Fort Calhoun Station
Unit 1

TDB-III.22

TECHNICAL DATA BOOK

LIMITATION ON POWER LEVEL INCREASES AND ROD MOVEMENTS AT POWER

Change No.	EC 41005
Reason for Change	Update Ramp Rates to follow AREVA Power Operation guidelines.
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LIMITATION ON POWER LEVEL INCREASES AND ROD MOVEMENTS AT POWER

The following restrictions for increasing power are based upon the maintenance of an Axial Shape Index (ASI) as specified by the Reactor Engineer when exceeding 20% power, using OI-RR-1, Attachment 4.
See Also: Technical Specification 2.10.2(7)b.ii

TABLE 1

Power Ramp Following Shutdown or Power Reduction	Category of Fuel Power Density Change	Reactor Power Range (% of Full Power) 0 - 50*	50 – 90	90 - 100**
Major	I	30%/hr	5%/hr	3%/hr
Minor with Normal Recovery	II	30%/hr	15%/hr	5%/hr
Minor with Fast Recovery	III	30%/hr	15%/hr	5%/hr
Extended Low Power	IV	30%/hr	15%/hr	5%/hr

Category	Description
I	Increase in power following shutdown greater than 45 days or more, or one during which a fuel shuffle takes place.
II	Increase in power following shutdown of 45 days or less without fuel shuffle, or partial power reduction where local fuel power density does not exceed previously preconditioned power levels which have been maintained for a period of 72 hours or more during the preceding 30 calendar days.
III	Increase in power following shutdown of 45 days or less without a fuel shuffle, or partial power reduction where local fuel power density does not exceed previously preconditioned power levels which have been maintained for a period of 72 hours or more during the preceding 6 EFPD.
IV	Increase in power following operation at a power level less than 90% of rated power for more than 27 of 30 calendar days.

* Maintenance of axial shape control should be established as soon as feasible following loading of turbine.
** Based upon a local power density >8 kW/ft, otherwise use the ramp rates for the 50-90% power range.

Additional Limitations

Condition A: "Borating the CEA's Out"

The Reactor Engineer shall determine, within 48 hours of stabilizing at the desired power level, that the CEA's are required or not required to maintain constant ASI. The Reactor Engineer should reverify this condition within an additional 48 hours.

Following a power increase, if the CEA's are not required to maintain constant, ASI, they shall be removed from the core at a rate less than 1 inch per hour, while maintaining constant ASI ±0.02.

Following a power decrease of at least 10% and when the fuel is in fuel power density change category III, if the CEA's are not required to maintain constant ASI, they should be removed from the core at a rate of less than 1 inch power hour while maintaining constant ASI ±0.03.

Condition B: Rod Insertions

CEA rod insertions are limited only by the PDIL and ASI considerations.

Condition C: Decreasing Power

When decreasing power, the axial shape as defined by the Reactor Engineer should be maintained until 50% power is reached. Due to xenon, especially at EOC, it is preferred to keep rods out to maintain some control when power is decreasing.