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Niagara Mohawk Power Corp. Syracuse, N. Y. 13202 R. R. Scheider	4-18-74	4-22-74	X			

TO:	ORIG	CC	OTHER	
D. L. Ziemann	1 signed			SENT AEC PDR X SENT LOCAL PDR X

CLASS	UNCLASS	PROP INFO	INPUT	NO CYS REC'D	DOCKET NO:
	XXX			40	50-220

DESCRIPTION:
Ltr re our 3-20-74, furnishing addl info concerning control rod drive conversion programs at Nine Mile Point #1

ENCLOSURES:

DO NOT REMOVE

ACKNOWLEDGED

PLANT NAME: Nine Mile Point Unit #1

FOR ACTION/INFORMATION 4-18-74 GC

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✓CASE	✓KNIGHT	BALLARD	GOULBOURNE (L)	
GIAMBUSSO	✓PAWLICKI	SPANGLER	LEE (L)	PLANS
BOYD	✓SHAO		MAIGRET (L)	MCDONALD
MOORE (L)(BWR)	✓STELLO	ENVIRO	REED (E)	DUBE w/Input
DEYOUNG(L)(PWR)	✓HOUSTON	MULLER	SERVICE (L)	
SKOVHOLT (L)	NOVAK	DICKER	SHEPPARD (L)	INFO
✓GOLLER(L)	ROSS	KNIGHTON	SLATER (E)	C. MILES
P. COLLINS	IPPOLITO	YOUNGBLOOD	SMITH (L)	B. KING (E/W-358)
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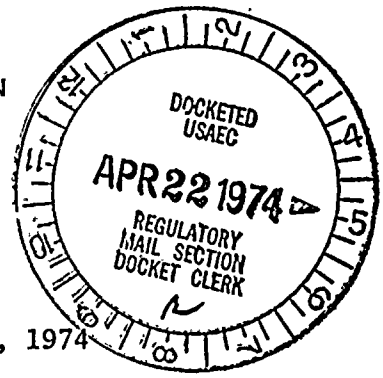
1 - P. R. DAVIS (AEROJET NUCLEAR)	NEWMARK/BLUME/AGBABIAN	RM-B-127, GT.
✓16 - CYS ACRS ~~XXXXXX~~ SENT TO LIC. ASST. 4-22-74 DIGGS	1-GERALD ULRIKSON...ORNL	1-RD..MULLER..F-309 GT
	1-B & M SWINEBROAD, Rm E-201 GT	

Regulatory Docket File

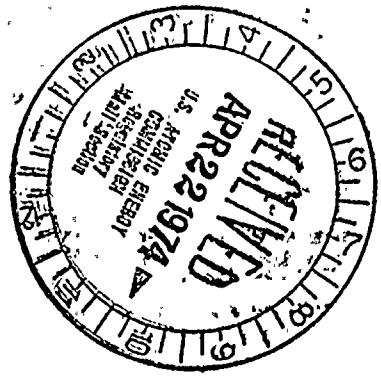
NIAGARA MOHAWK POWER CORPORATION

NIAGARA MOHAWK

300 ERIE BOULEVARD WEST
SYRACUSE, N. Y. 13202



April 18, 1974



Mr. Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Directorate of Licensing
Division of Reactor Licensing
United States Atomic Energy Commission
Washington, D. C. 20545

Re: Provisional Operating License: DPR-17
Docket No: 50-220

Dear Mr. Ziemann:

Your letter of March 20, 1974 requested additional information concerning the control rod drive conversion program at Nine Mile Point Nuclear Station, Unit #1. In particular, the enclosure to your letter specified three question areas. The response to those questions is as follows:

1. The proposed conversion program consists of the repositioning of a filter to place this filter in the flow path for reactor water to the stop piston seals and not in the scram path. (Figure 1) The fine mesh filter was originally mounted on the traveling portion of the drive and early in plant life, prior to changing the mesh size, was responsible for deteriorating scram times. However, with the repositioning, the filter is mounted on top of the stop piston and is provided to filter reactor water flowing to the stop piston seals, removing foreign particles or abrasives matter that could result in internal damage to the seals. This modification has been recommended by General Electric Company, the nuclear steam supplier, and is the design incorporated on later plants [1]. Based upon testing results of all control rod drives, criteria has been established in determining the scheduled modification of all control rod drives. A withdrawal stall leakage flow test was performed on all control rod drives.

Continued

The result of this testing showed that those drives stopping at position 02 following a scram[2,3] had the highest stall leakage flows. Therefore, using this test method a schedule for modification was derived as follows:

1. Modify all drives that have clear indication of stop piston seal deterioration, (those that stopped at position 02 on a scram).

2. Modify all drives with withdrawal stall leakage flows equal to or greater than 4 gpm.

3. Modify the remaining drives in decreasing stall leakage flow order time permitting.

Part three (3) of the criteria indicates that all drives may not be modified this refueling outage. An attempt will be made to modify all 129 control rod drives, however, this modification becomes critical path for the outage and some low stall leakage flow drives may not be modified until the next annual outage. Eighty control rod drives will be modified this outage as a minimum (this is the 4 gpm cut off point). The outage is scheduled to end May 26, 1974.

2. As described in the response to question 1, the appropriate test to use in determining the amount of leakage from the upper set of stop piston seals is the withdrawal stall flow leakage test. This is conservative as stall flow leakage is the sum of collect seal and stop piston seal leakage. As a weekly requirement during power operqtion, control rod drive exercising is done. This test verifies that all control rods are capable of movement. It has been practical to incorporate a withdrawal stall leakage test in this procedure, for control rods at position 48. This can be used as a method of determining the extent if any of deterioration of upper stop piston seals.

During the previous operating cycle, 22 control rod drives experienced stop piston seal deterioration to the extent that flow past the upper set of stop piston seals to the discharge (the discharge is common to flow thru the buffer holes) was enough to prevent the drive from latching at position 00. Thru analysis, it has been shown that:

1. The drive would settle only to position 00 (normal) or 02 (high leakage) and no higher withdrawn position.

2. The reactor would be shutdown under these conditions.

3. The control rod drives that settled to position 02 could in all cases be inserted to 00 using the manual control system.

4. Approximately 20% of the drives (all without modification) failed to insert to position 00.

Continued

Therefore, it can be concluded that if those unmodified control rod drives during the next cycle experienced the stop piston failure in the same percentage, the result would be more conservative than the previous cycle.

A single drive where the upper set of stop piston seals are leaking greater than 6 gpm presents a reasonable probability of latching in tto position 02 instead of position 00. Thru testing with all stop piston seals removed the stop piston leakage was slightly greater than 6 gpm and the drive did settle to position 02. This would be the maximum deterioration condition. If the deterioration of all seals is present the control rod drive would be difficult to withdraw from the fully inserted position and could settle to position 02 following a scram.

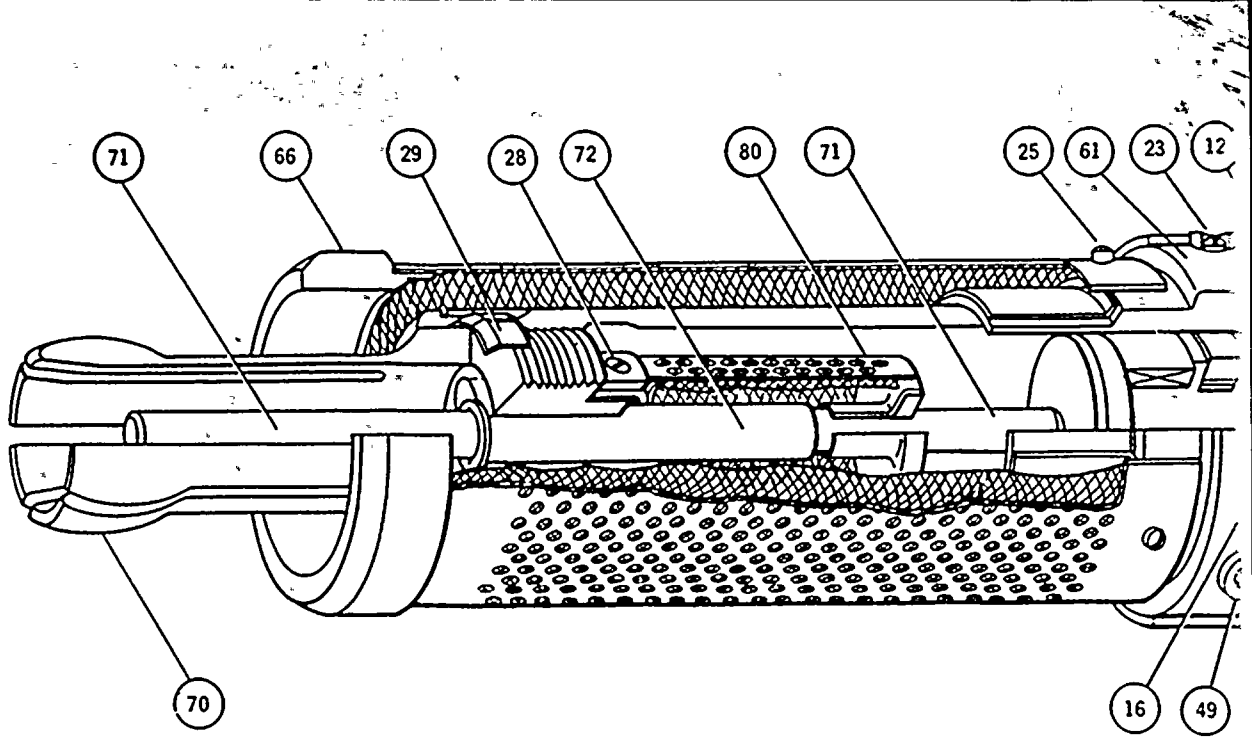
3. The process computer monitors certain vital parameter enabling a "post mortum" study following a reactor scram. One point monitored is scram dump volume (SDV) hi hi level. The time to reach the SDV hi hi level can be obtained from the computer. On November 20, 1973,2eleven drives failed to insert to position 00. They settled into position 02. During that scram the amount of time necessary to reach SDV hi hi level was over 60 seconds indicating that even with high leakage the effect was not seen in SDV. Following each reactor scram this parameter would be monitored to assure that the times to fill to hi hi level are greater than the average scram time. With the modification to limit deterioration of the stop piston seals it is expected that times to reach SDV hi hi level will increase.

Very truly yours,

R. R. Schneider
Vice President
Electric Operations

1. JAFNPP 50-333
2. AOR 73-11-20
3. AOV 73-11-29

2	RING FLANGE
*3	SOCKET HEAD CAP SCREW (RING FLANGE MOUNTING)
*4	FILLISTER HEAD SCREW (POSITION INDICATOR PROBE MOUNTING)
*5	LOCKWASHER (FOR PART 4)
*8, 75	PISTON TUBE
*9	O-RING (PISTON TUBE)
10	NUT (PISTON TUBE)
12	STOP PISTON
13	SPLIT BUSHING (STOP PISTON)
*14	SEAL RING (STOP PISTON)
*15	SPRING WASHERS
*16	COTTER PIN (STOP PISTON)
*17	INDEX TUBE
*18	BAND
*19	COLLET AND PISTON
*20	SEAL RING (COLLET PISTON – INTERNAL)
*21	SEAL RING (COLLET PISTON – EXTERNAL)
*23	FILLISTER HEAD SCREW (GUIDE CAP PLUG MOUNTING)
*25	DRILLED FILLISTER HEAD SCREW (OUTER FILTER MOUNTING)
*28	FLAT HEAD SCREW (INNER FILTER MOUNTING)
*29	BAND
*34	DRIVE SCREW (NAMEPLATE MOUNTING)
*35	BALL RETAINER
*36	BALL (CHECK VALVE)
*37	O-RING (BALL RETAINER)
*38	O-RING SPACER
*41	POSITION INDICATOR PROBE
*49	PLUG (GUIDE CAP)
*50	O-RING (INSERT AND WITHDRAW PORTS)
*51	O-RING (CRD FLANGE FACE)
*55	SET SCREW PLUG (COOLING WATER ORIFICE)
*57	SCREW (O-RING SPACER MOUNTING) (NOT SHOWN)
*59	COLLET SPRING
*60	BARREL
*61	GUIDE CAP
*63, 74	NAMEPLATE
*64	FLAT HEAD SCREW (STRAINER MOUNTING)
*65	STRAINER
*66	OUTER FILTER
*69	DRIVE PISTON
*70	SPUD
*71	ROD
*72	TUBE
*73	CYLINDER, TUBE, AND FLANGE
*77	DOWEL (ALIGNMENT) PIN
78	COLLET HOUSING (PORTION OF OUTER TUBE)
79	SPACER (PART OF CYLINDER, TUBE, AND FLANGE)
*80	INNER FILTER
81	POSITION INDICATOR SWITCHES
82	INDEX TUBE NOTCH
83	OUTER TUBE (PART OF CYLINDER, TUBE, AND FLANGE)
84	INNER CYLINDER (PART OF CYLINDER, TUBE, AND FLANGE)
85	THERMOCOUPLE (PART OF POSITION INDICATOR PROBE)
86	STUD (PORTION OF PISTON TUBE)
87	COLLET FINGER (PART OF COLLET AND PISTON)
88	INDICATOR TUBE (PART OF PISTON TUBE)
89	INNER SEALS (DRIVE PISTON – BUFFER SEALS)
90	Seal Ring Inner Filter



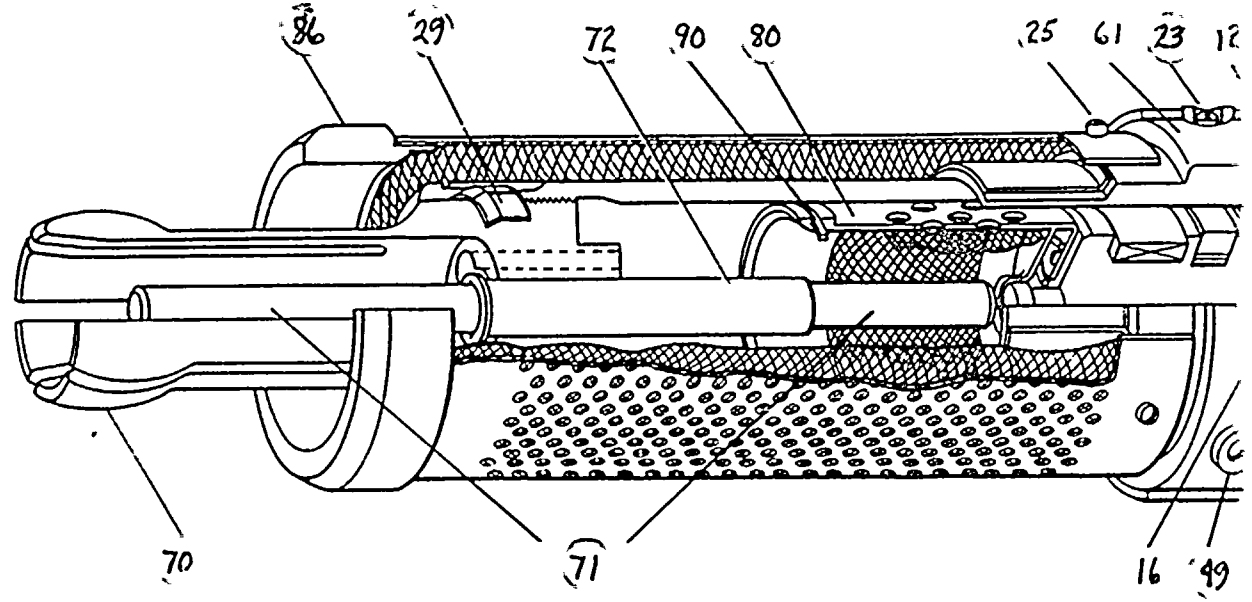


FIG 1