power and low power physics tests.

The basis for prohibiting the use of part length control rods during fuel Cycle 1 is to provide for protection against potential adverse axial power distribution in the reactor core during normal operation and anticipated transients. Continued operation with part length rods inserted could result in excessive peak local power density or minimum DNBR. It was recognized that insertion of the part length control rods for short periods is necessary for axial offset calibration tests and to perform physics tests.

While the part length control rods were inserted in No. 4 reactor core the reactor was protected by increased operator surveillance of neutron monitors and flux difference indicators. If an abnormal power shape had developed, the operator would have withdrawn the part length control rods to protect the reactor against excessive axial power distribution in the reactor core.

In addition, while the part length control rods were inserted in No. 4 reactor core, the automatic reactor protection system was operable and would have initiated protective action if an abnormal power distribution had developed and the operator did not respond promptly to protect the reactor core.

Measured Nuclear Enthalpy Rise Hot Channel Factor and Total Heat Flux Hot Channel Factor at approximately 5% reactor power level were determined to be well within acceptable limits, with the part length control rods inserted to 81 steps above the bottom of the core. Extrapolation of this data to 50% reactor power level provides assurance that peaking factors with the part length control rods inserted to 81 steps from the bottom of the core were well within acceptable limits and the safe operation of the reactor was not adversely affected.

Mr. John F. O'Leary, Director

August 23, 1973

VI. CONCLUSIONS

- a. Insertion of part length control rods in preparation for performance of test number T-0201.12 violated Technical Specifications because the primary purpose of this test was not for axial offset calibration.
- b. This abnormal occurrence did not adversely affect the safe operation of Turkey Point Unit No. 4.
- c. Assignment of a knowledgeable staff member to review the impact of changes in Technical Specifications, plant procedures, and to recommend changes to these procedures to ensure conformance with the revised Technical Specifications will minimize or prevent recurrence of this and similar incidents.
- d. Placing the part length control rods under administrative control in accordance with Administrative Procedure No. 0103.5 will prevent inadvertent operation of the part length control rods.
- e. When the part length rods were inserted in No. 4 reactor core, the reactor was protected against adverse axial power distribution by increased operator surveillance and automatic actions of reactor protection system. Therefore, the safe operation of the reactor was not adversely affected.
- f. This abnormal occurrence did not present any danger to the public health and safety.

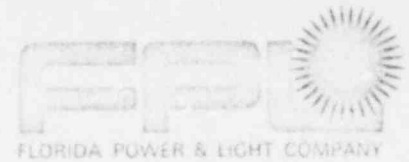
Very truly yours,



A. D. Schmidt
Director of Power Resources

ADS/JKH/AFH/VTC/bfs

cc: Mr. Norman C. Moseley, Director
Region II, Directorate of Regulatory Operations
U. S. Atomic Energy Commission
Suite 818, 230 Peachtree Street, N.W.
Atlanta, Georgia



August 23, 1973

Mr. John F. O'Leary, Director
Directorate of Licensing
U.S. Atomic Energy Commission
Washington, D. C. 20545

TURKEY POINT UNIT NO. 4
DOCKET NUMBER 50 - 251
ABNORMAL OCCURRENCE NO. 4-73-10
INSERTION OF PART LENGTH CONTROL RODS

Dear Mr. O'Leary:

I. INTRODUCTION

This report is submitted in accordance with Technical Specification 6.6.2.a for Turkey Point Unit No. 4, Operating License No. DPR-41. This Abnormal Occurrence Report No. 4-73-10 describes an abnormal occurrence which was identified on August 15, 1973. The Directorate of Regulatory Operations was notified on August 15, 1973.

II. DESCRIPTION OF OCCURRENCE

On August 15, 1973, in preparation for performing test number T-0201.12-ROD CONTROL CLUSTER ASSEMBLY PSEUDO EJECTION TEST AT 50% REACTOR POWER LEVEL, the part length control rods were inserted in No. 4 reactor core to a position 81 steps above the bottom of the core.

Changes to Turkey Point Unit Nos. 3 and 4 Technical Specifications prohibit the insertion of part length control rods during the first fuel cycle, except for low power physics tests and axial offset calibration tests performed below 75% of rated power. Therefore, the insertion of part length control rods for the performance of test number T-0201.12 is a violation of Technical Specification 3.2.1.e.

Dupe of

~~8304110060~~

COPY SENT REGION

6563

Mr. John F. O'Leary, Director

August 23, 1973

III. ANALYSIS OF THE OCCURRENCE

Turkey Point Unit No. 4 is still undergoing startup and power escalation tests which are performed to verify nuclear design predictions and specifications. Test number T-0201.12 was designed to verify nuclear design predictions of effects on core reactivity and power distribution when a rod control cluster assembly has been "ejected" from the controlling bank. A similar test was performed at approximately 5% reactor power level.

The procedure for test number T-0201.12 was identical to the test performed on No. 3 reactor to verify nuclear design predictions. However, No. 3 reactor test was completed before the Technical Specifications were changed to consider the effects of fuel densification and the procedure had not been reviewed to determine if the procedure conformed to the revised Technical Specifications.

IV. CORRECTIVE ACTION TO PREVENT RECURRENCE

Immediate corrective action was to withdraw the part length control rods from No. 4 reactor core.

The part length control rods have been placed under administrative control in accordance with Administrative Procedure 0103.5. This action will prevent inadvertent insertion of the part length control rods.

A knowledgeable plant staff member has been assigned the responsibility to review the impact of technical specification changes on procedures and to recommend changes to procedures as required by the revised technical specifications.

These actions will minimize the probability of a recurrence of this and similar incidents.

V. ANALYSIS AND EVALUATION OF SAFETY IMPLICATIONS OF THE OCCURRENCE

An evaluation of the results of analyses on the effects of fuel densification concluded that limitations on

Mr. John F. O'Leary, Director

August 23, 1973

operation of Turkey Point Unit Nos. 3 and 4 should be imposed. Accordingly, Technical Specifications were changed to provide for protection against the effects of fuel densification. These changes included limitations on the maximum reactor power level permitted, limitations on fuel residence time for Cycle 1, increased surveillance requirements to prevent operation with misaligned control rods, inoperable control rods, and control rod insertion below the insertion limit. In addition, insertion of part length control rods was prohibited during fuel Cycle 1 except for axial offset calibration tests below 75% rated power and low power physics tests.

The basis for prohibiting the use of part length control rods during fuel Cycle 1 is to provide for protection against potential adverse axial power distribution in the reactor core during normal operation and anticipated transients. Continued operation with part length rods inserted could result in excessive peak local power density or minimum DNBR. It was recognized that insertion of the part length control rods for short periods is necessary for axial offset calibration tests and to perform physics tests.

While the part length control rods were inserted in No. 4 reactor core the reactor was protected by increased operator surveillance of neutron monitors and flux difference indicators. If an abnormal power shape had developed, the operator would have withdrawn the part length control rods to protect the reactor against excessive axial power distribution in the reactor core.

In addition, while the part length control rods were inserted in No. 4 reactor core, the automatic reactor protection system was operable and would have initiated protective action if an abnormal power distribution had developed and the operator did not respond promptly to protect the reactor core.

Measured Nuclear Enthalpy Rise Hot Channel Factor and Total Heat Flux Hot Channel Factor at approximately 5% reactor power level were determined to be well within acceptable limits, with the part length control rods inserted to 81 steps above the bottom of the core. Extrapolation of this data to 50% reactor power level provides assurance that peaking factors with the part length control rods inserted to 81 steps from the bottom of the core were well within acceptable limits and the safe operation of the reactor was not adversely affected.

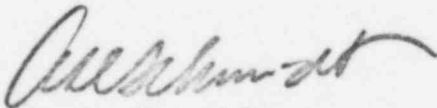
Mr. John F. O'Leary, Director

August 23, 1973

VI. CONCLUSIONS

- a. Insertion of part length control rods in preparation for performance of test number T-0201.12 violated Technical Specifications because the primary purpose of this test was not for axial offset calibration.
- b. This abnormal occurrence did not adversely affect the safe operation of Turkey Point Unit No. 4.
- c. Assignment of a knowledgeable staff member to review the impact of changes in Technical Specifications, plant procedures, and to recommend changes to these procedures to ensure conformance with the revised Technical Specifications will minimize or prevent recurrence of this and similar incidents.
- d. Placing the part length control rods under administrative control in accordance with Administrative Procedure No. 0103.5 will prevent inadvertent operation of the part length control rods.
- e. When the part length rods were inserted in No. 4 reactor core, the reactor was protected against adverse axial power distribution by increased operator surveillance and automatic actions of reactor protection system. Therefore, the safe operation of the reactor was not adversely affected.
- f. This abnormal occurrence did not present any danger to the public health and safety.

Very truly yours,



A. D. Schmidt
Director of Power Resources

ADS/JKH/AFH/VTC/bfs

cc: Mr. Norman C. Moseley, Director
Region II, Directorate of Regulatory Operations
U. S. Atomic Energy Commission
Suite 818, 230 Peachtree Street, N.W.
Atlanta, Georgia