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November 1, 1977

Docket No. 50-302

Florida Power Corporation  
ATTN: Mr. W. P. Stewart  
Director, Power Production  
P. O. Box 14042, Mail Stop C-4  
St. Petersburg, Florida 33733

Gentlemen:

The Commission has issued the enclosed Amendment No. 8 to Facility Operating License No. DPR-72 for the Crystal River Unit No. 3 Nuclear Generating Plant. The amendment consists of changes to the Technical Specifications in response to your proposed changes 2b through 2f submitted May 20, 1977.

This amendment revises various Technical Specifications to agree with actual plant conditions, clarify their intent and eliminate unnecessary requirements.

Copies of the related Safety Evaluation and the Notice of Issuance are also enclosed.

Sincerely,

Robert W. Reid, Chief  
Operating Reactors Branch #4  
Division of Operating Reactors

Enclosures:

1. Amendment No. 8
2. Safety Evaluation
3. Notice

cc w/enclosures:  
See next page

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OFFICE →	ORB#4:DOH	ORB#4:DOR	STB	OELD	C-ORB#4:DOR
SURNAME →	RIngram:dn	CNelson	<i>[Signature]</i>	<i>[Signature]</i>	RReid
DATE →	10/20/77	10/20/77	10/20/77	10/13/77	10/14/77

Florida Power Corporation

cc w/enclosures:

Mr. S. A. Brandimore  
Vice President and General Counsel  
P. O. Box 14042  
St. Petersburg, Florida 33733

Mr. Wilbur Langely, Chairman  
Board of County Commissioners  
Citrus County  
Iverness, Florida 36250

U. S. Environmental Protection Agency  
Region IV Office  
ATTN: EIS COORDINATOR  
345 Courtland Street, N.E.  
Atlanta, Georgia 30308

Chief, Energy Systems  
Analyses Branch (AW-459)  
Office of Radiation Programs  
U. S. Environmental Protection Agency  
Room 645, East Tower  
401 M Street, S.W.  
Washington, D.C. 20460

Crystal River Public Library  
Crystal River, Florida 32629

Bureau of Intergovernmental Relations  
660 Apalchee Parkway  
Tallahassee, Florida 32304



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

FLORIDA POWER CORPORATION  
CITY OF ALACHUA  
CITY OF BUSHNELL  
CITY OF GAINESVILLE  
CITY OF KISSIMMEE  
CITY OF LEESBURG  
CITY OF NEW SMYRNA BEACH AND UTILITIES COMMISSION, CITY OF NEW SMYRNA BEACH  
CITY OF OCALA  
ORLANDO UTILITIES COMMISSION AND CITY OF ORLANDO  
SEBRING UTILITIES COMMISSION  
SEMINOLE ELECTRIC COOPERATIVE, INC.  
CITY OF TALLAHASSEE

DOCKET NO. 50-302

CRYSTAL RIVER UNIT 3 NUCLEAR GENERATING PLANT  
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 8  
License No. DPR-72

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Florida Power Corporation, et al (the licensees) dated May 20, 1977, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

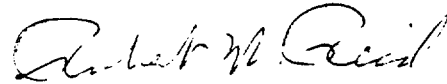
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-72 is hereby amended to read as follows:

2.C.(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 8, are hereby incorporated in the license. Florida Power Corporation shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert W. Reid, Chief  
Operating Reactors Branch #4  
Division of Operating Reactors

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: November 1, 1977

ATTACHMENT TO LICENSE AMENDMENT NO. 8

FACILITY OPERATING LICENSE NO. DPR-72

DOCKET NO. 50-302

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

Pages

3/4 1-16

3/4 3-35

3/4 3-36

3/4 3-38

3/4 7-19

3/4 9-2

REACTIVITY CONTROL SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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3. Verifying the concentrated boric acid storage system solution temperature when it is the source of borated water.
  - b. At least once per 24 hours by verifying the BWST temperature when it is the source of borated water and the outside air temperature is  $< 40^{\circ}\text{F}$ .

REACTIVITY CONTROL SYSTEMS

BORATED WATER SOURCES - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.9 Each of the following borated water sources shall be OPERABLE:

- a. The concentrated boric acid storage system and associated heat tracing with:
  - 1. A minimum contained borated water volume of 5000 gallons,
  - 2. Between 12,250 and 14,000 ppm of boron, and
  - 3. A minimum solution temperature of 105°F.
- b. The borated water storage tank (BWST) with:
  - 1. A contained borated water volume of between 415,200 and 449,000 gallons,
  - 2. Between 2270 and 2450 ppm of boron, and
  - 3. A minimum solution temperature of 40°F.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

- a. With the concentrated boric acid storage system inoperable, restore the storage system to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to a SHUTDOWN MARGIN equivalent to 1%  $\Delta k/k$  at 200°F within the next 6 hours; restore the concentrated boric acid storage system to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.
- b. With the borated water storage tank inoperable, restore the tank to OPERABLE status within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

TABLE 3.3-9

REMOTE SHUTDOWN MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>READOUT LOCATION</u>	<u>MEASUREMENT RANGE</u>	<u>MINIMUM CHANNELS OPERABLE</u>
1. Reactor Trip Breaker Indication	CRD switch gear room 124 foot elevation	open-close	1 per trip breaker and 1 per secondary trip breaker
2. Reactor Coolant Temperature - Th	4160ES-B switchgear room 108 foot elevation	520-620°F	1 per loop
3. Reactor Coolant Pressure	4160ES-B switchgear room 108 foot elevation	0-2500 psig	1
4. Pressurizer Level	4160ES-B switchgear room 108 Foot elevation	0-320" H <sub>2</sub> O	1
5. Steam Generator Pressure	4160ES-B switchgear room 108 foot elevation	0-1200 psig	1 per steam generator
6. Steam Generator Level	4160ES-B switchgear room 108 foot elevation	0-250" H <sub>2</sub> O	1 per steam generator
7. Decay Heat Removal Temperature	4160ES-B switchgear room 108 foot elevation	0-300°F	1 per cooler
8. Motor driven Emergency Feedwater Pressure	Intermediate Building 95 foot elevation	0-2000 psig	1 per pump
9. Nuclear Services Closed Cycle Cooling Pumps Discharge Pressure	Auxiliary Building 95 foot elevation	0-300 psig	1
10. Nuclear Services Closed Cycle Cooling Cooler Outlet Temperature	Auxiliary Building 95 foot elevation	0-250°F	1 per cooler



TABLE 4.3-6

REMOTE SHUTDOWN MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

<u>INSTRUMENT</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL CALIBRATION</u>
1. Reactor Trip Breaker Indication	M	N.A.
2. Reactor Coolant Temperature - Th	M	R
3. Reactor Coolant Pressure	M	R
4. Pressurizer Level	M	R
5. Steam Generator Level	M	R
6. Steam Generator Pressure	M	R
7. Decay Heat Removal Temperature	M	R
8. Motor Driven Emergency Feedwater Pressure	M	R
9. Nuclear Services Closed Cycle Cooling Pumps Discharge Pressure	M	R
10. Nuclear Services Closed Cycle Cooling Cooler Outlet Temperature	M	R

CRYSTAL RIVER - UNIT 3

3/4 3-36

Amendment No. 8

## INSTRUMENTATION

### POST-ACCIDENT INSTRUMENTATION

#### LIMITING CONDITION FOR OPERATION

---

3.3.3.6 The post-accident monitoring instrumentation channels shown in Table 3.3-10 shall be OPERABLE with readouts and recorders in the control room.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

- a. With the number of OPERABLE post-accident monitoring channels less than required by Table 3.3-10, either restore the inoperable channel to OPERABLE status within 30 days, or be in HOT SHUTDOWN within the next 12 hours.
- b. The provisions of Specification 3.0.4 are not applicable.

#### SURVEILLANCE REQUIREMENTS

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4.3.3.6 Each post-accident monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-7.

TABLE 3.3-10

POST-ACCIDENT MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>MEASUREMENT RANGE</u>	<u>MINIMUM CHANNELS OPERABLE</u>
1. Power Range Nuclear Flux	0-125%	2
2. Reactor Building Pressure	0-70 psia	2
3. Source Range Nuclear Flux	$10^{-1}$ to $10^6$ cps	2
4. Reactor Coolant Outlet Temperature	520-620°F	2 per loop
5. Reactor Coolant Total Flow	0-110% full flow	1
6. RC Loop Pressure	0-2500 psig 0-600 psig 1700-2500 psig	2 1 2
7. Pressurizer Level	0-320 inches	2
8. Steam Generator Outlet Pressure	0-1200 psig	2/steam generator
9. Steam Generator Operating Range Level	0-100%	2/steam generator
10. Borated Water Storage Tank Level	0-50 feet	2
11. Startup Feedwater Flow	0- $1.5 \times 10^6$ lb/hr.	2

PLANT SYSTEMS

3/4.7.6 FLOOD PROTECTION

LIMITING CONDITION FOR OPERATION

---

3.7.6.1 Flood protection shall be provided for all safety related systems, components and structures when:

- a. The water level of the Gulf of Mexico exceeds 98 feet Plant Datum, at the intake structure, and
- b. A Hurricane Warning is in effect.

APPLICABILITY: At all times.

ACTION:

With the water level at the intake structure above elevation 98 feet Plant Datum and with a Hurricane Warning in effect:

- a. Close all watertight doors providing flood protection for safety related systems, components and structures within 2 hours, and
- b. Be in at least HOT SHUTDOWN within 6 hours; be in at least COLD SHUTDOWN within the next 30 hours.

SURVEILLANCE REQUIREMENTS

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4.7.6.1.1 When a hurricane Watch or Warning is in effect, the water level at the intake structure shall be determined to be within the limit by:

- a. Measurement at least once per 12 hours when the water level is below elevation 92 feet Plant Datum,
- b. Measurement at least once per 4 hours when the water level is equal to or above elevation 92 feet Plant Datum, and
- c. Measurement at least once per 30 minutes when the water level is equal to or above elevation 94 feet Plant Datum.

4.7.6.1.2 Meteorological forecasts shall be obtained from the National Hurricane Center in Miami, Florida at least once per 2 hours when a Hurricane Warning is in effect.

## PLANT SYSTEMS

### 3/4.7.7 CONTROL ROOM EMERGENCY VENTILATION SYSTEM

#### LIMITING CONDITION FOR OPERATION

---

3.7.7.1 Two independent control room emergency ventilation systems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

#### ACTION:

With one control room emergency ventilation system inoperable, restore the inoperable system to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

#### SURVEILLANCE REQUIREMENTS

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4.7.7.1 Each control room emergency ventilation system shall be demonstrated OPERABLE:

- a. At least once per 12 hours by verifying that the control room air temperature is  $\leq 120^{\circ}\text{F}$ .
- b. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 15 minutes.
- c. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

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\*The air flow distribution test of Section 8 of ANSI N510-1975 may be performed downstream of the HEPA filters.

### 3/4.9 REFUELING OPERATIONS

#### BORON CONCENTRATION

#### LIMITING CONDITION FOR OPERATION

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3.9.1 With the reactor vessel head unbolted or removed, the boron concentration of all filled portions of the Reactor Coolant System and the refueling canal shall be maintained uniform and sufficient to ensure that the more restrictive of the following reactivity conditions is met:

- a. Either a  $K_{eff}$  of 0.95 or less, which includes a 1%  $\Delta k/k$  conservative allowance for uncertainties, or
- b. A boron concentration of  $\geq 1925$  ppm, which includes a 50 ppm conservative allowance for uncertainties.

APPLICABILITY: MODE 6\*.

#### ACTION:

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes, and initiate and continue boration at  $\geq 2700$  gpm of 2270 ppm boron solution or its equivalent until  $K_{eff}$  is reduced to  $< 0.95$  or the boron concentration is restored to  $> 1925$  ppm, whichever is the more restrictive. The provisions of Specification 3.0.3 are not applicable.

#### SURVEILLANCE REQUIREMENTS

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4.9.1.1 The more restrictive of the above two reactivity conditions shall be determined prior to:

- a. Removing or unbolting the reactor vessel head, and
- b. Withdrawal of any safety or regulating rod in excess of 3 feet from its fully inserted position.

4.9.1.2 The boron concentration of the reactor coolant system and the refueling canal shall be determined by chemical analysis at least once each 72 hours.

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\* The reactor shall be maintained in MODE 6 when the reactor vessel head is unbolted or removed.

REFUELING OPERATIONS

INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.9.2 As a minimum, the following instrumentation shall be OPERABLE:

- a. Two source range neutron flux monitors, each with visual indication in the control room and one with audible indication in the control room, and
- b. One auxiliary source range neutron flux monitor with audible indication in the containment or one source range neutron flux monitor with audible indication in the containment.

APPLICABILITY: MODE 6.

ACTION:

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.2 Each source range neutron flux monitor shall be demonstrated OPERABLE by performance of :

- a. A CHANNEL FUNCTIONAL TEST at least once per 7 days, and
- b. A CHANNEL FUNCTIONAL TEST within 8 hours prior to the initial start of CORE ALTERATIONS, and
- c. A CHANNEL CHECK at least once per 12 hours during CORE ALTERATIONS.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20545

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 8 TO LICENSE NO. DPR-72

FLORIDA POWER CORPORATION, ET AL

CRYSTAL RIVER UNIT 3 NUCLEAR GENERATING PLANT

DOCKET NO. 50-302

Introduction

By letter dated May 20, 1977, Florida Power Corporation (FPC) proposed changes to the Crystal River Unit No. 3 Technical Specifications to update administrative controls and to agree with actual plant conditions. This evaluation addresses all proposed changes except those dealing with administrative controls which were addressed in License Amendment No. 5 issued July 5, 1977.

Evaluation

1. The required minimum boron concentration in the boric acid storage system during operation is currently stated in Technical Specification 3.1.2.9.a.2 as 5000 gallons of 12,500 ppm boron. FPC states that this concentration is a typographical error and should be 12,250 ppm as it is for the shutdown condition. The Technical Specification Bases concerning this requirement indicates that 4,088 gallons of 12,250 ppm boric acid water will provide the necessary 1% shutdown margin following xenon decay and cooldown to 200°F. Furthermore, the required concentration as stated on page 15-39 of the CR-3 Final Safety Analysis Report (Proposed Technical Specifications) is 5000 gallons of 12,250 ppm boron. Therefore, we have determined that correction of this typographical error to require a minimum of 12,250 ppm boron is acceptable.
2. Technical Specification 3.3.3.5 currently requires that the decay heat closed cycle cooling (DHCCC) temperature instruments listed in Table 3.3-9 be operable for remote shutdown monitoring. Table 4.3-6 lists the surveillance requirements for these instruments. FPC has stated that it is the decay heat removal (DHR) temperature which should be monitored. Table 3.3-9 does currently list the correct readout location and measurement range



for the DHR temperature instruments and Table 4.3-6 lists the correct surveillance requirements. Since the CR-3 FSAR lists the DHR temperature instrument as required for remote shutdown monitoring we have determined that correction of Tables 3.3-9 and 4.3-6 to indicate this is acceptable.

3. Technical Specification 3.3.3.6, Table 3.3-10, Post-Accident Monitoring Instrumentation, presently lists two 0-500 psig reactor coolant (RC) loop pressure instrument channels as required to be operable. FPC has stated that this is an error and only one channel in the 0-600 psig range exists. While RC loop pressure is a desirable parameter to monitor during post accident conditions, the minimum operable number of channels required is based on actual plant design. Therefore, a change to Table 3.3-10 to indicate one 0-600 psig RC loop pressure instrument is acceptable.
4. The action statement of Technical Specification 3/4.7.6 (Flood Protection) currently requires that when water level exceeds a specified elevation, the reactor be in at least Hot Shutdown within 6 hours and Cold Shutdown within the next 30 hours. This would require going from Mode 6 (Refueling) conditions to Mode 5 (Cold Shutdown) within 36 hours if initially in Mode 6. FPC has requested that "at least" be added before "Cold Shutdown" to allow remaining in Mode 6. It is not the intent of this Specification to preclude operation in Mode 6 nor to require that the head be put on the reactor, and therefore, we find this change acceptable.
5. Technical Specification 3.9.2 currently requires an auxiliary source range neutron monitor which gives audible indication in containment during refueling. FPC has proposed a change which would permit, as an alternative, the use of one of the two source range monitors required to be operable in the control room to provide a more reliable audible signal in containment. The required redundancy of monitors would be maintained and the audible signal would be available to those inside containment, therefore, we find this change acceptable.

### Environmental Consideration

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

### Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: November 1, 1977

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-302

FLORIDA POWER CORPORATION

CITY OF ALACHUA

CITY OF BUSHNELL

CITY OF GAINESVILLE

CITY OF KISSIMMEE

CITY OF LEESBURG

CITY OF NEW SMYRNA BEACH AND UTILITIES COMMISSION, CITY OF NEW SMYRNA BEACH

CITY OF OCALA

ORLANDO UTILITIES COMMISSION AND CITY OF ORLANDO

SEBRING UTILITIES COMMISSION

SEMINOLE ELECTRIC COOPERATIVE, INC.

CITY OF TALLAHASSEE

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY  
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 8 to Facility Operating License No. DPR-72, issued to the Florida Power Corporation, City of Alachua, City of Bushnell, City of Gainesville, City of Kissimmee, City of Leesburg, City of New Smyrna Beach and Utilities Commission, City of New Smyrna Beach, City of Ocala, Orlando Utilities Commission and City of Orlando, Sebring Utilities Commission, Seminole Electric Cooperative, Inc., and the City of Tallahassee (the licensees) which revised Technical Specifications for operation of the Crystal River Unit No. 3 Nuclear Generating Plant located in Citrus County, Florida. The amendment is effective as of the date of issuance.

The amendment revises various Technical Specifications to agree with actual plant conditions, clarify their intent and eliminate unnecessary requirements.

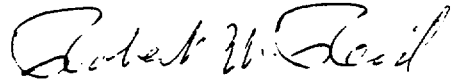
The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement, negative declaration or environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment dated May 20, 1977, (2) Amendment No. to License No. DPR-72, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C. and at the Crystal River Public Library, Crystal River, Florida. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 1st day of November 1977.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script, appearing to read "Robert W. Reid".

Robert W. Reid, Chief  
Operating Reactors Branch #4  
Division of Operating Reactors