

3150-0011
EXPIRES 4-30-82

(PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

0	9	6	I	A	11	E	12	X	13	C	K	T	B	R	K	14	A	15	Z	16	
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CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

1 0 The apparent cause of this event was component failure. The breaker trip shaft

1 1 bearing assembly was sticking, causing the breaker to delay in opening. The

1 2 sticking was a result of hardening of the bearing lubricant. The trip breakers

1 3 were replaced with spares. All CRD breaker trip shaft bearing assemblies on all

1 4 units will be replaced and an automatic shunt trip attachment will be installed.

FACILITY STATUS				% POWER				OTHER STATUS				METHOD OF DISCOVERY				DISCOVERY DESCRIPTION			
1	5	E	(28)	1	0	0	(29)	NA	(30)	B	(31)	Operator Observation				(32)			

ACTIVITY CONTENT
RELEASED OF RELEASE

1 6 2 33 2 34

AMOUNT OF ACTIVITY (35) NA

LOCATION OF RELEASE (36) NA

PERSONNEL EXPOSURES									
NUMBER				TYPE		DESCRIPTION (39)			
1	7	0	0	0	(37)	Z	(38)	NA	

PERSONNEL INJURIES		NUMBER		DESCRIPTION		(41)
1	8	0	0	0	(40)	NA

1		2		3		4		5		6		7		8		9		10		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		48		49		50		51		52		53		54		55		56		57		58		59		60		61		62		63		64		65		66		67		68		69		70		71		72		73		74		75		76		77		78		79		80		81		82		83		84		85		86		87		88		89		90		91		92		93		94		95		96		97		98		99		100	
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PUBLICITY		ISSUED		DESCRIPTION		(45)		NRC USE ONLY									
2	0	N	44			NA											

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DUKE POWER COMPANY

P.O. BOX 33189
CHARLOTTE, N.C. 28242

HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

January 11, 1984

TELEPHONE
(704) 373-4531

Mr. James P. O'Reilly, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30303

Re: Oconee Nuclear Station
Docket No. 50-269

Dear Mr. O'Reilly:

Please find attached Reportable Occurrence Report RO-269/83-20 which was submitted December 30, 1983 as Reportable Occurrence Report RO-269/83-17 in error. The report number has been corrected and the entire report is attached for clarity and ease of distribution. No other contents of this report have been altered.

Very truly yours,

H.B. Tucker / JCP

Hal B. Tucker

JCP/php

Attachment

cc: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

INPO Records Center
Suite 1500
1100 Circle 75 Parkway
Atlanta, Georgia 30339

Mr. J. C. Bryant
NRC Resident Inspector
Oconee Nuclear Station

Mr. John F. Suermann
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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Duke Power Company
Oconee Nuclear Station

Report Number: RO-269/83-20

Report Date: December 30, 1983

Occurrence Date: December 19, 1983

Facility: Oconee Unit 1, Seneca, South Carolina

Identification of Occurrence: Control Rod Drive (CRD) AC breaker number 10 and CRD DC breaker number 2 on Unit 1 experienced a delayed trip while being tested.

Conditions Prior to Occurrence: Oconee 1 100% Full Power

Description of Occurrence: On a weekly basis, one of the four Reactor Protective System (RPS) Channels (A, B, C, or D) is tested, per procedure, on each unit whenever the unit is operating at a Steady State Power Level. The performance of this procedure to calibrate and functionally test a RPS channel includes a provision to verify that the CRD breakers immediately opened upon receiving a trip signal.

At 1601 hours on December 19, 1983, with Unit 1 at 100% full power, calibration and functional testing of the RPS channel "A" was being performed. During the performance of this procedure, CRD AC breaker number 10 was observed to have opened approximately eight seconds after receiving a trip signal. The breaker was reset and retested, resulting in approximately a five second delay. The breaker was again reset and retested; this time the breaker did open immediately upon receiving a trip signal.

In response to the delayed opening of the AC breaker on Unit 1, testing of the remaining AC breakers as well as all of the DC breakers on all three units was initiated. Subsequently, CRD DC breaker number 2 on Unit 1 was observed to have a delayed time response of approximately three seconds. By December 21, 1983, all other AC and DC breakers on all three units when tested were observed to have opened immediately upon receiving a trip signal, including the replacement breakers for the two malfunctioned breakers.

During the investigation into this incident, it was learned that on November 30, 1983, during routine surveillance of RPS Channel C, CRD DC breaker number 1 on Unit 3 was sluggish in response to the test trip signal. The normal corrective actions required per procedure were followed; however, the event was not reported. This failure to report this event was due to a misunderstanding by the supervisor involved.

Apparent Cause of Occurrence: The apparent cause of this occurrence was determined to be a component failure. The two breakers which had malfunctioned were inspected and bench tested to determine the source of the problem. During the

bench testing, it was observed that the trip shaft bearing assembly was sticking, thereby causing the breaker to delay in opening after receiving a trip signal. The sticking was a result of hardening of the bearing lubricant, which is a result of the lubricant breaking down due to age.

The recommendations provided by a General Electric Corporation (GE) Service Letter (GE Service Letter No. 175) were incorporated into the preventive maintenance procedure used on these breakers. The spraying of a penetrating lubricant on the trip shaft and bearing assembly was recommended by GE and was implemented into the preventive maintenance program for the breakers. This was expected to keep the bearing lubricant in a refurbished condition. Preventive maintenance had been performed on July 6, 1983 on the two breakers which malfunctioned, and was scheduled to be performed again in January 1984.

Analysis of Occurrence: All other CRD breakers have been tested subsequent to this incident. They all tripped successfully with the exception of the Unit 1 CRD DC breaker 2 which had an approximately three second delay in tripping.

In the event that an actual reactor trip had been called for during this period of time and both CRD AC breaker 10 and CRD DC breaker 2 had delayed in tripping, both safety rod groups 1 and 2 and regulating rod groups 5, 6, and 7 would have dropped immediately as designed. This would have been caused by the interruption of power to the CRD mechanisms by the other CRD breakers and the silicon control rectifiers (SCRs). Insertion of these rod groups would have been sufficient to shut down the reactor. Safety rod groups 3 and 4 would have dropped when CRD AC breaker 10 or CRD DC breaker 2 opened.

The SCRs function independently of the CRD breakers and act to interrupt power to and trip regulating rod groups 5, 6 and 7 upon receipt of a trip signal. Thus, the SCRs provided a diverse and independent means of shutting down the reactor. The health and safety of the public were not affected by this event.

Corrective Action: The immediate corrective action taken, upon observing the time delay in the tripping of the CRD AC breaker number 10, was to reset the breaker and to exercise this breaker until it operated correctly by retesting. A replacement CRD AC breaker was obtained and preventive maintenance was performed on it. The replacement breaker was installed for the malfunctioned AC breaker. On-line testing of all of the CRD AC and DC breakers on all three units was initiated. During this testing CRD DC breaker 2 on Unit 1 was observed to exhibit approximately a three second delay before opening after receiving a trip signal. Subsequently, it was changed out with a replacement DC breaker on which preventive maintenance had been performed. All other breakers were observed to have opened immediately upon receiving a trip signal.

In addition to the on-line testing, a bench test of all CRD breakers was also performed. The purpose of the bench tests was to determine, exactly, the response time of the CRD breakers. All CRD breakers had a response time of 50 milliseconds or less. This also included the two replacement CRD breakers that were installed for the two malfunctioned CRD breakers.

Duke will install an automatic shunt trip attachment as described in a Duke letter of December 30, 1983 to H. R. Denton (NRC). The proposed schedule for completion of this modification is included therein. In view of the extended

time frame for installation, Duke is pursuing the purchase and installation of new trip shaft and bearing assemblies. Initial discussions with GE indicated a 14 week delivery schedule. However, additional discussions are being held with GE to procure these assemblies on an expedited schedule. The NRC will be advised when a final schedule for delivery and installation is established.

The preventive maintenance has been increased to a frequency of 3 months until the new trip shaft bearing assemblies are installed or the shunt trip modification is installed.

Appropriate station procedures used to conduct periodic preventive maintenance are being modified to include provisions for recording as found and as left measurements for breaker trip time response and torque required to trip the breaker. A station modification to accurately measure the response of the CRD breakers on-line will be implemented along with the installation of the automatic shunt trip modification.

In regards to the November 30, 1983 incident, immediate actions were taken to correct the slow response time. The personnel involved in this event are being retrained and the appropriate station personnel will review this report.

This event is currently under review by management to determine what additional corrective actions may be required.

Finally, Duke will continue to actively support generic B&W Owners Group activities relative to the generic implication of this event on the GE AK-2 breakers. Two submittals have been made recently documenting Owners Group activities by J. Ted Enos, Chairman, B&W Owners Group ATWS Committee to D. G. Eisenhower (NRC)-- the first by letter dated November 5, 1983 and the second by letter dated December 21, 1983.