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 FACIL: 50-269 OCONEE NUCLEAR STATION, UNIT 1, DUKE POWER CO.
 50-287 OCONEE NUCLEAR STATION, UNIT 3, DUKE POWER CO.
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DOCKET #
 05000269
05000287

SUBJECT: LER 79-014/01T-0 ON 790507: NI POWER INDICATIONS LESS THAN
 THAN CALCULATED THERMAL LEVELS OCCASIONS, CAUSED BY CHANGES
 IN CORE CHARACTERISTICS WHICH ACCOMPANY CHANGES IN POWER
 LEVELS.

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NOTES: M. CUNNINGHAM - ALL AMENDS TO FSAR & CHANGES TO TECH SPECS.

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MAY 29 1979

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EXHIBIT A

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EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

A review of the data pertaining to NI power indications revealed that in three instances these indications were less than the calculated thermal power level by more than the 4.0% full power tolerance assumed in the FSAR. Since a number of additional conservatisms are included in the safety analyses, and since other parameters were monitored which would have initiated a reactor trip if required, these incidents are considered to be of no significance with respect to safe operation and the health and safety of the public were not affected.

019	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47		
SYSTEM CODE		CAUSE CODE		CAUSE SUBCODE		COMPONENT CODE		COMP. SUBCODE		VALVE SUBCODE		EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE		REPORT TYPE		REVISION NO.		ACTION TAKEN		FUTURE ACTION		EFFECT ON PLANT		SHUTDOWN METHOD		HOURS		ATTACHMENT SUBMITTED		NRC FORM SUB.		PRIME COMP. SUPPLIER		COMPONENT MANUFACTURER	
I		D		Z		I		E		Z		7		0		0		T		0		E		G		Z		Z		10		Y		Y		L		B	
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CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

The NI drift is due to changes in core characteristics which accompany changes in power level, and recalibration is therefore required during increases in power. In one of the three instances, the procedures were not properly followed. Operations personnel have been counselled, and the procedures will be revised to preclude future such occurrences.

115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150		
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DUKE POWER COMPANY
OCONEE NUCLEAR STATION

Report Number: RO-269/79-14

Report Date: May 21, 1979

Occurrence Dates: July 18, December 15, and December 26, 1978

Facility: Oconee Nuclear Station, Seneca, South Carolina

Identification of Occurrences: Nuclear Instrumentation Out of Calibration

Conditions Prior to Occurrences: Unit 1 60% and 85% Full Power (December 15, 1978)
Unit 1 75% Full Power (December 26, 1978)
Unit 3 75% Full Power (July 18, 1978)

Description of Occurrences:

On May 7, 1979, as the result of a review of the data pertaining to Nuclear Instrumentation (NI) power range channel readings for the period from March 1, 1978 through April 30, 1979, it was determined that in three instances the NI power indications were less than the thermal power values (calculated by the plant computer from primary and secondary system heat balances) by more than 4.0% full power. The non-conservative NI power indications occurred during and/or immediately following power increases and while reactor operation was at less than full power. The first incident occurred at Oconee Unit 3 on July 18, 1978 during an increase in power level to approximately 75% full power during power escalation testing. The NI indications were more than 4.0% full power below the calculated thermal power level for approximately four hours. On December 15, 1978, during the increase in power following a Unit 1 reactor trip, the NI indication was more than 4.0% full power lower than the calculated thermal power at approximately 60% and again at approximately 85% full power. A similar incident occurred on December 26, 1978 during a Unit 1 trip recovery, at a power level of approximately 75% full power.

Apparent Cause of Occurrences:

These occurrences are due to the NI power range channels drifting out of calibration as a result of changes in core characteristics accompanying changes in power level. The Unit 3 incident occurred as a result of failure to follow procedures correctly. The operating procedures require NI calibration to be performed whenever the NI indications are more than 2.0% full power below the calculated thermal power level. However, the NI indications were more than 2.0% below the calculated power level for approximately two hours. If a NI calibration had been performed, the incident would have been precluded. The two Unit 1 incidents could have been prevented if a calibration had been performed when two of the four channels were noted to be out of calibration in the non-conservative direction. However, no action was required by procedures until all four NI's were out of calibration. The NI and heat balance indications appear to diverge fairly quickly during power increases subsequent to reactor trips due to the rapid control rod motion associated with xenon burnout.

Analysis of Occurrence:

The NI channels are part of the Reactor Protection System (RPS), required to initiate reactor trips during transient or off-normal events when the monitored parameter exceeds the trip setpoint. The analyses of the trip setpoints and the safety analyses of postulated transient events were performed assuming a measurement tolerance of 4% for the NI detectors. Therefore, the incidents resulted in operation of Units 1 and 3 short periods with NI measurement tolerances slightly exceeding the tolerance value assumed in the safety analyses and RPS trip setpoint analyses. However, the safety analyses and RPS trip setpoint analyses were also performed with the assumption that several other independent parameters or phenomena (such as RCS flow, RCS pressure and temperature, power peaking, hot channel flow area, fuel rod and pellet characteristics, calculational uncertainties, etc.) would be simultaneously at their worst design values; and, further, the monitored parameters were assumed to be measured with the maximum design tolerance. Therefore, all these parameters would have to be simultaneously at their worst design values during transients for the core safety limits to be approached. Recognizing that the NI's were out of the required calibration tolerance only for short periods of time, that the calibration tolerance was exceeded at power levels less than full power, and that design analyses include significant conservatisms, it is considered that these incidents were of no significance with respect to safe operation of the affected units, and the health and safety of the public were therefore not endangered.

Corrective Action:

The immediate corrective action was to perform NI calibrations in each case. Similar incidents have been reported in occurrence reports RO-269/77-14 and RO-270/78-4, and corrective actions were implemented at those times. These actions have greatly reduced the number of such incidents. Operations personnel have been counselled regarding proper implementation of these procedures. In addition, operating procedures will be revised to require NI calibration when any two of the four instruments are out of calibration in the nonconservative direction by more than 2.0% full power. These actions should preclude future such occurrences.