December 29, 1976

Docket No.: 50-333

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Power Authority of the State
of New York
ATTN: Mr. George T. Berry
General Manager and
Chief Engineer
10 Columbus Circle
New York, New York 10019

Gentlemen:

The Commission has issued the enclosed Amendment No. 20 to Facility Operating License No. DPR-59 for the James A. FitzPatrick Nuclear Power Plant. The amendment consists of changes to the Technical Specifications in response to your application for amendment submitted by letter dated October 25, 1976.

The amendment incorporates provisions into the Technical Specifications related to limiting conditions for operation and surveillance of shock suppressors (snubbers). We have made certain changes in the Technical Specifications you proposdd and have discussed these changes with your staff.

Copies of the related Safety Evaluation and the Federal Register Notice are also enclosed.

Sincerely,

Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

Enclosures:
1. Amendment No. 20 to DPR-59
2. Safety Evaluation
3. Federal Register Notice

cc w/enclosures:
See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

POWER AUTHORITY OF THE STATE OF NEW YORK
AND
NIAGARA MOHAWK POWER CORPORATION

DOCKET NO. 50-333

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 20
License No. DPR-59

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Power Authority of the State of New York and Niagara Mohawk Power Corporation, (the licensees) sworn to October 22, 1976, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert W. Reid

Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 29, 1976

ATTACHMENT TO LICENSE AMENDMENT NO. 20

FACILITY OPERATING LICENSE NO. DPR-59

DOCKET NO. 50-333

Replace pages ia, ii, v, vi, 155 and 156 of the Appendix A Technical Specifications with the attached revised pages ia, ii, v, vi, 155 and 156, and add the attached new pages 145a, 145b, and 156a through 156q. The new pages and changes in the revised pages are shown by marginal lines. Pages ia, v and 155 are unchanged and are included for convenience only.

TEMPORARY RESTRICTIONS

Niagara Mohawk Power Corporation shall not commence initial criticality until the licensees have been advised by the Directorate of Licensing, in writing, that the Directorate of Regulatory Operations has found that the following items have been satisfactorily completed:

1. The preoperational test program for the ECCS Loss of Power Test.

2. Verification of the iodine removal efficiency tests of the carbon filters for the standby gas treatment and control room ventillation systems.

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LIST OF TABLES (CONT'D)

3.6 (cont'd)

3.6.I Shock Suppressors (Snubbers)

Applicability

Applies to the operational status of the shock suppressors (snubbers).

Objective

To assure the capability of the snubbers to:

Prevent unrestrained pipe motion under dynamic loads as might occur during an earthquake or severe transient, and

Allow normal thermal motion during startup and shutdown.

Specification

1. During all modes of operation except Cold Shutdown and Refuel, all snubbers which are required to protect the primary coolant system or any other safety related system or component shall be operable except as noted in 3.6.I.2 through 3.6.I.5 below. These safety related snubbers are listed in Table 3.6-1.

4.6 (cont'd)

4.6.I Shock Suppressors (Snubbers)

Applicability

Applies to the periodic testing requirement for the hydraulic shock suppressors (snubbers).

Objective

To assure the operability of the snubbers to perform their intended functions.

Specification

The following surveillance requirements apply to all hydraulic snubbers listed in Table 3.6-1.

1. All hydraulic snubbers whose seal material has been demonstrated by operating experience, lab testing or analysis to be compatible with the operating environment shall be visually inspected This inspection shall include, but not necessarily be limited to, inspection of the hydraulic fluid reservoir, fluid connections, and linkage connections to the piping and anchor to verify snubber operability in accordance with the following schedule:

Number of Snubbers Found Inoperable During Inspection or During Inspection Interval	Next Required Inspection Interval
0	18 months ± 25%
1	12 months ± 25%
2	6 months ± 25%

I. Shock Suppressors (Snubbers) (Cont'd)

2. From and after the time that a snubber is determined to be inoperable, continued reactor operation is permissible only during the succeeding 72 hours unless the snubber is sooner made operable or replaced.

3. If the requirements of 3.6.I.1 and 3.6.I.2 cannot be met, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition within 36 hours.

4. If a snubber is determined to be inoperable while the reactor is in the shutdown or refuel mode, the snubber shall be made operable or replaced prior to reactor startup.

5. Snubbers may be added to safety related systems without prior License Amendment to Table 3.6.1 provided that a revision to Table 3.6.1 is included with the next License Amendment request.

I. Shock Suppressors (Snubbers) (Cont'd)

3,4	124 days $\pm$ 25%
5,6,7	62 days $\pm$ 25%
$\geq$ 8	31 days $\pm$ 25%

The required inspection interval shall not be lengthened more than one step at a time.

Snubbers may be categorized in two groups, "accessible" or "inaccessible" based on their accessibility for inspection during reactor operation. These two groups may be inspected independently according to the above schedule.

2. All hydraulic snubbers whose seal materials are other than ethylene propylene or other material that has not been demonstrated to be compatible with the operating environment shall be visually inspected for operability every 31 days.

3. Once each refueling cycle, a representative sample of 10 hydraulic snubbers or approximately 10% of the hydraulic snubbers, whichever is less, shall be functionally tested for operability including verification of proper piston movement, lock up and bleed. For each unit and subsequent unit found inoperable, an additional 10% or ten hydraulic snubbers shall be so tested until no more failures are found or all units have been tested. Snubbers of rated capacity greater than 50,000 lbs. need not be functionally tested.

would provide a leakage path past the core thus reducing the core flow rate. The reverse flow through the inactive jet pump would still be indicated by a positive differential pressure but the net effect would be a slight decrease (3 percent to 6 percent) in the total core flow measured. This decrease, together with the loop flow increase, would result in a lack of correlation between measured and derived core flow rate. Finally, the affected jet pump diffuser differential pressure signal would be reduced because the backflow would be less than the normal forward flow.

A nozzle-riser system failure could also generate the coincident failure of a jet pump body; however, the converse is not true. The lack of any substantial stress in the jet pump body makes failure impossible without an initial nozzle-riser system failure.

The licensee's analyses indicate that above 80 percent power; the loop select logic could not be expected to function at a speed differential of 15 percent. Below 80 percent power, the loop select logic would not be expected to function at a speed differential of 20 percent. This specification provides a margin of 5 percent in pump speed differential before a problem could arise. If the reactor is operating on one pump, the loop select logic trips that pump before making the loop selection.

H. Jet Pump Flow Mismatch

The LPCI loop selection logic has been previously described in the James A. FitzPatrick FSAR. For some limited low probability accidents with the recirculation loop operating with large speed differences, it is possible for the logic to select the wrong loop for injection. For these limited conditions, the core spray itself is adequate to prevent fuel temperatures from exceeding allowable limits. However, to limit the probability even further, a procedural limitation has been placed on the allowable variation in speed between the recirculation pumps.

The licensee's analyses indicate that above 80 percent power; the loop select logic could be expected to function at a speed differential up to 14 percent of their average speed. Below 80 percent power, the loop select logic would be expected to function at a speed differential up to 20 percent of their average speed. This specification provides a margin because the limits are set at ±10 percent and ±15 percent of the average speed for the above and below 80 percent power cases, respectively. If the reactor is operating on one pump, the loop select logic trips that pump before making the loop selection.

Requiring the discharge valve of the lower speed loop to remain closed until the speed of the faster pump is below 50 percent of its rated speed provides assurance when going from one to two pump operation that excessive vibration of the jet pump risers will not occur.

I. Hydraulic Shock Suppressors

Snubbers are designed to prevent unrestrained pipe motion under dynamic loads as might occur during an earthquake or severe transient, while allowing normal thermal motion during startup and shutdown. The consequence of an inoperable snubber is an increase in the probability of structural damage to piping as a result of a seismic or other event initiating dynamic loads. It is therefore required that all snubbers required to protect the primary coolant system or any other safety system or component be operable during reactor operation.

Because the snubber protection is required only during low probability events, a period of 72 hours is allowed for repairs or replacements. In case a shutdown is required, the allowance of 36 hours to reach a cold shutdown condition will permit an orderly shutdown consistent with standard operating procedures. Since plant startup should not commence with knowingly defective safety related equipment, Specification 3.6.1.4 prohibits startup with inoperable snubbers.

All safety related hydraulic snubbers are visually inspected for overall integrity and operability. The inspection will include verification of proper orientation, adequate hydraulic fluid level and proper attachment of snubber to piping and structures.

The inspection frequency is based upon maintaining a constant level of snubber protection. Thus the required inspection interval varies inversely with the observed snubber failures. The number of inoperable snubbers found during a required inspection determines the time interval for the next required inspection. Inspections performed before that interval has elapsed may be used as a new reference point to determine the next inspection. However, the results of such early inspections performed before the original required time interval has elapsed (nominal time less than 25%) may not be used to lengthen the required inspection interval. Any inspection whose results require a shorter inspection interval will override the previous schedule.

Experience at operating facilities has shown that the required surveillance program should assure an acceptable level of snubber performance provided that the seal materials are compatible with the operating environment.

Snubbers containing seal material which has not been demonstrated by operating experience, lab tests or analysis to be compatible with the operating environment should be inspected more frequently (every month) until material compatability is confirmed or an appropriate changeout is completed.

Examination of defective snubbers at reactor facilities and material tests performed at several laboratories (Reference 1) has shown that millable gum polyurethane deteriorates rapidly under the temperature and moisture conditions present in many snubber locations. Although molded polyurethane exhibits greater resistance to these conditions, it also may be unsuitable for application in the higher temperature environments. Data are not currently available to precisely define an upper temperature limit for the molded polyurethane. Lab tests and in-plant experience indicate that seal materials are available, primarily ethylene propylene compounds, which should give satisfactory performance under the most severe conditions expected in reactor installations.

To further increase the assurance of snubber reliability, functional tests should be performed once each refueling cycle. These tests will include stroking of the snubbers to verify proper piston movement, lock-up and bleed. Ten percent or 10 snubbers whichever is less, represents an adequate sample for such tests. Observed failures on these samples should require testing of additional units. Those snubbers designated in Table 3.6-1 as being in high radiation areas during shutdown or especially difficult to remove need not be selected for functional tests provided operability was previously verified. Snubbers of rated capacity greater than 50,000 lbs. are exempt from the functional testing requirements because of the impracticability of testing such large units.

Reference 1 Report, H. R. Erickson, Bergen Paterson to K. R. Goller, NRC, October 7, 1974.
Subject: Hydraulic Shock Sway Arrestors

Table 3.6-1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber No.	Location	Elevation	* Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult to Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
(SSA1)	Inside Cont. Recirc. loop A (recirc. pump A)	261'			X	
(SSA2)	Inside Cont. Recirc. loop A (recirc. pump A)	263'			X	
(SSA3)	Inside Cont. Recirc. loop A (recirc. pump A)	263'			X	
(SSA4)	Inside Cont. Recirc. loop A (pump motor)	266'			X	
(SSA5)	Inside Cont. Recirc. loop A (pump motor)	266'			X	
(SSA6)	Inside Cont. Recirc. loop A (pump motor)	282'			X	
(SSA7)	Inside Cont. Recirc. loop A (inlet piping)	284'			X	
(SSA8)	Inside Cont. Recirc. loop A (inlet piping)	284'			X	
(SSA9)	Inside Cont. Recirc. loop A (outlet piping)	268'			X	

Amendment No. 2(

Table 3.6-1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber No.	Location	Elevation	*Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult to Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
(SSA10)	Inside Cont. Recirc. loop A (outlet piping)	263'			X	
(SSA11)	Inside Cont. Recirc. loop A (bypass line)	261'			X	
(SSA12)	Inside Cont. Recirc. loop A (outlet piping)	280'			X	
(SSA13)	Inside Cont. Recirc. loop A (outlet piping)	280'			X	
(SSA14)	Inside Cont. Recirc. loop A (iso. valve)	260'			X	
(SSB1)	Inside Cont. Recirc. loop B (recirc. pump B)	261'			X	
(SSB2)	Inside Cont. Recirc. loop B (recirc. pump B)	263'			X	
(SSB3)	Inside Cont. recirc. loop B (recirc. pump B)	263'			X	
(SSB4)	Inside Cont. Recirc. loop B (pump motor)	266'			X	

Table 3.6-1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber No.	Location	Elevation	* Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult to Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
(SSB5)	Inside Cont. recirc. loop B (pump motor)	266'			X	
(SSB6)	Inside Cont. Recirc. loop B (pump motor)	282'			X	
(SSB7)	Inside Cont. Recirc. loop B (inlet piping)	284'			X	
(SSB8)	Inside Cont. Recirc. loop B (inlet piping)	284'			X	
(SSB9)	Inside Cont. Recirc. loop B (outlet piping)	268'			X	
(SSB10)	Inside Cont. Recirc. loop B (outlet piping)	263'			X	
(SSB11)	Inside Cont. Recirc. loop B (bypass line)	261'			X	
(SSB12)	Inside Cont. Recirc. loop B (outlet piping)	280'			X	
(SSB13)	Inside Cont. Recirc. loop B (outlet piping)	280'			X	

Table 3.6-1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber No.	Location	Elevation	* Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult to Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
(SSB14)	Inside Cont. Recirc. loop B (iso. valve)	260'			X	
H3-6	Inside Cont. 3"-C-1504-31	318'-6"		X	X	
H3-7	Inside Cont. 3"-C-1504-31	318'-6"		X	X	
H10-370	Inside Cont. 20"-W20-902-1	286'-0"			X	
H10-371	Inside Cont. 20"-W20-902-1	286'-0"			X	
H10-372	Inside Cont. 20"-W20-902-1	286'-0"			X	
H10-373	Inside Cont. 20"-W20-902-1	286'-0"			X	
H10-375	Inside Cont. 4"-W20-902-43	348'-5"			X	
H10-377	Inside Cont. 4"-W20-902-43	337'-0"			X	
H10-380	Inside Cont. 4"-W20-902-36	337'-0"			X	
H10-381	Inside Cont. 4"-W20-902-36	337'-0"			X	
PFSK-761	Inside Cont. 24"-W20-902-14A	283'-0"			X	

Table 3.6-1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber No.	Location	Elevation	* Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult to Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
PFSK-763	Inside Cont. 24"-W20-902-14A	283'-0"			X	
PFSK-768	Inside Cont. 24"-W20-902-14B	285'-4"		X	X	
PFSK-769	Inside Cont. 24"-W20-902-14B	283'-0"		X	X	
PFSK-775	Inside Cont. 4"-W20-902-43	337'-0"			X	
PFSK-776	Inside Cont. 4"-W20-902-43	337'-0"			X	
PFSK-937	Inside Cont. 4"-W20-902-43	348'-5"			X	
PFSK-938	Inside Cont. 4"-W20-902-43	350'-11"			X	
H10-388	Crescent Area 12"-W20-302-13A	263'-6"				X
H10-400	Crescent Area 20"-W20-302-17	243'-6"		X		X
H10-401	Crescent Area 20"-W20-302-17	243'-6"		X		X
H10-456	Crescent Area 16"-W20-302-9B	251'-5"				X
H1-457	Crescent Area 16"-W20-302-9B	251'-5"				X

Table 3.6-1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber No.	Location	Elevation	* Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult to Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
H10-464	Crescent Area valve MOV-66A	256'-2"				X
H10-465	Crescent Area valve MOV-66A	243'-6"		X		X
H10-466	Crescent Area MOV-65A opera.	246'-0"				X
H10-467	Crescent Area MOV-65A opera.	246'-0"				X
H10-468	Crescent Area MOV-65A opera.	246'-0"				X
H10-469	Crescent Area 16"-W20-302-9A	251'-5"				X
H10-470	Crescent Area 16"-W20-302-9A	251'-5"				X
H10-471	Crescent Area 16"-W20-302-15A	257'-0"		X		X
H10-472	Crescent Area 16"-W20-302-15A	257'-0"		X		X
H10-475	Crescent Area 10 MOV-39A	256'-2"		X		X
H10-476	Crescent Area 10 MOV-39A	256'-2"				X
H10-477	Crescent Area 16"-W20-302-15A	256'-2"		X		X

Table 3.6-1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber No.	Location	Elevation	*Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult to Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
H10-478	Crescent Area 16"-W20-302-15A	256'-2"		X		X
H10-480	Crescent Area 20"-W20-302-8B	243'-6"				X
H10-481	Crescent Area 20"-W20-302-8B	243'-6"				X
H10-482	Crescent Area 20"-W20-302-8B	243'-6"				X
H10-483	Crescent Area MOV-66B	243'-6"				X
H10-484	Crescent Area MOV-66B	243'-6"				X
H10-485	Crescent Area MOV-65B	246'-0"				X
H10-486	Crescent Area MOV-65B	246'-0"				X
H10-487	Crescent Area MOV-65B	246'-0"				X
H10-488	Crescent Area MOV-65B	245'-3"				X
H10-498	Crescent Area 20"-W20-152-2B	239'-3"				X
H10-500	Crescent Area 24"-W20-152-3B	231'-9"				X

Table 3.6-1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber No.	Location	Elevation	* Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult to Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
H10-501	Crescent Area 24"-W20-152-3B	231'-9"				X
H10-502	Crescent Area 20"-W20-152-2A	239'-3"				X
PFSK-722	Crescent Area MOV-65B opera.	246'-0"				X
PFSK-723	Crescent Area MOV-66A opera.	243'-6"				X
PFSK-724	Crescent Area MOV-66A	245'-1"				X
PFSK-725	Crescent Area MOV-66A opera.	245'-0"				X
PFSK-726	Crescent Area MOV-65A	246'-7"				X
PFSK-727	Crescent Area MOV-65A opera.	246'-0"		X		X
PFSK-774	Crescent Area 16"-W20-302-15B	256'-2"				X
PFSK-777	Crescent Area 16"-W20-302-15B	256'-2"				X
PFSK-789	Crescent Area 16"-W20-302-15B	256'-2"		X		X
PFSK-790	Crescent Area 16"-W20-302-15B	256'-2"		X		X

Table 3.6-1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber No.	Location	Elevation	* Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult to Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
PFSK-791	Crescent Area 16"-W20-302-15B	256'-2"		X		X
PFSK-816A	Crescent Area MOV-34B (on top)	256'-2"				X
PFSK-816B	Crescent Area MOV-34B (on top)	256'-2"				X
PFSK-816C	Crescent Area MOV-34B (bottom)	256'-2"		X		X
PFSK-816D	Crescent Area MOV-34B (bottom)	256'-2"		X		X
PFSK-877	Crescent Area 16"-W20-302-15A	262'-6"		X		X
PFSK-878	Crescent Area 24"-W20-302-11A	256'-6"		X		X
PFSK-966	Crescent Area 24"-W20-302-11B	265'-6"		X		X
PFSK-980	Crescent Area 24"-W20-302-11B	265'-6"		X		X
PFSK-1269	Crescent Area 20"-W20-152-2B	239'-3"				X
PFSK-1274	Crescent Area 20"-W20-152-2C	239'-3"				X
PFSK-1288A	Crescent Area 24"-W20-152-3A	231'-9"				X

Table 3.6-1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber No.	Location	Elevation	*Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult to Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
PFSK-1288B	Crescent Area 24"-W20-152-3A	231'-9"				X
H10-394	Reactor Bldg. 12"-W20-302-13A	314'-9"		X		X
H10-398	Reactor Bldg. 10"-W20-302-12A	320'-6"				X
H10-399	Reactor Bldg. 10"-W20-302-12A	320'-6"				X
H10-452	Reactor Bldg. 10 MOV-12B	272'-10"				X
H10-453	Reactor Bldg. 10 MOV-12B	272'-10"				X
H10-458	Reactor Bldg. 16"-W20-302-10A	274'-3"				X
H10-459	Reactor Bldg. 10 MOV-12A	274'-3"				X
H10-462	Reactor Bldg. 10 MOV-12A	278'-9"				X
H10-463	Reactor Bldg. 10 MOV-12A	274'-9"				X
H10-489	Reactor Bldg. 16"-WS-151-30A	290'-2"		X		X
H10-490	Reactor Bldg. MOV-89A	290'-2"		X		X

Table 3.6-1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber No.	Location	Elevation	* Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult to Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
H10-491	Reactor Bldg. 16"-WS-151-30B	288'-1"		X		X
H10-492	Reactor Bldg. 16"-WS-151-30B	292'-1"		X		X
H10-496	Reactor Bldg. 10"-W20-302-12B	321'-6"		X		X
H10-497	Reactor Bldg. 10"-W20-302-12B	321'-5"		X		X
H10-524A	Reactor Bldg. 8"-W20-152-39	272'-0"				X
H10-524B	Reactor Bldg. 8"-W20-152-39	272'-0"				X
PFSK-640A	Reactor Bldg. 8"-SHP-902-32B	281'-9"				X
PFSK-640B	Reactor Bldg. 8"-SHP-902-32B	281'-9"				X
PFSK-694A	Reactor Bldg. 16"-W20-302-10B	278'-9"				X
PFSK-694B	Reactor Bldg. 16"-W20-302-10B	278'-9"				X
PFSK-1050	Crescent Area 8"-SLP-152-22	255'-0"		X		X
PFSK-1051	Crescent Area 8"-SLP-152-22	254'-10"		X		X

Table 3.6-1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber No.	Location	Elevation	* Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult to Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
H14-60	Inside Cont. 10"-W23-1504-5A	322'-7"			X	
H14-63	Inside Cont. 10"-W23-1504-5B	322'-7"			X	
PFSK-793	Inside Cont. 10"-W23-902-5A	315'-10"			X	
PFSK-794	Inside Cont. 10"-W23-902-5A	316'-10"			X	
PFSK-1132	Inside Cont. 10"-W23-902-5B	317'-6"			X	
PFSK-1133	Inside Cont. 10"-W23-902-5B	317'-7"			X	
H14-66	Crescent Area MOV-26B	258'-11"				X
H14-67	Crescent Area MOV-26A	258'-11"				X
PFSK-866A	Crescent Area MOV-13A	234'				X
PFSK-866B	Crescent Area MOV-13B	234'				X
PFSK-866C	Crescent Area MOV-13A	234'				X
PFSK-866D	Crescent Area MOV-13B	234'				X

Table 3.6-1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber No.	Location	Elevation	* Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult to Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
PFSK-991	Crescent Area MOV-26A	252'-11"				X
PFSK-994	Crescent Area MOV-26B	252'-11"				X
H23-86	Inside Cont. 10"-SHP-902-19A	291'-5"		X	X	
H23-87	Inside Cont. 10"-SHP-902-19A	288'-6"		X	X	
H23-88	Inside Cont. 10"-SHP-902-19A	288'-6"		X	X	
H23-7	Crescent Area 20"-SLP-152-25	245'-8"		X		X
H23-89	Crescent Area 16"-W25-152-17	232'-10"				X
H23-90	Crescent Area 16"-W25-152-17	232'-10"				X
H23-96	Crescent Area 10"-SHP-902-19	262'-11"		X		X
PFSK-766	Crescent Area 16"-WCP-152-1	249'-6"		X		X
PFSK-767	Crescent Area 16"-WCP-152-1	249'-6"		X		X
PFSK-1450	Torus 10"-SHP-902-19	263'		X	X	

Table 3.6-1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber No.	Location	Elevation	* Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult to Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
PFSK-1451	Torus 10"-SHP-902-19	263'-1"		X	X	
PFSK-1452	Torus 10"-SHP-902-19	263'-0"		X	X	
PFSK-1631	Inside Cont. 10"-SHP-902-34	280'-1"			X	
H29-128	Inside Cont. 24"-SHP-902-1A	293'			X	
H29-129	Inside Cont. 24"-SHP-902-1A	293'-6"			X	
H29-130	Inside Cont. 24"-SHP-902-1B	292'-1"			X	
H29-131	Inside Cont. 24"-SHP-902-1B	292'-1"			X	
H29-132	Inside Cont. 24"-SHP-902-1D	293'			X	
H29-133	Inside Cont. 24"-SHP-902-1D	293'			X	
H29-134	Inside Cont. 24"-SHP-902-1C	292'-1"			X	
H29-135	Inside Cont. 24"-SHP-902-1C	292'-1"			X	
H29-136	Inside Cont. 24"-SHP-902-1A	292'-1"			X	

Amendment No. 20

Table 3.6-1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber No.	Location	Elevation	* Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult to Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
H29-137	Inside Cont. 24"-SHP-902-1A	292'-1"			X	
H29-138	Inside Cont. 24"-SHP-902-1B	292'-1"			X	
H29-139	Inside Cont. 24"-SHP-902-1B	292'-1"			X	
H29-140	Inside Cont. 24"-SHP-902-1C	292'-1"			X	
H29-141	Inside Cont. 24"-SHP-902-1C	292'-1"			X	
H29-142	Inside Cont. 24"-SHP-902-1D	292'-1"			X	
H29-143	Inside Cont. 24"-SHP-902-1D	292'-1"			X	
H34-117	Inside Cont. 12"-WFP-902A-5C	292'-0"			X	
H34-118	Inside Cont. 12"-WFP-902A-5C	292'-0"			X	
H34-119	Inside Cont. 12"-WFP-902A-4A	291'-10"			X	
H34-120	Inside Cont. 12"-WFP-902A-4A	291'-10"			X	

Table 3.6-1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber No.	Location	Elevation	* Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult to Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
H34-121	Inside Cont. 12"-WFP-902A-5D	292'-0"			X	
H34-122	Inside Cont. 12"-WFP-902A-5D	292'-4"			X	
H34-123	Inside Cont. 18"-WFP-902A-4B	291'-10"			X	
H34-124	Inside Cont. 18"-WFP-902A-4B	291'-10"			X	
BFSK-511	Reactor Bldg. 24"-N-151A	335'-0"				X
BFSK-512	Reactor Bldg. 24"-N-151A	335'-0"				X
BFSK-514	Reactor Bldg. 24"-N-151A	335'-0"				X

NOTE: The above snubbers are listed in the order in which they appear on the pipe going away from the reactor.

* Modifications to this table due to changes in high radiation areas should be submitted to the NRC as part of the next license amendment.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 20 TO LICENSE NO. DPR-59

POWER AUTHORITY OF THE STATE OF NEW YORK

AND

NIAGARA MOHAWK POWER CORPORATION

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

DOCKET NO. 50-333

Introduction

By letter dated October 25, 1976, the Power Authority of the State of New York and Niagara Mohawk Power Corporation (the licensees) requested an amendment to Facility Operating License No. DPR-59. The purpose of the request is to incorporate provisions in the James A. FitzPatrick Technical Specifications related to limiting conditions for operation and surveillance of shock suppressors (snubbers). We made changes in the licensees' October 25, 1976 submittal after discussions with the licensees.

Background

During the summer of 1973, inspections at two reactor facilities revealed a high incidence of inoperable hydraulic shock suppressors (snubbers) manufactured by Bergen Paterson Pipesupport Corporation. As a result of those findings, the Office of Inspection and Enforcement required each operating reactor licensee to immediately inspect all Bergen Paterson snubbers utilized on safety systems and to reinspect them 45 to 90 days after the initial inspection. Snubbers supplied by other manufacturers were to be inspected on a lower priority basis.

Since a long term solution to eliminate recurring failures was not immediately available, the Division of Reactor Licensing sent a letter dated October 2, 1973, to operating facilities utilizing Bergen Paterson snubbers specifying continuing surveillance requirements. By letter dated December 19, 1975, we requested that the licensees submit proposed Technical Specification requirements for hydraulic snubbers. On October 25, 1976, the licensees proposed Technical Specifications for hydraulic snubbers at the FitzPatrick reactor. During our review of the proposed change, we found that certain modifications were necessary. These modifications were discussed with the licensees and have been incorporated into the proposed Technical Specifications.

Evaluation

Snubbers are designed to prevent unrestrained pipe motion under dynamic loads as might occur during an earthquake or severe transient while allowing normal thermal movement during startup and shutdown.

The consequences of an inoperable snubber is an increase in the probability of structural damage to piping resulting from a seismic or other postulated event which initiates dynamic loads. It is therefore, necessary that snubbers installed to protect safety system piping be operable during reactor operation and be inspected at appropriate intervals to assure their operability.

Examination of defective snubbers at reactor facilities has shown that the high incidence of failures observed in the summer of 1973 was caused by severe degradation of seal materials and subsequent leakage of the hydraulic fluid. The basic seal materials used in Bergen Paterson snubbers were two types of polyurethane; a millable gum polyester type containing plasticizers and an unadulterated molded type. Material tests performed at several laboratories (Reference 1) established that the millable gum polyurethane deteriorated rapidly under the temperature and moisture conditions present in many snubber locations. Although the molded polyurethane exhibited greater resistance to these conditions, it also may be unsuitable for application in the higher temperature environments. Data are not currently available to precisely define an upper temperature limit for the molded polyurethane. The investigation indicated that seal materials are available, primarily ethylene propylene compounds, which should give satisfactory performance under the most severe conditions expected in reactor installations.

An extensive seal replacement program has been carried out at many reactor facilities. Experience with ethylene propylene seals has been very good with no serious degradation reported thus far. Although the seal replacement program has significantly reduced the incidence of snubber failures, some failures continue to occur. These failures have generally been attributed to faulty snubber assembly and installation, loose fittings and connections and excessive pipe vibrations. The failures have been observed in both PWR's and BWR's and have not been limited to units manufactured by Bergen Paterson. Because of the continued incidence of snubber failures we have concluded that snubber operability and surveillance requirements should be incorporated into the Technical Specifications. We have further concluded that these requirements should be applied to all safety related snubbers, regardless of manufacturer, in all light water cooled reactor facilities.

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(1) Report H. R. Erickson, Bergen Paterson to K. R. Goller, NRC, October 7, 1974, Subject: Hydraulic Shock Sway Arrestors

The proposed Technical Specifications and Bases provide additional assurance of satisfactory snubber performance and reliability. The specifications require that snubbers be operable during reactor operation and prior to startup. Because snubber protection is required only during low probability events, a period of 72 hours is allowed for repair or replacement of defective units before the reactor must be shut down. The licensees will be expected to commence repair or replacement of a failed snubber expeditiously. However, the allowance of 72 hours is consistent with that provided for other safety-related equipment and provides for remedial action to be taken in accordance with 10 CFR §50.36(c)(2). Failure of a pipe, piping system or major component would not necessarily result from the failure of a single snubber to operate as designed, and even a snubber devoid of hydraulic fluid would provide support for the pipe or component and reduce pipe motion. The likelihood of a seismic event or other initiating event occurring during the time allowed for repair or replacement is very small. Considering the large size and difficult access of some snubber units, repair or replacement in a shorter time period is not practical. Therefore, the 72 hour period provides a reasonable and realistic period for remedial action to be taken.

An inspection program is specified to provide additional assurance that the snubbers remain operable. The inspection frequency is based upon maintaining a constant level of snubber protection. Thus, the required inspection interval varies inversely with the observed snubber failures. The longest inspection interval allowed in the Technical Specifications after a record of no snubber failures has been established is nominally 18 months. Experience at operating facilities has shown that the required surveillance program should provide an acceptable level of snubber performance provided that the seal materials are compatible with the operating environment. Snubbers containing seal material which has not been demonstrated to be compatible with the operating environment are required to be inspected every 31 days until the compatibility is established or an appropriate seal change is completed.

To further increase the level of snubber reliability, the proposed Technical Specifications require functional tests once each refueling cycle. The tests will verify proper piston movement, lock up and bleed.

We have concluded that the proposed Technical Specifications, as modified, increase the probability of successful snubber performance, increase reactor safety and we therefore find them acceptable.

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and pursuant to 10 CFR §51.5(d)(4) that an environmental impact statement, or negative declaration, and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated:

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-333

POWER AUTHORITY OF THE STATE OF NEW YORK

AND

NIAGARA MOHAWK POWER CORPORATION

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY

OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 20 to Facility Operating License No. DPR-59 issued to the Power Authority of the State of New York and Niagara Mohawk Power Corporation, which revised Technical Specifications for operation of the James A. FitzPatrick Nuclear Power Plant, located in Oswego County, New York. The amendment is effective as of its date of issuance.

The amendment incorporates provisions into the Technical Specifications related to limiting conditions for operation and surveillance of shock suppressors (snubbers).

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment submitted by letter dated October 25, 1976, (2) Amendment No. 20 to License No. DPR-59, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D.C. and at the Oswego County Office Building, 46 E. Bridge Street, Oswego, New York.

A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 29th day of December 1976.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert W. Reid

Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors