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November 17, 1982

Mr. Paul O'Connor
Project Manager
Operating Reactors Branch No. 5
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Dresden 2
SEP Topic: III-10.A, Thermal Overload Protection
for Motors of Motor-Operated Valves

NRC Docket 50-237

Dear Mr. O'Connor:

The NRC is concerned that application of thermal overload protection devices to motors associated with safety related motor operated valves may result in needless hindrance of the valves to perform their safety functions. Thermal overload devices are not bypassed, no evidence is available to support adequacy of trip setpoints, and torque switches, rather than limit switches, used to terminate valve travel.

During the mid 1970's Commonwealth Edison recognized that Dresden had a problem with motor operated valves performing their intended function. As a result, an investigation was conducted which resulted in modifications to motor operators, thermal overload devices and circuit breakers. In addition, all the torque switch settings and thermal overload settings were reviewed and properly set. Since then the failure rate has dropped significantly by our analysis from 38 during the period 1972 through 1976 to 19 during the period 1977 through 1981 for all MO valve failures, not only limit switches or torque switch related failures. The principal contributor to failure due to limit or torque switch trips was found to be over tightened packing and/or lack of stem lubrication.

Attachment 1 provides a list of all motor operated valve failures since Dresden 2 went into operation to June, 1982. Also, Commonwealth Edison tests motor operated valves per the following monthly or quarterly surveillances.

DOS 1300-2:	Isolation Condenser Valve Operability Check
DOS 1400-1:	Core Spray System Pump Test with Torus Available - Monthly
DOS 1400-2:	Core Spray System Valve Operability Check
DOS 1400-3:	Core Spray System Operability Test with Torus Unavailable - Monthly
DOS 1500-1:	LPCI System Valve Operability Test - Monthly
DOS 1500-4:	LPCI System Operability Test with the Torus Unavailable
DOS 1500-5:	LPCI System Quarterly Flow Rate Test
DOS 1500-6:	LPCI System Pump Operability Test with Torus Available

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DOS 1500-7: LPCI Containment Spray Test
DOS 1600-1: Quarterly Valve Timing
DOS 2300-1: HPCI MO Valves and Pump Operability Test - Monthly
DOS 2300-3: HPCI System Pump Test
DOS 2300-5: HPCI Simulated Automatic Actuation Test - Each
Refueling Outage

Please address any questions you may have concerning this matter to this office.

One (1) signed original and thirty-nine (39) copies of this transmittal have been provided for your use.

Very truly yours,

Charles W. Schuman 11/17/82

for Thomas J. Rausch
Nuclear Licensing Administrator
Boiling Water Reactors

SPP/ji
2499D

cc: RIII Resident Inspector, Dresden
Gregg Cwalina, SEP Integrated Assessment
Project Manager

ATTACHMENT 1

Summary of Dresden 2 MOV Failures
(SEP III - 10.A)

<u>Date of Event</u>	<u>Date of Report</u>	<u>LER #/LER Type</u>	<u>Valve</u>	<u>Failed Position</u>	<u>Reason for Failure</u>
12-21-70	03-15-71	/03X	1301-2	F.O.	Stem not adequately lubricated.
03-27-71	04-03-71	/01T	1402-24B	F.C.	Limatorque Operator failed as a result of water hammer.
04-07-72	05-05-72	/03L	1501-21A	F.O.	Wire found disconnected.
07-22-72	07-31-72	/01T	1501-19B	F.C.	Mounting bolts connecting valve yolk to Limatorque Operator had vibrated loose.
02-22-73	03-23-73	/03L	1501-32A	F.C.	Improper torque switch setting.
02-23-73	03-23-73	/03L	1501-32A	F.C.	Improper torque switch setting.
02-23-73	03-23-73	/03L	1501-3A	F.O.	Loose slide wire locking nut.
03-15-73	04-12-73	/03L	2301-5	F.C.	Improper torque switch setting.
03-30-73	04-14-73	/01T	1501-3A	F.C.	Instrument failure in slide wire/resistor VPI feedback circuit.
04-05-73	04-13-73	/01T		F.O.	Breaker tripped at lower current than trip setting indication.
06-06-73	06-15-73	/01T	1301-2	F.O.	Valve was tripped on previous cycle and failed to reset because reset spring had been omitted during maintenance.
07-24-73	08-22-73	/03L	1501-3A	F.C.	Improper slide wire setting for VIP feedback circuit.
08-15-73	08-24-73	/01T	2301-3	Partial Open	Opened only halfway due to bent stem. (Cause unknown.)

Summary of Dresden 2 MOV Failures - (Cont'd.)

Page 2

<u>Date of Event</u>	<u>Date of Report</u>	<u>LER #/LER Type</u>	<u>Valve</u>	<u>Failed Position</u>	<u>Reason for Failure</u>
08-15-73	08-24-73	/01T	2301-6 & 14	F.O.	Lower electrical interlock operating bar on two 250 volt D.C. breaks was improperly bent.
08-17-73	09-14-73	/03L	1501-3A	F.C.	Breaker magnetic trip setting too low.
08-20-73	09-18-73	/03L	1501-20B	Partially Open	Breaker tripped. (Cause unknown.)
08-21-73	09-19-73	/03L	1501-19A & B	F.C.	Broken torque switch on 19A. Both valve operators were replaced with larger model.
08-26-73	09-21-73	/03L	1501-3A	F.C.	Wiper on slide wire for VPI feedback ran off end.
09-04-73	09-21-73	/03L	1501-3A	F.C.	Slide wire worked off of operating cam and opened VPI feedback circuit.
09-15-73	09-21-73	/03L	220-2	F.C.	Two 1/4-inch square keys which hold the valve stem in the yolk bushing were missing.
10-08-73	11-05-73	/03L	1001-1B	F.O.	Auxiliary contact operating bar misaligned. (Adjusted and modified.)
10-19-73	10-26-73	/01T	1301-1	Partially Open	Breaker tripped while opening due to improper magnetic trip setting (Drift). Breaker was replaced.
10-25-73	11-21-73	/03L	1501-3A	F.C.	Feedback polarity reversed, feedback potentiometer drive train leveled gears separated. (Modified assembly.)
05-22-74	06-03-74	74 /01T	220-2	F.C.	Air gap between contactor and armature too large.

Summary of Dresden 2 MOV Failures - (Cont'd.)

Page 3

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07-22-74	07-29-74	74 /01T	1501-5A	F.O.	Valve disc overtraveled in open direction and cocked in the valve guides.
08-01-74	08-09-74	74-37/01T	2301-35	F.C.	Contractors on breaker were out of adjustment.
10-18-74	10-25-74	74-52/01T	202-4B	F.O.	Valve would not close because torque switch opened.
11-14-74	11-22-74	74-66/01T	2301-6	F.C.	Flaw in insulating barrier caused shunt field motor leads to burn-up.
11-20-74	11-27-74	74-69/01T	2301-8	No Failure	Dirt and/or moisture on commutator preventing good brush contact.
12-23-74	12-30-74	74-79/01T	220-1	F.C.	Tack weld between disc stem ring and disc had broken, allowing stem to unscrew from disc.
01-23-75	01-31-75	75-9 /01T	301-4	Stuck in Mid Position	Movable contacts on torque switch were rotated, only 10% of contact surface was making up. Dirt in contact area prevented contact.
05-22-75	05-30-75	75-31/01T	1501-3A	F.O.	Bent stem. (Cause unknown, probably feedback circuit.)
05-29-75	06-06-75	75-34/01T	1501-3B	F.O.	Bent stem. (Cause unknown, probably feedback circuit.)
03-13-76	03-24-76	76-9 /01T	2301-4	F.C.	Dirty contacts in breaker.
06-10-76	09-22-76	76-58/03X	1402-4B	F.O.	Stem not adequately lubricated.
07-11-76	08-09-76	76-49/03L	1402-24B	F.C.	Broken limit switch.

Summary of Dresden 2 MOV Failures - (Cont'd.)

Page 4

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11-13-76	05-13-77	76-66/O1T	2301-8	F.C.	Stem severed due to mechanical overstress of stem when the torque switch remained momentarily energized.
02-17-77	03-02-77	75-5 /O1T	1501-32B	F.C.	Limit switch, that bypasses torque switch during opening of valve, had opened prior to the valve coming off its seat.
04-02-77	05-02-77	77-16/O3L	202-4B	F.O.	Valve packing too tight.
06-03-77	07-01-77	77-42/O3L	1501-3A	F.C.	Delta P switch feedback potentiometer misadjusted as a result of maintenance on a bent stem.
08-02-77	08-16-77	77-30/O1T	2301-8	Double indication	Torque switch open due to: a) improper setting, b) dry stem, or c) tight packing.
08-15-77	09-07-77	77-32/O3L	1501-5A	F.C.	No problems found.
09-10-77	09-23-77	77-35/O1T	2301-8	F.C.	Water in housing (170 ahm ground).
09-12-77	12-30-77	77-37/O3X-1	202-4B	F.O.	Light packing and dry stem.
10-13-78	11-09-78	78-57/O3L	1402-4B	F.O.	Stem not adequately lubricated.
10-18-78	11-13-78	78-58/O3L	1501-5C	F.O.	Stem not adequately lubricated.
12-20-78	01-18-79	78-68/O3L	202-4A	F.O.	Stem not adequately lubricated.
01-11-79	01-24-79	79-04/O3L	1501-38B	F.O.	Broken pinion gear.
01-26-79	02-09-79	79-08/O3L	1501-13A	Partially Open	Cause unknown.

Summary of Dresden 2 MOV Failures - (Cont'd.)

Page 5

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05-12-80	06-12-80	80-17/03L	2301-4	F.O.	Packing leak allowed water in housing.
05-18-80	06-03-80	80-18/03L	2301-4	F.O.	Packing too tight.
10-11-80	10-29-80	80-39/01T	2301-4	F.O.	Stem not adequately lubricated.
01-05-81	01-29-81	81-2/03L	1501-20B	F.O.	Stuck auxiliary contacts.
11-19-81	12-03-81	81-69/03L	1402-4B	F.O.	Failed fillet weld on M.O.
11-20-81	12-02-81	81-70/01T	1402-4A	F.O.	Cracked fillet weld on M.O.
05-29-82	06-22-82	82-18/03L	1301-1	F.C.	Valve packing caused tripping.

<u>Year</u>	<u>Number of Failures</u>	<u>Number of Torque Switch Failures</u>
1971	2	0
1972	2	0
1973	20	3
1974	7	2
1975	3	1
1976	4	1
1977	7	1
1978	3	0
1979	2	0
1980	3	0
1981	3	0
1982	1	0
TOTAL	57	8