TOLEDO EDISON

January 16, 1986

Log No. KA86-29
File: RR 2 (NP-33-85-38)

Docket No. 50-346
License No. NPF-3

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

Gentlemen:

This is a re-submittal of Licensee Event Report 86-003. This is to correct the sequential number, page one of three, which was inadvertently listed as 86-000.

Please destroy or mark superseded your previous copy of this report and replace with the attached.

Yours truly,

Louis F. Storz

Louis F. Storz
Plant Manager
Davis-Besse Nuclear Power Station

LFS/syc

Enclosure

cc: Mr. James G. Keppler
Regional Administrator
USNRC Region III

Mr. Walt Rogers
DB-1 NRC Resident Inspector

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1/1

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Davis-Besse Unit 1	0 5 0 0 0 3 4 6	1 OF 0 3

TITLE (4)

Essential 4160V Bus Voltage High

EVENT DATE (5)			LER NUMBER (6)					REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR		SEQUENTIAL NUMBER		REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
												0 5 0 0 0
1 2	1 3	8 5	8 6	—	0 0 3	—	0 0	0 1	1 6	8 6		0 5 0 0 0

OPERATING MODE (9)	5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)					
POWER LEVEL (10)	0 0 0	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)		
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)		
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)		
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)			
		20.405(a)(1)(iv)	X 50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)			
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)			

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
Eric W. Johnson, Associate Engineer	4 1 9 2 4 9 - 5 0 0 0

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

While researching correspondence in support of the Davis-Besse System Review and Test Program, it was discovered that Toledo Edison had committed to the NRC to take action to reduce electrical bus voltage upon receipt of an Essential Bus C1 or D1 overvoltage alarm. Although this alarm is frequently received during an outage when the plant electrical load is reduced, action such as changing transformer tap settings has never been taken. The cause was due to design documents and procedures not reflecting this NRC commitment. Corrective action planned is: (1) Change taps on Start-Up transformers '01' and '02' to immediately address the commitment, and (2) Prepare drawing and revise procedures to reflect the NRC commitment.

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☆U.S.GPO:1984-0-454-481/18759

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Description of Occurrence: During the problem review portion of the "System Review and Test Program" currently in progress, it was discovered that Toledo Edison had committed to the NRC to take action to reduce voltage on the 4160V busses upon receipt of an Essential Bus C1 or D1 high voltage alarm. The high alarm setpoint was presently 102% of 4160V or 4243V.

Toledo Edison's commitment to reduce bus voltage was discovered while researching correspondence to determine the basis for the alarm setpoint of 102%. Various documents were being reviewed to investigate the problem of frequent 4160V bus high voltage alarms during plant shutdown.

This event is considered reportable under 10CFR50.73(a)(2)(ii)(B) as a condition outside the design basis of the plant since the potential existed for exceeding the voltage rating of safety related electrical equipment.

References:
System Review and Test Program Report Number 4.16KV-NRR-1
Letter, TED to NRC, S/N 144, dated 11/03/76
Letter, TED to NRC, S/N 230, dated 03/01/77
Letter, TED to NRC, S/N 293, dated 07/18/77

Designation of Apparent Cause of Occurrence: The cause of Toledo Edison failing to take action to reduce bus voltage as committed to in the above referenced letters is that the commitment was not adequately translated into TED design documents and operating procedures. At this time no controlled design document exists which specifies the proper transformer tap settings. Alarm Procedure AP 3001.14.3 focuses on low (or lack of) bus voltage with little guidance on action required for high bus voltage conditions.

Analysis of Occurrence: Based upon a review of documents describing the basis for 4160V bus high voltage alarm setpoint, bus voltage experienced during the present outage, and the operating mode during which the high voltage alarm is received, the event is not considered a challenge to nuclear safety.

The original 4160V bus high alarm setpoint of 103.3% (an alarm setpoint of 102% was later added to provide a margin) was the voltage at which the 480V bus would experience a voltage of 110% of motor rated voltage (or 110% of 460V = 506V). The high voltage limiting case is 110% of motor rating (460V and 4000V). However, this setpoint was chosen based on recommended unit substation transformer tap setting of 1 tap below nominal (4055/480V). The effect of operating a unit substation transformer one tap below nominal is to increase the ouput voltage approximately 2½%. The unit substation transformers were actually set at nominal tap (4160/480V). Therefore, the 480V busses do not experience a voltage of 506V until bus C1 or D1 is operating approximately 105.8% (103.3% + 2.5%) of 4160V. It should be noted that Toledo Edison's "Analysis of the Adequacy of the Davis-Besse Nuclear Power Station Onsite Electrical Auxiliary Distribution Power Station Voltages" (transmitted via S/N 543, dated 10/09/79) was based on a nominal tap setting for the unit substation transformers.

Bus C1 and D1 voltages were randomly sampled over a 5 day period prior to preparation of this report. The highest voltage recorded on each bus was 4304V (103.4% of 4160V) for bus C1 and 4356V (104.7% of 4160V) for bus D1.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Analysis of Occurrence, Continued: The 4160V bus high voltage alarm is received only while the plant is shut down and electrical bus loading is minimal. As equipment is started, voltage drop across the transformers will increase resulting in reduced bus voltages.

Corrective Action: Corrective actions that have been or will be taken are:

1. A supplement to Facility Change Request (FCR) 85-0244 was issued to initiate changing the taps of Start-Up Transformers '01' and '02' from 1 tap below nominal to the nominal tap setting resulting in a reduction of voltage of approximately 2½% to comply with Toledo Edison's present day commitment.

2. FCR 85-0237 was initiated to prepare a drawing for documentation of station transformer tap settings to provide additional assurance that station electrical bus voltage are maintained within previously analyzed limits.

3. Alarm Procedures AP 3001.14 and AP 3001.15 will be revised to provide adequate guidance upon receipt of 4160V bus C1 or D1 high voltage alarm.

4. The Plant Shutdown and Cooldown Procedure PP 1102.10 and the Plant Startup Procedure PP 1102.12 will be modified to include the appropriate time frame for the tap changes.

5. FCR 85-0349 was initiated to revise the 4160V bus voltage high alarm setpoint to correspond with actual station transformer tap settings.

6. A long term program will be implemented to review NRC correspondence and incorporate commitments into the Toledo Edison Licensing Commitment Tracking System.

Failure Data: There have been no previous reports of this type in the last twelve months.

REPORT NUMBER: NP-33-85-38 DVR(S) 85-187