



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
REGARDING THE RADIOLOGICAL CONSEQUENCES OF A LOCA WHILE PURGING CONTAINMENT
POWER AUTHORITY OF THE STATE OF NEW YORK
JAMES A. FITZPATRICK NUCLEAR POWER PLANT

DOCKET NO. 50-333

The staff has reviewed the radiological consequences of a hypothetical LOCA while purging the containment at power for Fitzpatrick. This evaluation was conducted under Multi-Plant Issue B-24 and in accordance with the guidance of Branch Technical Position CSB 6-4, Standard Review Plan Sections 6.2.4 and 15.6.5 and Regulatory Guide 1.3.

Our evaluation is based on the release of 5000 pounds mass (lbm) of steam prior to the post-LOCA closure of the purge valves at the maximum Technical Specification primary coolant concentration of $31 \mu\text{Ci/gm}$, dose equivalent I-131. It was assumed that the containment isolation would be achieved before the onset of fuel failure resulting from the accident. The worst 0.5% probability directionally dependent case X/Q values consistent with ground level releases were used in the dose calculations. A list of applicable assumptions is given in Table 1.

8507160749 850701
PDR ADDCK 05000333
P PDR

The staff estimates that the steam released through the purge line would result in an incremental dose of 18 Rem to the thyroid at the Exclusion Area Boundary (EAB) and 0.5 Rem to the thyroid at the Low Population Zone Boundary (LPZ). These doses when added to the staff Safety Evaluation Report LOCA doses (See Table 2) of 36 Rem to the thyroid at the EAB and 60 Rem to the thyroid at the LPZ, meet the applicable guidelines of 10 CFR Part 100. We conclude, therefore, that the radiological consequences of a LOCA during purging at the Fitzpatrick would be acceptable.

TABLE 1

ASSUMPTIONS USED TO EVALUATE THE CONTAINMENT PURGE CONTRIBUTION TO THE
LOCA DOSE

X/Q value (0-2 hour, EAB, ground level release), sec/m^3	5.0×10^{-4}
(0-8 hour, LPZ, ground level release), sec/m^3	1.5×10^{-5}
Purge valve closure time, sec	< 10
Amount of steam released through the purge valves prior to post-LOCA closure, lbm	5000
Maximum technical specification primary coolant limit, dose-equivalent I-131, $\mu\text{Ci/gm}$	31

TABLE 2

RADIOLOGICAL CONSEQUENCES

	THYROID DOSES	
	EAB, 0-2 HOUR	LPZ, 30 DAYS
Containment purge contribution	18 Rem	0.5 Rem
SER LOCA dose	36 Rem	60 Rem
Effective LOCA dose	54 Rem	61 Rem

NOTES:

1. The X/Q values and the SER LOCA doses were taken from the NRC Plant Data File, updated 5/12/83.
2. The whole body doses are not listed because they would be negligible when compared to the guideline values.

Principal Contributor: K. Dempsey, AEB

Dated: July 1, 1985