

GENERAL ELECTRIC

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	POWER PLANT SINGLE-LOOP
	OPERATION
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ERRATA And ADDENDA SHEET

NO.	1
DATE	December 1980
NOTE: Correct all copies of the applicable publication as specified below.	

ITEM	REFERENCES (SECTION, PAGE PARAGRAPH, LINE)	INSTRUCTIONS (CORRECTIONS AND ADDITIONS)
01	Page 1-1/1-2	Replace with new page 1-1/1-2
02	Page 5-2	Replace with new page 5-2.
03	Page 5-5	Replace with new page 5-5.

1. INTRODUCTION AND SUMMARY

The current technical specifications for the FitzPatrick Nuclear Power Plant do not allow plant operation beyond a relatively short period of time if an idle recirculation loop cannot be returned to service. The FitzPatrick Nuclear Power Plant (Technical Specification 3.6.H.3) shall not be operated for a period in excess of 24 hours with one recirculation loop out of service.

The capability of operating at reduced power with a single recirculation loop is highly desirable, from a plant availability/outage planning standpoint, in the event maintenance of a recirculation pump or other component renders one loop inoperative. To justify single-loop operation, the safety analyses documented in the Final Safety Evaluation Reports and Reference 1 were reviewed for one-pump operation. Increased uncertainties in the core total flow and TIP readings resulted in an 0.01 incremental increase in the MCPR fuel cladding integrity safety limit during single-loop operation. This 0.01 increase is reflected in the MCPR operating limit. No other increase in this limit is required as core-wide transients are bounded by the rated power/flow analyses performed for each cycle, and the recirculation flow-rate dependent rod block and scram setpoint equations given in the technical specifications are adjusted for one-pump operation. The least stable power/flow condition, achieved by tripping both recirculation pumps, is not affected by one-pump operation.

During single-loop operation, the flow control should be in master manual, since control oscillations might occur in the recirculation flow control system under automatic flow control conditions.

Derived MAPLHGR reduction factors are 0.84, 0.85, and 0.84 for the 7x7, 8x8, and 8x8R/P8x8R fuel types, respectively.

The discharge valve in the idle recirculation loop is normally closed, but if its closure is prevented, the suction valve in the loop should be closed to prevent the loss of Low Pressure Coolant Injection (LPCI) flow out of a postulated break in the idle suction line.

the most limiting break also occurs at the 80% DBA discharge break, and the reflooding time is 247 seconds. The uncovered time at the most limiting break is 213 seconds for the two-loop analysis and 214 seconds for the single-loop analysis.

5.1.2 Single-Loop MAPLHGR Determination

The small difference in uncovered time for the limiting break size would result in a very small change in the calculated peak cladding temperature. Therefore, as noted in Reference 3, the one- and two-loop SAFE/REFLOOD results can be considered similar and the generic alternative procedure described in Section II.A.7.4 of this reference was used to calculate the MAPLHGR reduction factors for single-loop operation.

MAPLHGR reduction factors were determined for the cases given in Table 5-1. The most limiting reduction factors for each fuel type is shown in Table 5-2.

One-loop operation MAPLHGR values are derived by multiplying the current two-loop operation MAPLHGR values by the reduction factor for that fuel type. As discussed in Reference 3, single recirculation loop MAPLHGR values are conservative when calculated in this manner.

5.1.3 Small Break Peak Cladding Temperature

Section II.A.7.4.4.2 of Reference 3 discusses the small sensitivity of the calculated peak clad temperature (PCT) to the assumptions used in the one-pump operation analysis and the duration of nucleate boiling. Since the slight increase ($\sim 50^\circ\text{F}$) in PCT is overwhelmingly offset by the decreased MAPLHGR (equivalent to 300° to 500°F PCT) for one-pump operation, the calculated PCT values for small breaks will be well below the 2200°F 10CFR50.46 cladding temperature limit.

5.2 ONE-PUMP SEIZURE ACCIDENT

The one-pump seizure accident is a relatively mild event during two-recirculation-pump operation, as documented in References 1 and 2. Similar analyses were performed to determine the impact this accident would have on

Table 5-1
MAPLHGR MULTIPLIER CASES

<u>Fuel Type</u>	<u>Cases Calculated</u>
7x7	80% DBA Discharge Break* 85% DBA Discharge Break 100% DBA Suction Break
8x8	80% DBA Discharge Break* 85% DBA Discharge Break 100% DBA Suction Break
8x8R/P8x8R	80% DBA Discharge Break* 85% DBA Discharge Break 100% DBA Suction Break

*Most limiting break for MAPLHGR reduction factors.

Table 5-2
LIMITING MAPLHGR REDUCTION FACTORS

<u>Fuel Type</u>	<u>Reduction Factors</u>
7x7	0.84
8x8	0.85
8x8R/P8x8R	0.84