May 19,1997

Mr. D. N. Morey
Vice President - Farley Project
Southern Nuclear Operating
Company, Inc.
Post Office Box 1295
Birmingham, Alabama 35201-1295

SUBJECT: ISSUANCE OF AMENDMENT - JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 1 (TAC NO. M98268)

Dear Mr. Morey:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 128 to Facility Operating License No. NPF-2 for the Joseph M. Farley Nuclear Plant, Unit 1. The amendment changes the Technical Specifications (TS) in response to your submittal dated March 25, 1997.

The amendment changes TS 3/4.4.9, "Specific Activity," and the associated Bases to reduce the limit associated with dose equivalent iodine-131. The steady-state dose equivalent iodine-131 limit would be reduced by 40 percent from 0.5 μCi/gram to 0.3 μCi/gram and the maximum instantaneous value would be reduced by 40 percent from 30 μCi/gram to 18 μCi/gram.

A copy of the related Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

ORIGINAL SIGNED BY:

Jacob I. Zimmerman, Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-348

Enclosures: 1. Amendment No. 128 to NPF-2
2. Safety Evaluation

cc w/encls: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

ALABAMA POWER COMPANY

DOCKET NO. 50-348

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 128
License No. NPF-2

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Southern Nuclear Operating Company, Inc. (Southern Nuclear), dated March 25, 1997, 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 license 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. NPF-2 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 128 , are hereby incorporated in the license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Peter S. Tam for

Herbert N. Berkow, Director
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 19, 1997

ATTACHMENT TO LICENSE AMENDMENT NO. 128

TO FACILITY OPERATING LICENSE NO. NPF-2

DOCKET NO. 50-348

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised areas are indicated by marginal lines.

Remove Pages	Insert Pages
3/4 4-23	3/4 4-23
3/4 4-24	3/4 4-24
3/4 4-25	3/4 4-25
3/4 4-26	3/4 4-26
B 3/4 4-5	B 3/4 4-5

3/4.4.9 SPECIFIC ACTIVITY

LIMITING CONDITION FOR OPERATION

3.4.9 The specific activity of the primary coolant shall be limited to:

a. Less than or equal to 0.3 microCurie per gram DOSE EQUIVALENT I-131;

b. Less than or equal to $100/\bar{E}$ microCurie per gram.

APPLICABILITY: MODES 1, 2, 3, 4, and 5

ACTION:

MODES 1, 2, and 3*:

a. With the specific activity of the primary coolant greater than 0.3 microCurie per gram DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval or exceeding the limit line shown on Figure 3.4-1, be in at least HOT STANDBY with T_{avg} less than 500°F within 6 hours.

b. With the specific activity of the primary coolant greater than $100/\bar{E}$ microCurie per gram, be in at least HOT STANDBY with T_{avg} less than 500°F within 6 hours.

* With T_{avg} greater than or equal to 500°F.

ACTION: (Continued)

MODES 1, 2, 3, 4, and 5:

a. With the specific activity of the primary coolant greater than 0.3 microCurie per gram DOSE EQUIVALENT I-131 or greater than $100/\overline{E}$ microCuries per gram, perform the sampling and analysis requirements of item 4a of Table 4.4-4 until the specific activity of the primary coolant is restored to within its limits.

SURVEILLANCE REQUIREMENTS

4.4.9 The specific activity of the primary coolant shall be determined to be within the limits by performance of the sampling and analysis program of Table 4.4-4.

TABLE 4.4-4

PRIMARY COOLANT SPECIFIC ACTIVITY SAMPLE AND ANALYSIS PROGRAM

	TYPE OF MEASUREMENT AND ANALYSIS	SAMPLE AND ANALYSIS FREQUENCY	MODES IN WHICH SAMPLE AND ANALYSIS REQUIRED
1.	Gross Activity Determination	At least once per 72 hours	1, 2, 3, 4
2.	Isotopic Analysis for DOSE EQUIVALENT I-131 Concentration	1 per 14 days	1
3.	Radiochemical for $\bar{E}$ Determination	1 per 6 months*	1
4.	Isotopic Analysis for Iodine Including I-131, I-133, and I-135	a) Once per 4 hours, whenever the specific activity exceeds 0.3 µCi/gram DOSE EQUIVALENT I-131 or $100/\bar{E}$ µCi/gram, and	1#, 2#, 3#, 4#, 5#
		b) One sample between 2 and 6 hours following a THERMAL POWER change exceeding 15 percent of the RATED THERMAL POWER within a one hour period.	1, 2, 3

Until the specific activity of the primary coolant system is restored within its limits.

* Sample to be taken after a minimum of 2 EFPD and 20 days of POWER OPERATION have elapsed since reactor was last subcritical for 48 hours or longer.

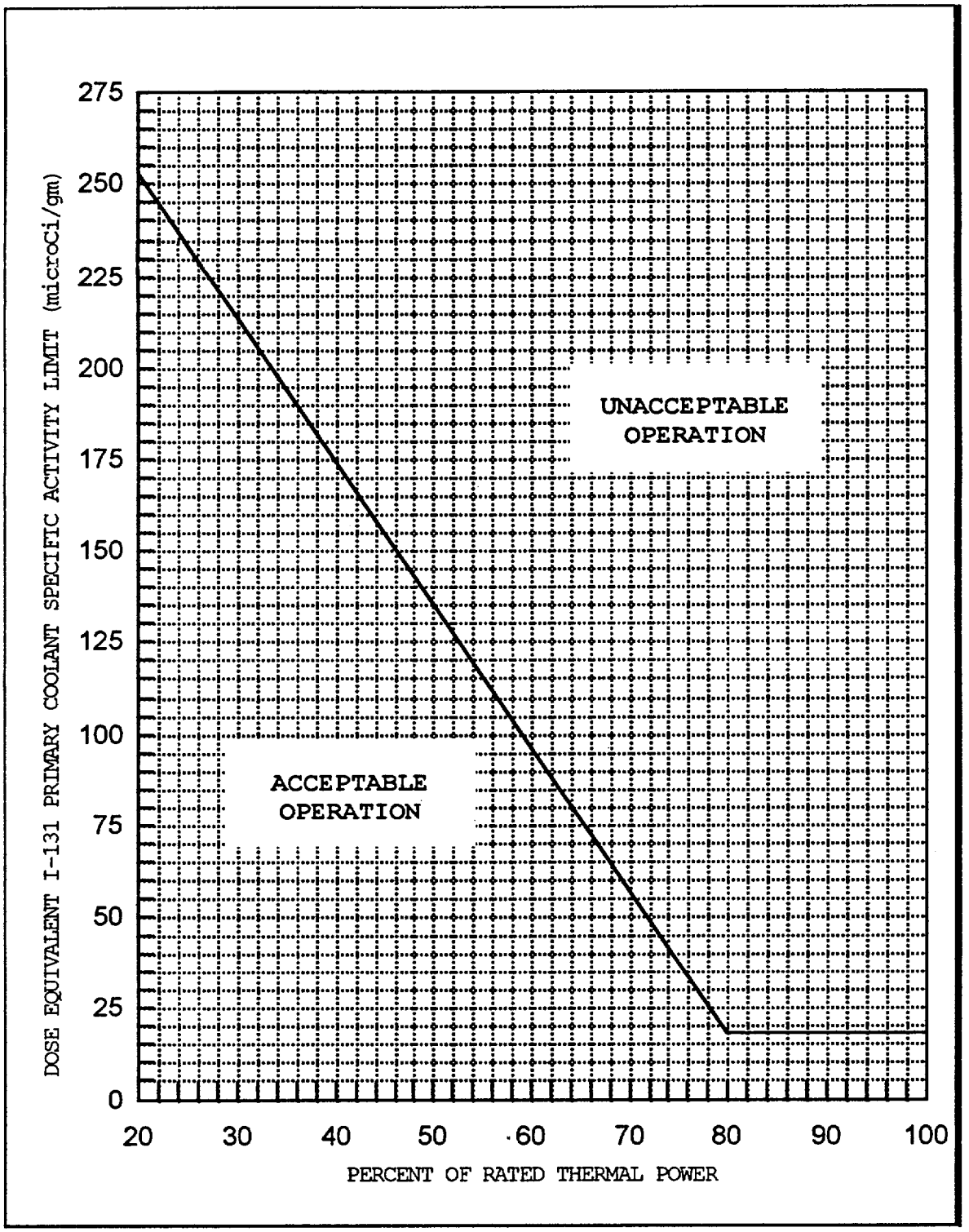

FIGURE 3.4-1

DOSE EQUIVALENT I-131 Primary Coolant Specific Activity Limit Versus Percent of RATED THERMAL POWER with the Primary Coolant Specific Activity > 0.3 μCi/gram Dose Equivalent I-131

3/4.4.8 CHEMISTRY

The limitations on Reactor Coolant System chemistry ensure that corrosion of the Reactor Coolant System is minimized and reduces the potential for Reactor Coolant System leakage or failure due to stress corrosion. Maintaining the chemistry within the Steady State Limits provides adequate corrosion protection to ensure the structural integrity of the Reactor Coolant System over the life of the plant. The associated effects of exceeding the oxygen, chloride, and fluoride limits are time and temperature dependent. Corrosion studies show that operation may be continued with contaminant concentration levels in excess of the Steady State Limits, up to the Transient Limits, for the specified limited time intervals without having a significant effect on the structural integrity of the Reactor Coolant System. The time interval permitting continued operation within the restrictions of the Transient Limits provides time for taking corrective actions to restore the contaminant concentrations to within the Steady State Limits.

The surveillance requirements provide adequate assurance that concentrations in excess of the limits will be detected in sufficient time to take corrective action.

3/4.4.9 SPECIFIC ACTIVITY

The limitations on the specific activity of the primary coolant ensure that the resulting 2 hour doses at the site boundary will not exceed an appropriately small fraction of Part 100 limits in the event of primary-to-secondary leakage as a result of a steamline break.

The ACTION statement permitting POWER OPERATION to continue for limited time periods with the primary coolant's specific activity greater than 0.3 microCuries/gram DOSE EQUIVALENT I-131, but within the allowable limit shown on Figure 3.4-1, accommodates possible iodine spiking phenomenon which may occur following changes in THERMAL POWER.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 128 TO FACILITY OPERATING LICENSE NO. NPF-2

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 1

DOCKET NOS. 50-348

1.0 INTRODUCTION

By letter dated December 26, 1996, Southern Nuclear Operating Company, Inc. (SNC) et al., submitted a technical specification (TS) amendment request for Farley Unit 1 for implementation of a voltage-based alternate repair criteria in accordance with Generic Letter 95-05. As part of this amendment request, SNC proposed to increase the allowable primary-to-secondary leakage induced by a main steamline break (MSLB) accident from a previously approved value of 11.4 gallons per minute (gpm) to 20 gpm. Subsequent discussions indicated that the dose results presented by SNC were inconsistent with the calculations performed by the staff. Consequently, the voltage-based repair criteria amendment was approved but without an increase in the allowable event induced primary-to-secondary leakage of 11.4 gpm. The staff indicated to SNC that if they wished to increase the allowable leakage limit to a value greater than the 11.4 gpm, then a revision to the TS for specific activity levels of dose equivalent ^{131}I would be required.

By letter dated March 25, 1997, SNC submitted a request for changes to the Joseph M. Farley Nuclear Plant, Unit 1, Technical Specifications (TS). The requested changes would revise TS 3/4.4.9, "Specific Activity," and the associated Bases to reduce the limit associated with dose equivalent iodine-131. The steady-state dose equivalent iodine-131 limit would be reduced by 40 percent from 0.5 μCi/gram to 0.3 μCi/gram and the maximum instantaneous value would be reduced by 40 percent from 30 μCi/gram to 18 μCi/gram.

2.0 Background

By letter dated June 4, 1992, SNC submitted an assessment of the radiological dose consequences of an MSLB accident. Based upon dose equivalent ^{131}I levels of 1 μCi/gram in primary coolant for the accident initiated spike case and 60 μCi/gram in primary coolant for the pre-existing spike case, SNC determined that the maximum allowable event induced leakage was 5.7 gpm. In its letter dated July 29, 1993, SNC proposed that the allowable levels for specific activity of dose equivalent ^{131}I for primary coolant be decreased by a factor of 4. Such a decrease would support a factor of 4 increase in the allowable MSLB induced primary-to-secondary leakage because SNC had concluded that the increased leakage would be offset by the reduced TS limits for dose equivalent ^{131}I. By letter dated April 5, 1994, the staff issued Amendment No. 106 to the Farley Unit 1 TSs, which reduced the allowable activity level of

dose equivalent ^{131}I to 0.25 μCi/gram for the 48-hour TS value and to 15 μCi/gram for the maximum instantaneous value. Associated with these primary coolant activity levels was an event induced allowable primary to secondary leakage rate of 22.8 gpm.

By letter dated May 31, 1995, SNC requested a TS amendment to increase the primary coolant activity levels for dose equivalent ^{131}I to 0.5 μCi/gram for the 48-hour value and to 30 μCi/gram for the maximum instantaneous value. Associated with this increase in coolant levels was a decrease in the allowable primary-to-secondary leakage induced by an MSLB. The acceptable value was now 11.4 gpm.

In its submittal dated December 26, 1996, SNC proposed to increase the allowable primary-to-secondary leakage induced by the MSLB to 20 gpm. No corresponding decrease in the allowable levels of primary coolant activity was proposed in this letter. The staff's confirmatory calculations showed that the dose consequences associated with this increased primary-to-secondary leak rate would be unacceptable without some corresponding decrease in the activity levels for dose equivalent ^{131}I. In a submittal dated March 25, 1997, SNC proposed to decrease the primary coolant activity levels to 0.3 μCi/gram of dose equivalent ^{131}I for the 48-hour value and to 18 μCi/gram for the maximum instantaneous value submittal. Associated with these activity levels was a proposed allowable primary-to-secondary leakage rate of 19 gpm. In a submittal dated March 7, 1997, SNC included its calculations to support the 20 gpm primary-to-secondary event induced leakage rate. No calculations were included in the submittal dated March 25, 1997.

Assessment of Radiological Consequences

The staff assessed the radiological dose consequences of an MSLB accident which induces a 19 gpm primary-to-secondary leak and occurs at primary coolant activity levels of 0.3 μCi/gram of dose equivalent ^{131}I for the accident initiated spike case and 18 μCi/gram for the pre-existing spike case. In both cases, the secondary coolant activity level of dose equivalent ^{131}I was 0.1 μCi/gram. The staff independently calculated the doses resulting from a main steamline break accident using the methodology associated with Standard Review Plan (SRP) 15.1.5, Appendix A. Two assessments were performed. One was based upon a pre-existing iodine spike activity level of 18 μCi/gram of dose equivalent ^{131}I and the other was based upon an accident initiated iodine spike at a primary coolant activity level of 0.3 μCi/gram of dose equivalent ^{131}I. The staff calculated doses for individuals located offsite at the Exclusion Area Boundary (EAB) and at the Low-Population Zone (LPZ) and onsite to the control room operator. The parameters, which were utilized in the staff's assessment, are presented in Table 1 (attached). The doses calculated by the staff are presented in Table 2 (attached).

The staff's calculations show that the thyroid doses would be within the regulatory guidelines established for utilization of interim plugging criteria with the exception of the thyroid dose at the LPZ for the accident initiated spike case. For that case, the thyroid dose was found to be 10 percent greater than the guideline values. However, the doses would remain a small fraction of the limits of Part 100. The staff's calculations also show that the control room operator thyroid dose would be less than the guidelines of SRP 6.4 of NUREG-0800.

Although the calculated dose at LPZ for the accident initiated spike case slightly exceeded the staff's guidelines, the dose was still within a small fraction of Part 100. Therefore, the staff concluded that SNC's proposed increase in the MSLB induced leakage to 19 gpm in conjunction with a reduction in the TS allowable values for the maximum instantaneous dose equivalent ^{131}I and the 48 hour value for dose equivalent ^{131}I was acceptable. Therefore, the proposed change to allow an MSLB induced primary-to-secondary leakage rate of 19 gpm is acceptable.

With respect to the licensee's assumptions, which were included in its letter dated December 26, 1996, in support of the request for an allowable 20 gpm primary-to-secondary leak rate, two items need to be noted. First, SNC's calculations included a control room pressurization flow of 450 cfm. That flowrate is outside the limits established in Farley Unit 1, TS 3/4.7.7. Either SNC's calculations of record need to change to incorporate a value consistent to that allowed by the TSs or the TS's flowrate needs to be changed. SNC assumed a control room volume of 114,000 ft^3, which is nearly twice the volume presented in the updated Final Safety Analysis Report (FSAR). The results presented in Table 2 incorporate a flowrate consistent with the Farley Unit 1 TSs and a control room volume consistent with the data from the updated FSAR.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the State of Alabama official was notified of the proposed issuance of the amendments. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (62 FR 16201 dated April 4, 1997). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Attachment: Tables 1 and 2

Principal Contributor: J. Hayes

Date: May 19, 1997

TABLE 1

INPUT PARAMETERS FOR FARLEY UNIT 1 EVALUATION OF MAIN STEAMLINE BREAK ACCIDENT

1. Primary coolant concentration of 18 μCi/g of dose equivalent ^{131}I.

	Pre-existing Spike Value (μCi/g)
^{131}I =	13.9
^{132}I =	4.98
^{133}I =	22.2
^{134}I =	3.36
^{135}I =	12.2

2. Volume of primary coolant and secondary coolant.

Primary Coolant Volume (ft^3)	10,710
Primary Coolant Temperature (°F)	578
Secondary Coolant Steam Volume (ft^3)	3,742
Secondary Coolant Liquid Volume (ft^3)	2,016
Secondary Coolant Steam Temperature (°F)	518
Secondary Coolant Feedwater Temperature (°F)	437

3. TS limits for DE ^{131}I in the primary and secondary coolant.

Primary Coolant DE ^{131}I concentration (μCi/g)	0.3
Secondary Coolant DE ^{131}I concentration (μCi/g)	0.1

4. TS value for the primary to secondary leak rate.

Primary to secondary leak rate, any SG (gpd)	140
Primary to secondary leak rate, total all SGs (gpd)	420

5. Maximum primary to secondary leak rate to the faulted and intact SGs.

Faulted SG (gpm)	19
Intact SGs (gpm/SG)	0.1

6. Iodine Partition Factor

Faulted SG	1
Intact SG	0.1
Primary to Secondary Leakage	1.0

TABLE 1 (continued)

7. Steam Released to the environment

Faulted SG (lbs/2 hours)	96,200 plus primary to secondary leakage
Intact SGs (lbs/2 hours)	479,000 plus primary to secondary leakage

8. Letdown Flow Rate (gpm) 60

9. Release Rate for 0.3 μCi/g of Dose Equivalent ^{131}I

	Ci/hr
^{131}I =	2.4
^{132}I =	5.4
^{133}I =	5.8
^{134}I =	8.5
^{135}I =	5.8

10. Atmospheric Dispersion Factors

EAB (0-2 hours)	6.4×10^{-4}
LPZ (0-8 hours)	1.0×10^{-4}
Control Room (0-8 hours)	3.3×10^{-3}

11. Control Room

Volume (ft^3)	69,000
Normal Makeup Flow (cfm)	1,350
Emergency Makeup Flow (cfm)	270
Makeup Filter efficiency (%)	99
Unfiltered Inleakage (cfm)	10
Recirculation Filter Flow Rate (cfm)	2,700
Recirculation Filter Efficiency (%)	95

TABLE 2

MAIN STEAMLINE BREAK THYROID DOSE ASSESSMENT FOR FARLEY UNIT 1

Pre-existing Spike

	EAB	LPZ	Control Room
Calculated doses (rem)	27	15	2.3
Regulatory Guidelines (rem)	30	30	30

Accident Initiated Spike

	EAB	LPZ	Control Room
Calculated doses (rem)	15	34	5.0
Regulatory Guidelines (rem)	30	30	30