
Transient Response of Babcock & Wilcox-Designed Reactors

Office of Nuclear Reactor Regulation

U.S. Nuclear Regulatory
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TABLE 4.1

EFFECT OF REVISED SETPOINTS AND ANTICIPATORY REACTOR TRIP
ON TRIP FREQUENCY FOR B&W OPERATING PLANTS

B&W Plants	Pre-TMI-2				Post-TMI-2			
	No. of Trips		Trips/Mo.		No. of Trips		Trips/Mo.	
	A	B	A	B	A	B	A	B
Oconee-1	31	52	0.45	0.76	2	5	0.24	0.60
Oconee-2	9	28	0.16	0.51	2	3	0.26	0.39
Oconee-3	17	27	0.33	0.53	2	2	0.68	0.68
Davis-Besse 1	5	23	0.31	1.42	2	4	0.31	0.61
Crystal River-3	8	28	0.33	1.14	7	7	1.18	1.18
Rancho Seco	4	16	0.08	0.34	6	8	0.66	0.88
ANO-1	6	24	0.12	0.47	2	2	0.28	0.28
TMI-1	3	6	0.05	0.11	-	-	-	-
TMI-2	1	3	0.35	1.04	-	-	-	-
TOTAL	84	207	0.23	0.56	23	31	0.48	0.65

A - Trips that are affected by setpoint changes and addition of anticipatory reactor trip (e.g., high-pressure trips, feedwater upsets, turbine trips)

B - Total trips: Category A trips plus those not affected by changes (e.g., total loss of feedwater, power to flow, test trips, etc.)

Note: Data for table through 1979.

Note: Through January 31, 1980, there have been 10 changes to the Control-Grade Anticipatory Reactor Trip System with 9 successes.

Design: 400 trips for 40-year life
10 trips/year or 0.83 trips/mo.

Pre-TMI-2 Setpoints: DB-1 and CR-3 exceeded 0.83 trips/mo.

Post-TMI-2 Setpoints: Rancho Seco and CR-3 exceeded 0.83 trips/mo.

Increase in Trip Frequency: A - 0.23 to 0.48 (approx. factor of 2)
B - 0.56 to 0.65 (approx. 15% rise)

Possible Causal Factors:

- 1 - Short period of time operating
- 2 - Many startups and shutdowns
- 3 - Operator familiarization
- 4 - Statistical Variations

TABLE 4.2
TRANSIENT EVENT SUMMARY FOR B&W OPERATING PLANTS

Event	Pre-TMI-2	Post-TMI-2
<u>Reactor Trips:</u>		
Total	232	38
Trips with documented PORV openings	149	1
<u>Reactor Trips caused by:</u>		
Feedwater transients	88	15
Turbine trip	41	12
<u>Effect of NNI/ICS Failures (29 total):</u>		
Feedwater transients	13	6
Reactor trip	18	3
PORV opening	17	1
Engineered safety features actuation	3	1

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