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AUTH.NAME AUTHOR AFFILIATION
LEMPGES,T.E. Niagara Mohawk Power Corp.
RECIP.NAME RECIPIENT AFFILIATION
VASSALLO,D.B. Operating Reactors Branch 2

SUBJECT: Forwards response to NRC 811209 request for addl info re containment vent & purge valves, including info re valve operability, conformance w/SPR Section 6.2.4 & leakage due to seal deterioration. Tech Specs will be submitted separately.

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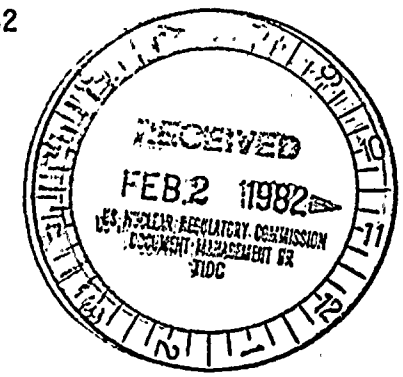
NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/300 ERIE BOULEVARD WEST, SYRACUSE, N.Y. 13202/TELEPHONE (315) 474-1511

January 29, 1982



Director of Nuclear Reactor Regulation
Attention: Mr. Dominick B. Vassallo, Chief
Operating Reactors Branch #2
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

Gentlemen:

Your letter of December 9, 1981 requested information regarding the containment vent and purge valves at Nine Mile Point Unit 1. The attachment to this letter addresses your request. Technical Specifications requested in your letter are being submitted under a separate cover.

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION

Thomas E. Lempges

Thomas E. Lempges
Vice President - Nuclear Generation

MGM:ja
Attachment

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NINE MILE POINT UNIT 1
NIAGARA MOHAWK POWER CORPORATION
RESPONSE TO
DECEMBER 9, 1981
REQUEST FOR INFORMATION ON
CONTAINMENT VENT AND PURGE VALVES

Introduction and Summary

Your letter of December 9, 1981 provided a status of your review of Nine Mile Point Unit 1 regarding the issue of containment vent and purge valves. Several areas, as listed below, required further clarification:

1. Conformance to Standard Review Plan Section 6.2.4, Revision 1 and Branch Technical Position CSB 6-4, Revision 1.

2. Valve operability

3. Containment Leakage due to seal deterioration

4. Technical Specifications

Information which addresses these areas is provided herein for Nine Mile Point Unit 1. Specifically, the areas outlined in your letter and attachments are addressed.

Conformance to Standard Review Plan Section 6.2.4, Revision 1 and Branch Technical Position CSB 6-4, Revision 1

The draft safety evaluation attached to your December 9, 1981 letter noted that:

1. Sufficient information has not been provided to ensure that isolation valve closure would not be precluded by debris which could potentially become entrained in the escaping air and steam.

2. Provisions should be provided to reduce the probability of damage to the Reactor Building, Emergency Ventilation System during operation.

3. Closing times of the isolation valves should be reduced from 60 seconds to 5 seconds to limit offsite exposure.

In order to ensure that isolation valve closure would not be precluded by debris which could potentially become entrained in the escaping nitrogen and steam we will install debris screens in the vent and purge lines. The debris screens will be seismic category Class I and will be installed on the containment side of each inboard valve. The screens will be installed during the planned spring 1983 refueling and maintenance outage.

During operation, the Reactor Building Emergency Ventilation System would be subjected to increased operating pressures should the vent and purge valves be open. The only equipment in the emergency ventilation system which could be damaged by increased pressures is the filter housing. This housing contains the HEPA and charcoal filters for the system. To reduce the probability of damage to this housing, we will install a pressure control valve upstream of the housing. The pressure control valve will limit the pressure to less than 1 psig. The pressure control valve will be installed during the planned spring 1983 refueling and maintenance outage.

In addition to the installation of the pressure control valve, we are evaluating the need for additional modifications to improve system performance. We will inform you of the results of our review by December 31, 1982.

A dose assessment evaluation was performed to determine the offsite doses associated with the present vent and purge valves. For the design basis accident (i.e. double ended break of a recirculation line), both liquid and steam would be produced. The following assumptions were utilized in the evaluation:

1. 60 second valve closure time. This closure time is conservative, since the valves are now limited to opening of no more than 50 degrees which results in valve closure times of approximately 30 seconds.

2. Steam escapes undiluted from the open line.

3. Coolant activity is the maximum allowable by Technical Specifications (i.e., 25 Ci/gm). Higher coolant activities associated with accident induced failed fuel would not occur until beyond 60 seconds into the accident (i.e., the vent and purge valves would be closed).

The evaluation indicates that the resultant doses are approximately 65 percent of those which would occur for a main steam line break (i.e., 10.7 rem thyroid and 0.03 rem wholebody at the site boundary). These doses are substantially less than the limits of 10 CFR 100 (i.e., 300 rem thyroid and 25 rem whole body).

Additionally, as indicated in our letter of December 17, 1979, purging operation is kept as low as reasonably achievable, typically less than 90 hours per year. The system is normally used for inerting and deinerting during startup and shutdown. The only other use would be for safety related surveillance or maintenance.

Based on the aforementioned, current valve closure times are sufficient to limit offsite doses.

Valve Operability

In our letter of December 17, 1979 we indicated that our valve manufacturer was providing valve operability verification for the vent and purge valves. Attachment A contains the results of that study for the Nine Mile Point Unit 1. This study indicated that various degrees of valve blocking were necessary (based on T_o vs. Operating T). All valves at Nine Mile Point Unit 1 were mechanically stopped such that the maximum opening is 50 degrees.

Containment Leakage due to Seal Deterioration

Your letter indicated that valve integrity tests should be conducted at least once every three months. However, if past surveillance testing demonstrated valve integrity, this increased surveillance would not be required.

The containment vent and purge valves have been in operation since 1969. The only Licensee Event Reports written on these valves occurred during the 1979 and 1981 refueling and maintenance outages. These address excessive leakage during type C local leak rate testing. It is currently planned to install new rubber seals on these valves during the 1983 refueling and maintenance outage. These seals should provide for improved valve leakage characteristics. Technical Specifications, being submitted under separate cover, will require seals to be changed at least once every ten years. This is consistent with our operating experience.

Technical Specifications

Your letter provided Technical Specifications for containment vent and purge valves. Revised Nine Mile Point Unit 1 technical specifications will be submitted by February 15, 1982.

ATTACHMENT A

ALLIS CHALMERS
FINAL TEST REPORT
FOR
NINE MILE POINT UNIT 1
CONTAINMENT VENT AND PURGE
BUTTERFLY ISOLATION VALVES

ALLIS-CHALMERS
BOX M-93 • YORK, PENNSYLVANIA 17405/717-848-1126

YORK PLANT
VALVE DIVISION

August 1, 1980

Michael G. Mosier
Niagara Mohawk
300 Erie Blvd., West
Syracuse, NY 13202

REFERENCE: Niagara Mohawk Purchase Order 12131,
Dated 5/21/80

Dear Mike:

Attached is the final test report for your Allis-Chalmers butterfly valves in containment isolation service.

As we've said before, all of the valves in question, except 201-07, -08, and -17, have operators that are more than adequate to provide closure during your worst case DBE. Valves 201-07 and 201-17 exceed their operator capacity at 80° open and should be blocked so that each will not exceed 75° open. For valve 201-08, the performance of the Bettis unit is marginal, and could be improved either by installing a larger actuator or resetting the existing actuator to produce a faster stroke time.

Please call if you have any questions.

Sincerely,

Theodore Kopey

Theodore Kopey, Jr.
Application Engineer

TK/sm
Attachment
C5

Niagara Mohawk - 20" BFV - Tag No. 201-07

Ramp Pressure vs. Angle, 0 sec. delay t/d 0.29
Test #24 P_{max} = 34.5 psig, @ 90°
Operator Type: Limitorque
Closing Time: 60 seconds
Max. Torque: 1,100 ft-lbs.

°Open	Sec	P_1	P	C_t	T_D('#)	T_b('#)	T_o('#)	Oper. T('#)
90	0	34.5	11.25	-26.4	-1375	44	-1331	1100
80	6.66	25.25	10.25	-24.1	-1144	40	-1103	1100
70	13.33	22.50	10.7	-14.6	- 723	42	- 681	1100
60	20.0	22.50	14.1	- 8.9	- 581	55	- 526	1100
50	26.66	22.30	15.8	- 7.4	- 541	62	- 479	1100
40	33.33	22.25	18.3	- 5.9	- 500	71	- 428	1100
30	40.0	22.20	18.9	- 4.2	- 368	74	- 293	1100
20	46.66	22.20	20.1	- 2.8	- 261	79	- 182	1100
10	53.33	22.20	21.2	- 5.03	- 494	83	- 410	1100
0	60.0	22.15	--	--	--	--	--	1100

Max. Shaft Torque: 2,050 ft-lbs.
Shaft Diameter: 2.5 inches

$T_D = 4.63\ C_t\ P$

$Tb = 3.93\ P = 4.71\left(\frac{20}{12}\right)^2 \times 2.5 \times .12 \times P$

$To = TD + Tb$

Niagara Mohawk - 20" BFV - Tag Nos: 201-08 & 201-16

Ramp Pressure Vs. Angle, 0 sec. delay, t/d 0.29
Test #21 P_{max} = 34.5 psig @ 90°
Operator Type: Bettis
Closing Time: 60 sec.
Max. Torque: 1,520 ft-lbs.

°Open	Sec	P_1	P	C_t	T_D('#)	T_b('#)	T_o('#)	Oper. T('#)
90	0	34.5	11.5	-25	-1331	-45.2	-1376	1520
80	6.66	25.25	9.25	-17.9	- 767	-36.4	- 803	1047
70	13.33	22.50	11.5	-11.25	- 599	-45.2	- 644	801
60	20.0	22.50	13.8	- 9.5	- 607	-54.2	- 661	665
50	26.66	22.30	16.7	- 7.0	- 541	-65.6	- 606	591
40	33.33	22.25	18.8	- 5.2	- 453	-74	- 527	557
30	40.0	22.20	20.2	- 3.2	- 299	-79	- 378	556
20	46.66	22.20	21.7	- 2.2	- 221	-85	- 306	586
10	53.33	22.20	22.2	- 3.92	- 403	-87	- 490	651
0	60	22.15	--	--	--	--	--	--

Max. Shaft Torque: 2,050 ft-lbs.
Shaft Diameter: 2.5 inches

$T_D = 4.63\ C_t \quad P$
Tb = -3.93 P
To = To + Tb

Niagara Mohawk - 24" BFV - Tag No. 201-32

Ramp Pressure vs. Angle, 0 sec. delay, t/d 0.17
Test #32 P_{max} = 34.5 psig @ 90°
Operator Type: Bettis
Closing Time: 60 sec.
Max. Torque: 3194 ft-lbs.

°Open	Sec	P_1	P	C_t	T_D('#)	T_b('#)	T_o('#)	Oper. T('#)
90	0	34.5	4.6	-24.1	- 887	-25.99	- 913	3193
80	6.66	25.25	5.5	- 5.7	- 228	-31	- 259	2201
70	13.33	22.50	8.75	3.3	231	-49	182	1685
60	20.0	22.50	12.5	2.9	290	-71	219	1399
50	26.66	22.30	17.1	.91	125	-97	28	1241
40	33.33	22.25	19.1	- .42	- 64	-108	- 172	1172
30	40.0	22.20	19.4	- .54	- 84	-110	- 194	1169
20	46.66	22.20	21	- .7	-118	-119	- 237	1232
10	53.33	22.20	21	-1.26	-212	-119	- 331	1368
0	60	22.15						

Max. Shaft Torque 2,200 ft-lbs. Shaft Di. = 2.5

$T_D = 8\ C_T \quad P$
Tb = -5.65 P
To = TD + Tb

Niagara Mohawk - 20" BFV - Tag No. 201-17

Ramp Pressure vs. Angle, 0 sec. delay, t/d 0.29
Test #21, P_{max} = 34.5 psig @ 90°
Operator Type: Limitorque
Closing Time: 60 sec.
Max. Torque: 1100 ft-lbs.

°Open	Sec	P_1	P	C_t	T_D('#)	T_b('#)	T_o('#)	Oper. T('#)
90	0	34.5	11.5	-25	-1331	-45.2	-1376	1100
80	6.66	25.25	9.25	-17.9	- 767	-36.4	- 803	1100
70	13.33	22.50	11.5	-11.25	- 599	-45.2	- 644	1100
60	20.0	22.50	13.8	- 9.5	- 607	-54.2	- 661	1100
50	26.66	22.30	16.7	- 7.0	- 541	-65.6	- 606	1100
40	33.33	22.25	18.8	- 5.2	- 453	-74	- 527	1100
30	40.0	22.20	20.2	- 3.2	- 299	-79	- 378	1100
20	46.66	22.20	21.7	- 2.2	- 221	-85	- 306	1100
10	53.33	22.20	22.2	-3.91	- 403	-87	- 490	1100
0	60	22.15						

Max. Shaft Torque 2,050 ft-lbs. Shaft Dia. = 2½"

$T_D = 4.63\ C_T\ P$
Tb = -3.93 P
To = TD + Tb

Niagara Mohawk - 24" BFV - Tag Nos. 201-09 & 201-31

Ramp Pressure vs. Angle, 0 sec. delay, t/d 0.17
Test #29, P_{max} = 34.5 psig @ 90°
Operator Type: Limitorque
Closing Time: 60 sec.
Max. Torque: 1100 ft-lbs.

°Open	Sec	P_1	P	C_t	T_D('#)	T_b('#)	T_o('#)	Oper. T('#)
90	0	34.5	7.25	-8.02	-58.1	- 41	- 99	1100
80	6.66	25.25	8.65	-3.1	-26.8	- 49	- 75.7	1100
70	13.33	22.50	8.5	6.9	58.65	- 48	11.0	1100
60	20.0	22.50	13.0	3.15	41.0	-73.5	- 33	1100
50	26.66	22.30	16.7	.72	12.1	- 94	- 82	1100
40	33.33	22.25	19.1	-2.1	-39.9	-108	- 148	1100
30	40.0	22.20	19.8	-2.35	-46.53	-112	- 158	1100
20	46.66	22.20	21.2	-2.89	-61.5	-120	- 182	1100
10	53.33	22.20	21.4	-3.62	-77.5	-121	- 198	1100
0	60	22.15						

Max. Shaft Torque 2,200 ft-lbs. Shaft Dia. = 2.50"

$T_D = 8C_T \quad P$
$Tb = -5.65 \quad P$
$To = TD + Tb$

Niagara Mohawk - 24" BFV - Tag No. 201-10

Ramp Pressure vs. Angle, 0 sec. delay, t/d 0.17
Test #29, P_{max} = 34.5 psig @ 90°
Operator Type: Bettis
Closing Time: 60 sec.
Max. Torque: 3194 ft-lbs.

°Open	Sec	P_1	P	C_t	T_D('#)	T_b('#)	T_o('#)	Oper. T('#)
90	0	34.5	7.25	-8.02	-58.1	- 41	- 99	3194
80	6.66	25.25	8.65	-3.1	-26.8	- 49	-75.7	2202
70	13.33	22.50	8.5	6.9	58.65	- 48	11.0	1685
60	20.0	22.50	13.0	3.15	41.0	-73.5	-33	1398
50	26.66	22.30	16.7	.72	12.1	- 94	- 82	1242
40	33.33	22.25	19.1	-2.1	-39.9	-108	-148	1172
30	40.0	22.20	19.8	-2.35	-46.53	-112	-158	1169
20	46.66	22.20	21.2	-2.89	-61.5	-120	-182	1232
10	53.33	22.20	21.4	-3.62	-77.5	-121	-198	1369
0	60	22.15						

Max. Shaft Torque 2,200 ft-lbs. Shaft Dia = 2.50"

$T_D = 8C_T \quad P$
Tb = -5.65 P
To = TD + Tb

S6/5

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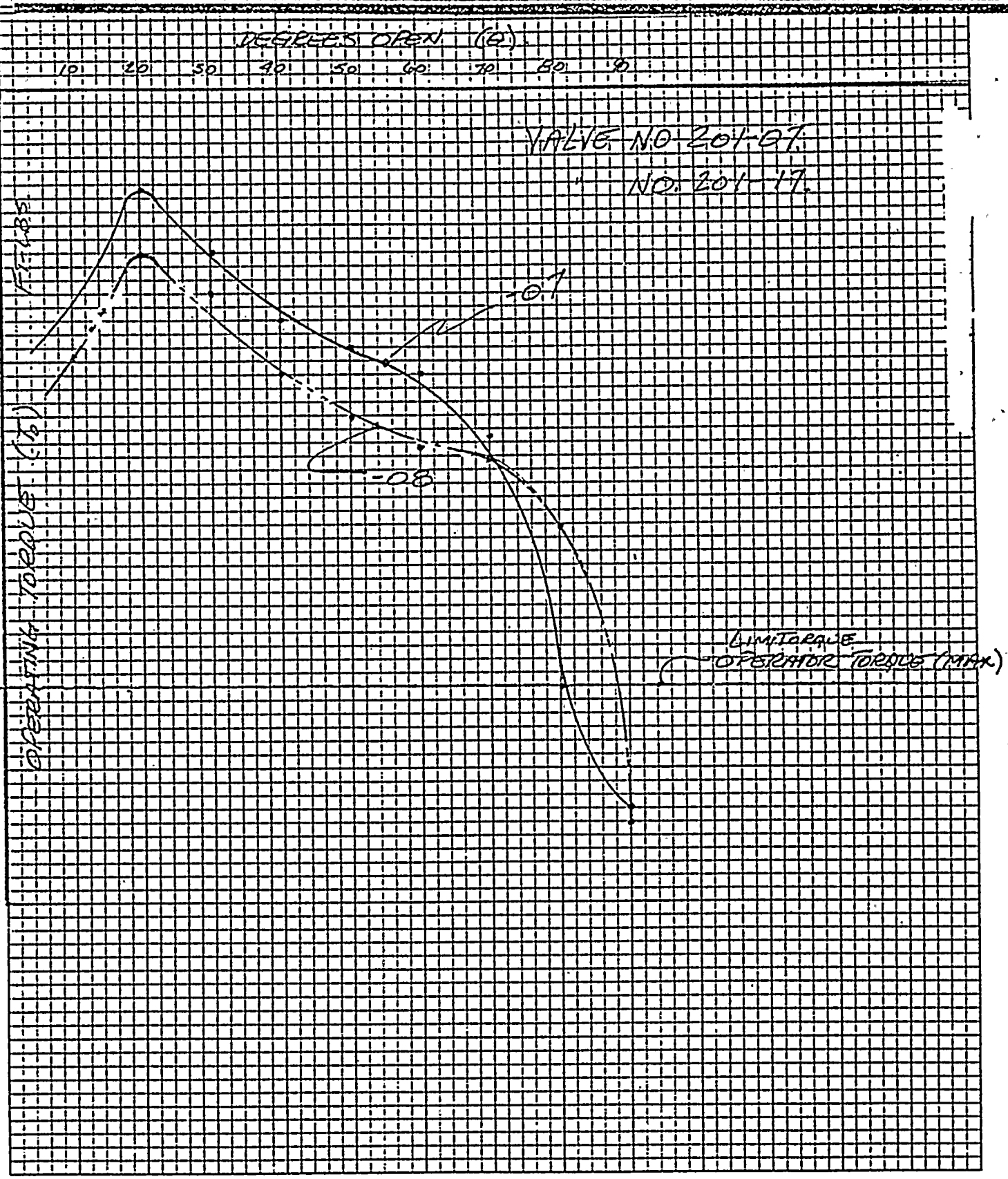

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