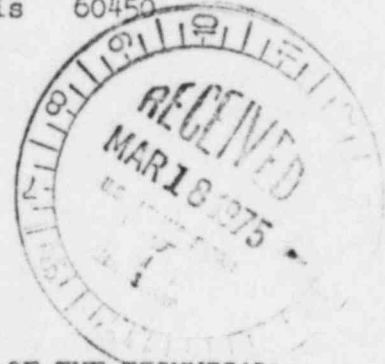


BBS Ltr. #155-75

Dresden Nuclear Power Station  
R. R. #1  
Morris, Illinois 60450  
March 12, 1975

Mr. James G. Keppler, Regional Director  
Directorate of Regulatory Operation-Region III  
U. S. Nuclear Regulatory Commission  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137



SUBJECT: REPORT OF ABNORMAL OCCURRENCE PER SECTION 6.6.A OF THE TECHNICAL SPECIFICATIONS  
U-3 EXCESSIVE CONTROL ROD SCRAM TIMES

References: 1) Regulatory Guide 1.16 Rev 1 Appendix A  
2) Notification of Region III of U. S. Nuclear Regulatory Commission  
Telephone: P. Johnson, 1540 hours on March 4, 1975  
Telegram: J. Keppler, 1410 hours on March 4, 1975

Report Number: 50-249/1975-13

Report Date: March 12, 1975

Occurrence Date: March 2, 1975

Facility: Dresden Nuclear Power Station, Morris, Illinois 60450

IDENTIFICATION OF OCCURRENCE

U-3 control rod drive scram times failed to meet a limiting condition for operation as defined in section 3.3.C.1 of the Technical Specifications.

CONDITIONS PRIOR TO OCCURRENCE

Unit 3 was in the run mode operating at a power level of 910 MWt and 270 MWe.

DESCRIPTION OF OCCURRENCE

On March 2, 1975, the 1 week 25 control rod drive (CRD) scram testing surveillance was in progress. Upon completion of testing the 25 drives, it

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was determined that drive J-9 had exceeded the 25 drive average for the 90% insertion time by greater than 0.75 secs. The eight drives around J-9 were then scram tested. Of these eight drives, J-8 had a 90% insertion time exceeding the 25 drive average by greater than 0.75 secs. It was then necessary to scram two more drives to complete the eight around J-8. An immediate evaluation was made of the 90% times and average to check against technical specification limits. As 90% times have been the most limiting in the past, these were the only ones carefully analyzed at that time. Drive J-9 was scrammed a second time on March 2 after the long time was noted. The drive tested satisfactorily on the second test and met all limits.

Further evaluation led to the discovery at about 1100 hours on March 4 that specification 3.3.C.1 of the technical specifications could not be met. The section that could not be met was the 5% and 20% limits for the average of the scram insertion times for the three fastest control rods of all groups of four control rods in a two by two array. The maximum time allowable for 5% insertion is 0.398 secs and for 20% insertion is 0.954 secs. The actual times obtained are listed below:

5% Insertion				20% Insertion			
10	.47	.35	.53	10	1.19	.86	1.19
9	.33	.57	.33	9	.83	1.38	.80
8	.51	.40	.56	8	1.18	1.04	1.25
	H	J	K		H	J	K

#### RESULTS OF THE EVALUATION OF THE 2X2 ARRAYS

Drives	H-9,	H-10,	J-10	5% avg .393 secs	20% avg .960 secs
Drives	J-10,	K-10,	K-9	5% avg .403 secs	20% avg .950 secs
Drives	K-9,	K-8,	J-8	5% avg .430 secs	20% avg 1.03 secs
Drives	H-9,	H-8,	J-8	5% avg .413 secs	20% avg 1.017 secs

#### DESIGNATION OF APPARENT CAUSE OF OCCURRENCE (Equipment Failure)

The cause of the occurrence appears to be due to deterioration of the drive seals. This condition has been noted in the past and is being monitored closely.

#### ANALYSIS OF OCCURRENCE

There was no danger to plant personnel or to the public from this occurrence. If a scram had occurred, the 50% and 90% times were within specs and the reactor would have been safety shutdown. The slower 5% and 20% times may have resulted in a slightly higher pressure during the worst case trip (Turbine trip with bypass valve failure), but this would have been offset by the fact that the unit is only operating at 50% power, and is considerably below the limiting scram reactivity curve.

#### CORRECTIVE ACTION

The immediate corrective action following discovery of the occurrence was to schedule retesting of the 5 questionable drives. At about 11:00 pm on

March 12, 1975

March 4, 1975 the 5 questionable drives (H-8, H-10, J-9, K-8 and K-10) plus an additional 25 drives, different from the original 25 drives, selected at random throughout the core, were scram tested. The drives met all technical specification limits. To analyze the 2X2 arrays, the times obtained from the test of March 2, 1975 were used for the other four drives (H-9, J-8, J-10 and K-9). Below are the times obtained:

5%				20%			
10	.45	.35	.37	10	.97	.86	.85
9	.33	.59	.33	9	.83	1.46	.80
8	.37	.40	.43	8	.85	1.04	.95
	H	J	K		H	J	K

Results of the evaluation of the 2X2 arrays were:

Drives H-9, H-10, J-10	5% avg. .377 secs	20% avg .887 secs
Drives J-10, K-10, K-9	5% avg .350 secs	20% avg .837 secs
Drives K-9, K-8, J-8	5% avg. .387 secs	20% avg .930 secs
Drives H-9, H-8, J-8	5% avg. .367 secs	20% avg. 907 secs

The two week test is not required until March 16, 1975, but a special test was conducted on March 9 for the purpose of this investigation. It was again necessary to scram test the eight drives around J-9 and J-8. The 5% and 20% insertion times for the arrays in question are listed below:

5%				20%			
10	.45	.29	.51	10	1.09	.75	1.20
9	.32	.56	.32	9	.81	1.44	.78
8	.31	.40	.51	8	.79	1.04	1.17
	H	J	K		H	J	K

#### RESULTS OF THE EVALUATION OF THE 2X2 ARRAYS WERE:

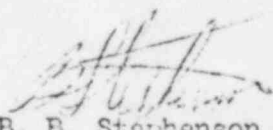
Drives H-9, H-10, J-10	5% avg. .353 secs	20% avg .877 secs
Drives J-10, K-10, K-9	5% avg .373 secs	20% avg .923 secs
Drives K-9, K-8, J-8	5% avg .410 secs	20% avg .997 secs
Drives H-9, H-8, J-8	5% avg .343 secs	20% avg.880 secs

Drives K-8 and J-9 could not meet either of the 5% or 20% limits. Drives K-8 and J-9 were then declared inoperable per section 3.3.A.2.d of the technical specifications. There was no problem meeting specification 3.3.A.1 with one of these drives left at 48, so K-8 was inserted and disarmed. Mirror symmetric rod F-8 was also inserted to enhance core monitoring capabilities. Drive J-9 was left at position "48". Analytical evaluations are underway to determine if section 3.3.A.1 can be met with both J-9 and K-8 at "48". If not, K-8 will be left at "00".

The 2 week scram test is due on March 16, 1975. Another drive will be chosen to replace J-9 in the sample of 25 operable control rods. In addition, J-9, and K-8, if it is at position "48", will also be tested to gather further data on rod drives with slow scram times. No further report will be issued on their performance. They will be overhauled during the next refueling outage, along with a number of other drives. The outage is presently scheduled to commence about May 1, 1975.

FAILURE DATA

The control rod drives, model 7 RDB 144B, have experienced two problems in the past. 1) Uncoupling at position 48, caused by improper installation of the inner filter, experienced only on unit 2, and 2) seal wear, causing excessive 90% scram times.

  
B. B. Stephenson  
Superintendent

BBS:smp

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