JAF - 24 MONTH OPERATING CYCLE

SHOCK SUPPRESSORS (SNUBBERS)
SURVEILLANCE AND MAINTENANCE EXTENSIONS

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I. EXECUTIVE SUMMARY:

James A. FitzPatrick Nuclear Power Plant will be operating on a 24 month refuel cycle. This cycle extension has an effect on maintenance and test activities that are currently performed on a 18 month refueling basis.

This study evaluates the changes to maintenance and surveillance requirements to support a nominal twenty-four month operating cycle. Justification is provided, where appropriate, to support tests and maintenance interval extensions.

At JAF, Shock Suppressors (Snubbers) are inspected, tested and maintained to ensure reliable restraint and support of piping system and equipment. Typically, the snubbers are inspected and tested on a refueling interval. Also, during refueling outages, various snubbers are replaced with fully tested units based on service life and manufacturers recommendations.

Snubber visual inspections, functional tests and replacement activities are mandated by the Technical Specifications and Section XI, Article IWF-5000 of the ASME Boiler & Pressure Vessel Code. Inspections are in accordance with approved Section XI relief requests and the Technical Specifications. Maintenance activities are based on the results of inspections, tests, operational experience and manufacturers recommendations.

The evaluation concludes that 1) Snubber surveillance intervals can be safely extended to support a nominal 24 month operating cycle, and 2) Snubber maintenance activities are not effected by the longer cycle. In addition, cost savings and a reduction in worker occupational exposures are also expected since plant personnel and resources are required less often due to the fuel cycle extension.

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II. BACKGROUND

Surveillance requirements 4.6.I of the JAF Technical Specifications (Reference 1) require tests and inspections on snubbers on an 18 month interval. The following is a summary of those requirements:

1. VISUAL INSPECTIONS

All safety related snubbers are visually inspected every 18 months (±25%). If snubbers were found inoperable during the previous inspection, the inspection period shortens as a function of the number of failed snubbers.

The visual inspection verifies that 1) no visible damage or impaired operability exists, and 2) attachments to the foundations are secure, and 3) in those locations where snubber movements can be manually induced without disconnecting the snubber, that the snubber has freedom of movement and is not frozen up.

Snubbers which appear inoperable may be determined to be operable for the purpose of establishing the next visual inspection period providing that 1) the cause of the rejection is clearly established and remedied for that snubber and other snubbers which may be generically susceptible and; 2) the affected snubber is tested in the as-found condition and determined operable.

2. FUNCTIONAL TESTING

At least once per 18 months during plant shutdown, a representative sample of 10% of all safety related snubbers are functionally tested. For each snubber failed, an additional 10% of the total installed of that type shall be functionally tested.

In addition to the regular sample, snubber locations which failed previous functional tests shall be retested during the next inspection period. If a failed snubber is repaired and reinstalled in another position, it shall also be removed and functionally tested.

If a snubber fails to lockup or move, the cause will be determined and if a generic problem exists, then all snubbers of similar make and model shall be tested.

An engineering evaluation shall be performed on components supported by the failed snubber.

The functional test shall verify that activation (restraining action) is achieved within the specified range of velocity or acceleration in both tension or compression. It shall also verify that snubber bleed, or release rate, where

required, is within the specified range in compression or tension. For snubbers specifically required not to displace under continuous load, the ability of the snubber to withstand load without displacement shall be verified.

The mechanical snubber functional test shall verify that the force that initiates free movement of the snubber rod in either tension or compression is less than the specified maximum drag force and that activation (restraining action) is achieved within the specified range of velocity or acceleration in both tension and compression. In addition, snubber release rate, where required, is within the specified range in compression or tension.

3. SNUBBER SERVICE LIFE MONITORING

A record of the service life of all mechanical and hydraulic snubbers, whose failure could adversely affect the primary coolant or other safety-related system, the date at which the service life commences, and installation/maintenance records on which the service life is based shall be maintained in the maintenance snubber history file. The present designated service life for hydraulic snubbers is 7 years from the date of the rebuilding of a snubber. For new snubbers, the service life is 7 years from the date of the initial functional test. The functional test constitutes the end of shelf life and the beginning of service life. The present designated service life for mechanical snubbers is 40 years from the date of installation. At least once per operating cycle, the installation and maintenance records for safety related snubbers shall be reviewed to verify that the designated service life has not been or will not be exceeded prior to the next scheduled service life review.

III. PURPOSE:

JAF will be operating on a 24 month operating cycle. The extension of the operating cycle to 24 months will not permit testing of inaccessible snubbers on the current 18 month frequency. To avoid either an 18 month surveillance outage or an extended mid cycle outage, changes are required to the snubber surveillance test intervals prescribed by the Technical Specifications. Substantiating the effects of the longer cycle length on snubber inspections, tests, and maintenance activities requires a comprehensive review of the snubbers, and the integrated effect of the above activities on operability.

IV. EVALUATION:

Shock and sway suppressors, or snubbers, perform safety functions during seismic events and other plant transients. Snubbers are designed to permit flexibility of a piping system or component when subjected to slow movement such

as that imposed by thermal expansion and contraction during normal operation with a minimal resisting force. When subjected to a dynamic load such as might be expected during a seismic event, the snubber locks to limit motion of the system or component to which it is attached. Snubbers provide a balance of flexibility for thermal considerations and stiffness for the restraint of dynamic loadings (Reference 2). At JAF, there are approximately 240 safety related snubbers. 94% (225) of them are hydraulic. The remaining 6% (15) of them are mechanical. Of the hydraulics, a majority (221) are manufactured by Bergen-Paterson. The remaining 4 hydraulic snubbers are manufactured by Lisega. The 15 mechanical snubbers are manufactured by Pacific Scientific. At JAF 56% of the total safety related snubber population (135) are categorized as inaccessible snubbers. These are snubbers that are in high radiation or other areas where normal operating conditions would render it impractical for the snubbers to be examined without exposing plant personnel to undue hazards.

Snubber inspections, tests, and maintenance activities were evaluated to determine the impacts of a 24 month operating cycle. The longer cycle length requires an extension of the surveillance and maintenance activities for:

1. Visual inspection of all snubbers and related foundations.
2. Functional testing of 10% of all safety related snubbers.
3. Service life induced maintenance and replacement activities.

1.0 The first item for consideration deals with the visual inspection requirements of all safety related snubbers. Presently, all snubbers and support components are visually inspected as prescribed by the following Plant Technical Specification table:

No. Inoperable Snubbers per Inspection Period	Subsequent Visual Inspection Period		
0	18	months	±25%
1	12	months	±25%
2	6	months	±25%
3,4	124	days	±25%
5,6,7	62	days	±25%
8 or more	31	days	±25% (Reference 1)

It can be noted from the above list that the current technical specification delineates the frequency of visual inspections. The list is punitive in nature and requires shorter inspection periods if snubbers are found unacceptable. The shorter inspection as a function of failures provides a means of verifying that the snubber population is properly installed in the plant and that they are capable of performing their intended function in a reliable manner. At JAF there have not been any visual failures since August of 1988. Records of the JAF Occurrence log, past visual inspection surveillance tests, and related documentation have been reviewed to ensure that there have not been any cycle dependent visual failures.

The review generally concluded that the surveillances were adequate and that the visual failure in August of 1988 was not time dependent (i.e., not a function of operating cycle length).

The longer operating cycle can result in a maximum inspection interval of 30 months. The Nuclear Regulatory Commission has recognized this and has issued Generic Letter 90-09 (Reference 3). This generic letter provides guidance to utilities to satisfactorily extend the frequency of visual inspection based on cycle length, snubber population size, failure rate, snubber type and previous inspection intervals. In Novermber of 1991 a Technical Specification amendment was requested for a longer visual inspection interval (Reference 4). The NRC's approval to JAF's proposed technical specification change is presented in Attachment II (Reference 5).

2.3 The second major inspection, test or maintenance activity to be considered deals with functional tests of snubbers. The purpose of the functional test is to determine snubber operability. INPO report 86-14 (Reference 2) shows the following modes of snubber malfunctions or failure:

1) Lockup velocity too high - The snubber may not function as a rigid restraint when required during a seismic event.

2) Lockup velocity too low - The snubber may not function as a rigid restraint when required during a seismic event.

3) Bleed velocity too high - The snubber may not remain a rigid component for a time period sufficient to provide proper restraint when required during a seismic event.

4) Bleed velocity too low - The snubber may remain a rigid restraint for a longer time period than is required.

5) Mechanical snubbers fail in a locked up mode due to mechanical damage or corrosion.

Abnormally high stresses in a supported system are the consequences of the snubber malfunctions. These stresses are the result of either excessive relative motion between the supported system and the plant structure or the restraint of thermal cycling allowance in the supported system.

Generally, review of industry snubber performance shows that hydraulic snubber failures are most often of two types: 1) hydraulic fluid leaks which drain the reservoirs and 2) operability failures discovered during periodic tests and inspection programs. Leakage is usually caused by either damage to accumulator tubing or reservoir sight glass, by improper orientation of the snubber vent, or by damage to the snubber piston rod which then scores the seals. Operability failures other than low oil levels are usually caused by improper installation techniques or

misuse after installation. Such examples are scoring of snubber shafts by use of pipe wrenches on shafts to hold snubbers during installation, painting over movable snubber parts and snubber vents, using snubbers as steps for climbing and as anchor points for lifting nearby components. In addition, improper grounding when welding near snubbers allows for arcing which may cause partial fusion of parts inside snubber and may lead to failure. These forms of failures are the result of maintenance errors and can be avoided. Since these failures are not time dependent (i.e., not age-degradation related) the frequency of occurrence will not increase due to the cycle extension.

The primary age degradation mechanism for hydraulic snubbers is the gradual relaxation of low pressure sealing force (e.g. seal failure). This relaxation can lead to loss of hydraulic fluid resulting in failure to function in the action mode (the primary failure mode of hydraulic snubbers) (Reference 2). Another aging concern for hydraulic snubbers is the degradation of the hydraulic fluid which affects the snubber control valves performance (Reference 6). JAF's seal replacement program and visual surveillance program assures that age related failures will not increase because of the longer cycle length. Seal replacement serves as a form of preventive maintenance and provides assurance of snubber seal integrity. The visual program, in general, checks for evidence of fluid leakage, fluid color change and signs of gross deterioration (corrosion, discoloration, wear on parts, etc.). Presence of these characteristics would indicate aging and would result in snubber removal. In addition, hydraulic fluid degradation is also not significant. Review of occurrence reports indicate that there are no incidents induced by snubber fluid failure. Review of G.E. Silicone fluid vendor information (Reference 18) details that the oxidation threshold (point at which oxidation by-products appear and in turn affect fluid life and function) for silicone fluid SF-1154 (used in JAF snubbers) is 520°F and the radiation threshold (Point of incipient gelation) is 3×10^8 rads. Furthermore, in a sealed system such as snubbers, a decrease in overall nominal viscosity can occur as a result of thermal degradation. G.E. vendor information reveals that it would take a year at 300°F to cause a decrease in silicone fluid viscosity. Since at full power, plant ambient conditions are significantly lower than 300°F and 3×10^8 rads, viscosity breakdown is not likely. Finally, it should be stated that fluid age degradation is a long term process that exceeds 7 years. Since each snubber, along with the fluid, is replaced every 7 years, failure due to fluid degradation is unlikely. In addition, any functional failure of the fluid would be detected during the snubber functional test (bleed rates and velocity rates will be unsatisfactory).

Mechanical snubbers can also fail as result of maintenance errors similar to those described above but generally fail from physical damage and/or environmental degradation. Physical damage to the snubber during installation usually results in either lockup of the snubber caused by over travel in either direction resulting from

uncontrolled motion of the snubber during handling. Environmental damage is usually caused by corrosion of snubber internals which is induced by a high humidity environment. Damage also results from degraded lubricants and wear of snubber internals or pins and spherical bushings caused by vibration of the piping or components being restrained. Such degradations can result in increased resistance to movement or jamming in the passive mode (The most frequent failure mode for mechanical snubbers) (Reference 2 & 6). Physical damage as described above is not time dependent and will not increase in frequency as the result of the cycle extension. The environmental effects described are time dependent but will not increase significantly due to the 6 month extension.

Malfunction of a snubber creates a high potential for system degradation. As summarized earlier, to minimize this potential, plant technical specifications require a functional test of 10% of all safety related snubbers every 18 months during periods of plant shutdown. At JAF, there have been approximately 12 functional snubber test failures in the last 5 years (see Table 1).

Memorandums JMD-90-203, JMD-90-114, and JTS-90-0321 (References 7, 8, & 9) infer that the 10 functional failures in 1990 (7 hydraulic; 3 mechanical) were not unusual and not specifically age related. Review of JAF's Plant Record Management System (PRMS) and JAF's Occurrence report log indicates that there were no age related functional failures in 1988 or 1989. JMD-87-040 (Reference 10) details that for the 1987 Refuel Outage, the required 10% representative sample of snubbers was swapped out and functionally tested and that all the snubbers in the representative sample were found to be acceptable. In addition, the review reveals that there were 3 visual failures in 1987 and 2 visual failures in 1988.

If any snubber fails a functional test, plant technical specifications require testing an additional 10% random sample of that type. This self-correcting inspection criteria ensures with a 95% confidence factor that 90% to 100% of all snubbers are operable (Reference 3). Plant technical specifications also require engineering evaluations and more stringent future inspections of the failed unit to determine if a generic problem exists.

The above details that the previous JAF snubber failures were not time dependant and that typical snubber failure modes or sources of failures are not cycle dependant. This coupled with the fact that the Technical Specification inspection criterion is self-correcting, concludes that the extension of the functional test frequency is not a safety concern.

3.0 The third major item under consideration is snubber service life maintenance and replacement activities. Maintenance activities in the form of replacements are based on service life. The service life of all snubbers is monitored as required by the plant Technical Specifications. This ensures that the snubbers are removed from the plant prior to exceeding their useful life. The recommended inspection

interval for the Bergen-Paterson hydraulic snubber is 5- 10 years (Reference 19). The Lisega hydraulic shock absorbers are designed for the life of the plant but exhibit an effective service life exceeding 16 years under normal operating conditions. Lisega recommends the control interval (inspection, testing, seal replacement) be 12 years (Reference 11). By these recommendations and vendor defined service lives, JAF is extremely conservative as they define the snubber service life as 7 years (Reference 17). The service life of the Pacific Scientific mechanical snubber is 40 years and is not replaced unless forced so by a visual or functional failure. Implicit with these determinations is the knowledge that the actual service life of the snubbers is dependent upon service and environmental conditions. In all probability, snubber service life could probably be exceeded if mild environmental conditions (i.e. low temperature, low humidity, etc.,) exist. This can be accomplished by taking these factors into account on a case by case basis per each snubber. Nuclear WYLE Environmental Qualification Report No. 176163-01, "EPR Seal Life Re-evaluation for James A. FitzPatrick Nuclear Power Plant" (Reference 15) details that temperature, pressure, relative humidity, and radiation are not limiting the life of the Ethylene Propylene Rubber (EPR) seals or O-rings (found in Bergen-Paterson snubbers). The report states that the snubbers installed in the plant have essentially unlimited lives as far as the seals are concerned. The only factor not accounted for analytically is the mechanical wear of the seals. Mechanical wear occurs primarily from actuation of the snubber during piping expansion associated with start-up and shut-down. Currently, JAF averages 3-4 cold conditions per the 18 month outage. Extrapolating to a 24 month cycle, this value becomes approximately 5-6 cold conditions per refueling outage. The additional actuations associated with the increase are few and any mechanical wear effects on the EPR seals due to the increased operating cycle is slight. This is consistent with the conclusions found in Lisega's Maintenance recommendation report (Reference 11). The report detailed that after an extensive mechanical and environmental aging process, the Viton seals in use in Lisega snubbers were determined to be able to 1) successfully withstand the environmental conditions typical of those found in a nuclear plant; 2) provide excellent resistance due to excessive dynamic loading; 3) exhibit an effective service life exceeding 16 years.

The service life monitoring required by plant Technical Specifications ensures that the snubbers that may exceed their useful service life are replaced prior to the start of each operating cycle. This part of the snubber maintenance program is implemented by the snubber visual and functional test program. In addition, LER 89-022 (Reference 16) details an event that occurred at JAF when the plant was performing a required review of the safety-related hydraulic snubber records. The review determined that the lack of maintenance records made it necessary to conservatively assume that elastomeric seals in 33 snubbers had not been replaced within the plant's 7-year service life guideline. A plant specific

reevaluation of seal life was performed and it was determined that conservative values of 15 years and 20 years could be applied to the service life of snubbers found in the primary containment and reactor building environments respectively. In addition, the snubbers were tested and were found to be capable of performing their safety function (Reference 15). This event infers that the snubbers can safely exceed their 7 year service life. It should be noted that the event resulted in a stricter management of snubber history profile and, in addition, the resulting current seal replacement monitoring system will likely prevent a similar situation from reoccurring. The above arguments establish that the extended operating cycle will not impact the current 7 service life of the snubbers. Therefore, the snubber monitoring program will not be affected by the cycle extension because although the operating cycle is longer, the frequency of removal and replacement of snubbers is still the same (7 years).

The following summarizes the evaluations and related conclusions as they apply to the JAF Snubber program:

1.0 Safety Function

The safety function of snubbers is to provide thermal and seismic support and restraint to various plant piping systems. This action prevents unrestrained pipe motion under dynamic loads associated with seismic events or severe transients. In addition, the snubbers accommodate normal thermal movement during start-up and shutdown.

2.0 Testing and Maintenance Activities

All tests and maintenance activities are presently performed during shutdowns in a refueling outage.

2.1 Once per cycle Surveillance Tests

Snubber surveillance tests which are performed once per operating cycle were evaluated. The significance of these tests on maintaining snubber operability is quantified below:

2.2 Snubber Functional Testing

Snubber functional tests are used to ensure (with a 95% confidence factor) that 90% to 100% of the snubbers are operable (Reference 2). The tests are performed on a 10% random sample of the safety related snubbers under the guidelines of MST 100.1 (Reference 12). Review of past snubber performance and analysis of various modes of failure indicates that functional testing will not be impacted by the cycle extension.

2.3 Visual Inspection Tests

These test, under the guidelines of MST 100.2 (Reference 13), are performed to ensure that the snubbers are properly installed and secured throughout the plant. These inspections are performed on all safety related snubbers. If a snubber were found inoperable, the test frequency would be increased. Currently, these inspections are performed once per cycle during refueling outages. Any additional wear or effects associated with the increase in cycle length is slight and would not be expected to impact the operability of the snubbers. See Attachment II for the NRC's safety evaluation for increasing JAF's Visual Surveillance Interval.

2.4 Corrective Maintenance and Equipment Performance

An evaluation of surveillance test history, significant operating reports and maintenance programs determined that the operability status of the snubbers has been fair to good. Surveillance test data for the previous 5 years was reviewed for all safety-related snubbers. Review of the failures delineated in the Occurrence log indicated that there are no recurring or symptomatic problems affecting operability (see Table 1). Equipment performance is not optimal but the snubber program appears to be working in that inoperable equipment is being detected in a timely fashion. There have been 12 functional snubber failures. This corresponds to a 5% functional failure rate (12 failures out of a safety-related snubber population of 240) for the last 5 years. The utility average functional failure rate is between 7% and 10% (Reference 6). Similarly, at JAF there have been 5 visual failures. This corresponds to a snubber visual failure rate of 2% for the last 5 years. The national average for visual failures is 1% (Reference 6). In both cases, JAF's failure rate is comparable to the national average and is acceptable.

3.0 Burden of Testing at Power

The performance of snubber visual tests on line is not required based on NRC Generic Letter 90-09. On-line visual inspections of snubbers is impractical due to ALARA and other personal safety concerns.

In addition to regulation hazards, snubber functional testing is also impractical with the plant on-line. Functional tests require the removal of the snubber from the system which would generally require disabling the system. Thus, the above concerns justify testing the snubbers on a cycle basis.

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V. SURVEILLANCE TESTS AND MAINTENANCE CHANGES:

The evaluation of snubber tests and maintenance activities, and historical equipment performance has shown that it is permissible to extend the tests that are presently scheduled on an 18 month ± 25% frequency to a 24 month ± 25% frequency.

1. Snubber Functional Tests

These tests are currently performed once every 18 ± 25% months during plant shutdown as required by plant technical specifications. The preceding evaluation determines that the testing program in place at JAF adequately detects unsatisfactory snubbers. In addition, review of snubbers that failed the functional test concludes that the failures were not age related and hence are not cycle dependent. Therefore extending these tests to once every 24 months ± 25% should not have a significant impact on snubber reliability or operability.

2. Snubber Visual Tests

These inspections are currently performed at a maximum of every 18 months ± 25% as required by section 4.6.I of the plant Technical Specifications. Based on past equipment performance and the NRC accepted methodology outlined in Generic Letter 90-09, it has been determined that the visual surveillance test frequency can be safely extended to 24 months ± 25% in accordance with Technical Specification Amendment 180. (See Attachment I (Reference 5)).

3. Service Life

The intent of the service life monitoring required by plant Technical Specifications is not impacted by the cycle extension. Snubber service life will not decrease as the result of the cycle extension. However the Technical Specifications require that the installation and maintenance records be reviewed once per operating cycle. Hence this aspect of the program must be changed to reflect the 24 month operating cycle.

Requirements pertaining to items 1,2, and 3 are established in MDSO-13 (Reference 17). Therefore this standing order must be revised to reflect the 24 month operating cycle. In addition, the JAF Maintenance Department Preventive Maintenance Schedule must also be changed to reflect the 24 month operating cycle.

VI. TECHNICAL SPECIFICATION CHANGES:

Technical Specification 4.6.I has been revised to extend the subsequent visual inspection period from 18 months ± 25% to 24 months ± 25% when zero inoperable snubbers are detected per inspection period (See Reference's 4 and 5 and Attachment II).

Technical Specification 4.6.I.3 requires revision to extend the functional test of 10% of each type of snubber in the plant from each refueling cycle to every 24 months.

Technical Specification 4.6.I.9 requires revision to extend the review of installation and maintenance records from 18 months to 24 months.

All references to "operating cycle" shall be replaced with "once every 24M" for clarity. A marked up revision of the necessary changes to the Technical Specifications has been enclosed as Attachment 3.

VII. SUMMARY AND CONCLUSION

To support the 24 month operating cycle, changes are proposed to extend the snubber surveillance test interval to 24 months for the following tests:

- Snubber Functional Tests
- Snubber Visual Inspections

The plant's Technical Specifications will force a more frequent inspection schedule if the failure rate per inspection period increases, and is therefore self correcting. Hence the changes will not affect the intent of the snubber program. The proposed changes will have no effect on the safety function of the snubbers. The proposed changes will have no effect on the service life of the snubbers but the snubber service life monitoring program in effect must be revised so that a review of all snubber records is performed every 24 months to coincide with plant outage.

In conclusion, there is reasonable assurance that the safety of the public will not be endangered by extending the intervals between successive visual inspections from 18 months to 24 months, successive functional tests from 18 months to 24 months, and successive maintenance and installation record reviews from 18 months to 24 months.

Table 2 lists the related documents that need to be revised to reflect the 24 month operating cycle.

VIII. REFERENCES

1. Technical Specification and Bases for the James A. FitzPatrick Nuclear Power Plant (Volume 1a), updated through amendment No. 179.

2. INPO 86-014, "Snubber Maintenance Program", Institute of Nuclear Power Operations, April 1986.

3. USNRC Generic Letter 90-09, "Alternative Requirements for Snubber Visual Inspection Intervals and Corrective Actions", December 11, 1990

4. NYPA letter to NRC, JPN-91-063, "Proposed Change to the Technical Specifications - Snubber Visual Inspection (JPTS-91-011)", November 15, 1991.

5. B. McCabe (NRC) letter to R. Beedle (NYPA), "Issuance of Amendment for James A. FitzPatrick Nuclear Power Plant (TAC No. M82183)", April 13, 1992.

6. NUREG CR-5643, "Snubbers - NPAR Summary of Research Results", Section 12.0, March 1992.

7. JMD-90-203, C. Patrickson to J. Deroy, "Snubber Failures - Failure Evaluations", November 30, 1990.

8. JMD-90-114, C. Patrickson to File, "Snubber Program - 1990 Refueling Outages Surveillances", June 18, 1990.

9. JTS-90-0321, R. Kester to PORC Chairman, "Snubber Operability Evaluation", June 1, 1990.

10. JMD-87-040, P. Schlau to File, "1987 Refuel Outage Snubber Inspection", May 5, 1987.

11. Lisega Maintenance recommendation 87003-4-4603, "Maintenance recommendation for LISEGA Hydraulic Shock Absorbers Type 30, Design, 79+81+84+86", Rev. 5, August 7, 1986.

12. Maintenance Surveillance Test, JAF, Hydraulic Snubber Functional Surveillance Test MST 100.1, Rev. 13.

13. Maintenance Surveillance Test, JAF, Snubber Visual Surveillance Test, MST 100.2, Rev. 9.

14. Maintenance Procedure, JAF, Removal and Installation of Snubbers, MST 100.3, Rev. 3.

15. Licensee Event Report (LER) 89-022, "Service Life Exceeded for Elastometric Seals in 33 Safety-Related Hydraulic Snubbers Due to Failures in Management of Maintenance Records", December 7, 1989.

16. WYLE NEQ Report 17163-01, "EPR Snubber Seal Life Re-Evaluation for James A. FitzPatrick Nuclear Power Plant", May 17,1991.

17. Maintenance Department Standing Order, JAF, Snubber Program, MDSO-13, Rev. 1.

18. General Electric Co., Silicone Products Division, G.E. Silicone Fluids Vendor Catalog.

19. NYPA Telephone Documentation form dated 5-15-92, between J. McNeil (NYPA) and A. Schumilla (Bergen-Paterson); Subject: "Bergen Paterson Service Life".

TABLE 1

SNUBBER RELATED OCCURRENCES

Occurrence Report No.	Date	Description
90-171	6/14/90	Hydraulic failed functional test (lock-up rate). Line walked down. Snubber replaced. JTS-90-0341 details evaluation and conclusion that subject snubber functional test does not indicate a deficiency which would prevent snubber from performing its intended function.
90-143	5/18/90	During functional test, snubber found with broken piston rod.
90-140	5/14/90	Hydraulic fails functional retest. Snubber was replaced within 72 hr. Walkdown performed.
90-138	5/14/90	Pacific Scientific mechanical snubber fails functional high drag test. Snubber replaced. Additional 10% of mechanical snubbers tested. Visual exam completed.
90-132	5/5/90	Hydraulic failed low bleed functional test. Snubber had been previously replaced. Additional 10% of hydraulics were functionally tested (Total 70%).
90-131	5/5/90	Pacific Scientific mechanical snubber failed high drag functional test. Additional 10% tested.
90-124	5/14/90	Pacific Scientific mechanical snubber failed high drag functional test. 2 additional snubbers removed for functional testing. Visual inspection performed.

TABLE 1

Occurrence Report No.	Date	Description
90-115	4/24/90	Hydraulic failed functional. Replaced snubber within 72 hrs. Visual exam completed. Additional 10% (Total 60%) hydraulics tested.
90-110	4/18/90	Hydraulic fails functional low lock-up. Additional 10% (50% total) tested.
90-105	4/13/90	Hydraulic fails functional bleed test. Additional 10% tested. Snubber replaced within 7 days.
90-103	4/12/90	Snubber fails functional bleed rate test. Snubber previously identified as having exceeded service life. Snubber replaced and additional 10% tested. JTS-90-0164 details that visual inspection is performed and no evidence of damage is noted.
90-101	4/11/90	Hydraulic fails functional bleed test. Snubber previously identified as overdue for rebuild. Snubber replaced, and additional 10% tested. Visual inspection performed - no damage evident.
90-030	2/8/90	4 snubbers found to have been past their assigned service life. Testing scheduled.
90-017	1/14/90	5 snubbers found past due rebuild.
89-208	11/7/89	Various snubbers located in the drywell exceeded their seal life.

TABLE 1

Occurrence Report No.	Date	Description
88-114	8/17/88	While performing visual inservice inspection on accessible snubbers, mechanical snubber was found to be inoperable. Replaced snubber within 72 hrs. Performed visual inspection as supported components. Engineering evaluation performed on snubber showed failure was not cycle dependent.
87-035	4/23/87	Snubber JAF-341, location 29-RIF-S-120 found with a loss of hydraulic oil

TABLE 2

SURVEILLANCE AND MAINTENANCE CHANGES

Frequency dependent	Documents	Change
SNUBBERS FUNCTIONAL TEST	Maintenance Schedule, T.S. 4.6.I.3 T.S. 4.6 Base	18M TO 24M**
SNUBBERS VISUAL INSPECTION	Maintenance Schedule	18M TO 24M*
SNUBBER SERVICE LIFE MONITORING PROGRAM	MSDO-13, T.S. 4.6.I.9	18M TO 24M**

*Future Test Frequencies to be determined as per Technical Specification Table in proposed change. Refer to Attachment I.

**Documents currently interpret operating cycle as being 18 months. New interpretation will be 24 months.

SHOCK SUPPRESSORS (SNUBBERS)
SURVEILLANCE AND MAINTENANCE EXTENSIONS

ATTACHMENT 1

I. Safety Evaluation:

The proposed changes have been reviewed in accordance with the requirements of 10 CFR 50.59 and 10 CFR 50.92. These changes, which extend the test intervals do not involve an unreviewed safety question nor do they constitute a Significant Hazards Consideration.

1. The probability of occurrence and the consequences of an accident or malfunction of safety-related equipment previously evaluated in the safety analysis report will not be increased.

   Changes are proposed to increase the surveillance test interval (STI) with the longer cycle for the snubber functional and visual testing.

   These change extend the STIs. They do not involve any hardware modifications. Review of component history and vendor information conclude that snubber operability is not time dependent. Therefore, there is no increase in (1) the probability of an accident occurring, (2) the consequences of an accident, and (3) the consequences of equipment malfunction.

2. The possibility of an accident or malfunction of a different type than evaluated previously in the safety analysis report is not created.

   The proposed changes extend STIs. The proposed changes do not alter the configuration of the snubbers nor change the manner in which the snubbers function. An evaluation of past equipment performance show that longer STIs will not degrade snubber equipment or performance. Therefore, the proposed changes do not create any new failure modes or a new accident.

3. The margin of safety as defined in the basis for any technical specification is not reduced.

   The proposed changes do not reduce the margin of safety as defined in the basis for any Technical Specification. The proposed changes extend STIs and affects only the frequency of the surveillance. Operation of the facility remains unchanged by the proposed changes. Evaluation of past performance of the equipment indicates that the effects of extending the STIs would not involve a significant reduction in a margin of safety.

SHOCK SUPPRESSORS (SNUBBERS)
SURVEILLANCE AND MAINTENANCE EXTENSIONS

ATTACHMENT 2

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

April 13, 1992

Docket No. 50-333

Mr. Ralph E. Beedle
Executive Vice President - Nuclear Generation
Power Authority of the State of New York
123 Main Street
White Plains, New York 10601

Dear Mr. Beedle:

SUBJECT: ISSUANCE OF AMENDMENT FOR JAMES A. FITZPATRICK NUCLEAR POWER PLANT (TAC NO. M82183)

The Commission has issued the enclosed Amendment No. 180 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 transmitted by letter dated November 15, 1991, as supplemented by letter dated March 11, 1992.

The amendment revises the Technical Specification (TS) surveillance requirements regarding visual inspection of snubbers. These revisions are consistent with the guidance provided in Generic Letter 90-09, "Alternative Requirements for Snubber Visual Inspection Intervals and Corrective Actions."

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular biweekly Federal Register notice.

Sincerely,

Brian C. McCabe

Brian C. McCabe, Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No.180 to DPR-59
2. Safety Evaluation

cc w/enclosures:
See next page

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James A. FitzPatrick Nuclear
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cc:

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

POWER AUTHORITY OF THE STATE OF NEW YORK

DOCKET NO. 50-333

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 180
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 (the licensee) dated November 15, 1991, and supplemented March 11, 1992, 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, and paragraph 2.C.(2) of Facility Operating License No. DPR-59 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 180, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance to be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A. Capra

Robert A. Capra, Director
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical Specifications

Date of Issuance: April 13, 1992

ATTACHMENT TO LICENSE AMENDMENT NO. 180

FACILITY OPERATING LICENSE NO. DPR-59

DOCKET NO. 50-333

Revise Appendix A as follows:

Remove Pages	Insert Pages
vi	vi
145b	145b
145c	145c
145d	145d
145e	145e
156	156
156a	156a
157-162	157-160
-	161
-	162

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 Refueling, all snubbers which are required to protect the primary coolant system or any other safety related system or component shall be operable. During Cold Shutdown or Refueling mode of operation, only those snubbers shall be operable which are on systems that are required to be operable in these modes.

4.6 (cont'd)

4.6.I Shock Suppressors (Snubbers)

Applicability

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

Objective

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

Specification

Each snubber shall be demonstrated operable by performance of the following augmented inservice inspection program.

1. All snubbers shall be categorized into two groups: those accessible and those inaccessible during reactor operation. The visual inspection interval for each category of snubbers shall be determined based upon the criteria provided in Table 4.6-1.

3.6 (cont'd)

2. With one or more snubbers inoperable, within 72 hours during normal operation, or within 7 days during Cold Shutdown or Refueling mode of operation for systems which are required to be operable in these modes, complete one of the following:

   a. replace or restore the inoperable snubber(s) to operable status or,

   b. declare the supported system inoperable and follow the appropriate limiting condition for operation statement for that system or,

   c. perform an engineering evaluation to show the inoperable snubber is unnecessary to assure operability of the system or to meet the design criteria of the system, and remove the snubber from the system.

3. With one or more snubbers found inoperable, within 72 hours perform a visual inspection of the supported component(s) associated with the inoperable snubber(s) and document the results. For all modes of operation except Cold Shutdown and Refueling, within 14 days complete an engineering evaluation as per Specification 4.6.I.6 to ensure that the inoperable snubber(s) has not adversely affected the supported component(s). For Cold Shutdown or Refueling mode, this evaluation shall be completed within 30 days.

4.6 (cont'd)

2. Visual inspection shall verify (1) that there are no visible indications of damage or impaired OPERABILITY, (2) attachments to the foundation or supporting structure are secure, and (3) in those locations where snubber movements can be manually induced without disconnecting the snubber, that the snubber has freedom of movement and is not frozen up. Snubbers which appear inoperable as a result of visual inspections may be determined OPERABLE for the purpose of establishing the next visual inspection interval, providing that (1) the cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers that may be generically susceptible; and (2) the affected snubber is functionally tested in the as found condition and determined OPERABLE per Specifications 4.6.I.7 or 4.6.I.8, as applicable. Hydraulic snubbers which have lost sufficient fluid to potentially cause uncovering of the fluid reservoir-to-snubber valve assembly port or bottoming of the fluid reservoir piston with the snubber in the fully extended position shall be functionally tested to determine operability.

3. Once each operating cycle, 10% of each type of snubbers shall be functionally tested for operability, either in place or in a bench test. For each unit and subsequent unit that does not meet the requirements of 4.6.I.7 or 4.6.I.8, an additional 10% of that type of snubber shall be functionally tested until no more failures are found, or all units have been tested.

3.6 (cont'd)

4.6 (cont'd)

4. The representative sample selected for functionally testing shall include the various configurations, operating environments and the range of size and capacity of snubbers. At least 25% of the snubbers in the representative sample shall include snubbers from the following three categories:

   a. The first snubber away from reactor vessel nozzle.

   b. Snubbers within 5 feet of heavy equipment (valve, pump, turbine, motor, etc.).

   c. Snubbers within 10 feet of the discharge from a safety relief valve.

   In addition to the regular sample, snubbers which failed the previous functional test shall be retested during the next test period. If a spare snubber has been installed in place of a failed snubber, then both the failed snubber (if it is repaired and installed in another position) and the spare snubber shall be retested. Test results of these snubbers may not be included for the re-sampling.

3.6 (cont'd)

4.6 (cont'd)

5. If any snubber selected for functional testing either fails to lockup or fails to move, i.e. is frozen in place, the cause will be evaluated and if due to manufacturer or design deficiency, snubbers of the same design subject to the same defect shall be functionally tested. This testing requirement shall be independent of the requirements stated above for snubbers not meeting the functional test acceptance criteria.

6. For the snubber(s) found inoperable, an engineering evaluation shall be performed on the components which are supported by the snubber(s). The purpose of this engineering evaluation shall be to determine if the components supported by the snubber(s) were adversely affected by the inoperability of the snubber(s) in order to ensure that the supported components remain capable of meeting the designed service requirements.

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Table 4.6-1

Snubber Visual Inspection Interval

Population[1,2] Category	Number of Unacceptable Snubbers		
	Column A[3] Extended Interval	Column B[4] Repeat Interval	Column C[5] Reduce Interval
1	0	0	1
80	0	0	2
100	0	1	4
150	0	3	8
200	2	5	13
300	5	12	25

Notes:

1. The next visual inspection interval for the population of a snubber category shall be determined based upon the previous inspection interval and the number of unacceptable snubbers found during that interval. Snubbers may be categorized, based upon their accessibility during power operation, as accessible or inaccessible. These categories may be examined separately or jointly. This decision shall be made and documented before any inspection and used as the basis upon which to determine the next inspection interval for that category.

2. Interpolation between population or category sizes and the number of unacceptable snubbers is permissible. The next lower integer for the value of the limit for Columns A, B, C shall be used if that integer includes a fractional value of unacceptable snubbers as determined by interpolation.

3. If the number of unacceptable snubbers is equal to or less than the number in Column A, the next inspection interval may be twice the previous interval but not greater than 48 months.

4. If the number of unacceptable snubbers is equal to or less than the number in Column B but greater than the number in Column A, the next inspection interval shall be the same as the previous interval.

Table 4.6-1 (cont'd)

Snubber Visual Inspection Interval

5 If the number of unacceptable snubbers is equal to or greater than the number in Column C, the next inspection interval shall be two-thirds of the previous interval. However, if the number of unacceptable snubbers is less than the number in Column C but greater than the number in Column B, the next interval shall be reduced by a factor that is one-third of the ratio of the difference between the number of unacceptable snubbers found during the previous interval and the number in Column B to the difference in the numbers in Columns B and C.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 180 TO FACILITY OPERATING LICENSE NO. DPR-59

POWER AUTHORITY OF THE STATE OF NEW YORK

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

DOCKET NO. 50-333

1.0 INTRODUCTION

By letter dated November 15, 1991, as supplemented March 11, 1992, the Power Authority of the State of New York (the licensee) submitted a request for changes to the James A. FitzPatrick Nuclear Power Plant, Technical Specifications (TS). The requested changes would revise the schedule for visual inspection of snubbers in T.S. 4.6.I in response to the guidance provided in the NRC's Generic Letter (GL) 90-09, "Alternative Requirements for Snubber Visual Inspection Intervals and Corrective Action." The March 11, 1992, letter provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

2.0 EVALUATION

Technical Specifications (TS) impose surveillance requirements for visual inspection and functional testing of all safety-related snubbers. A visual inspection is the observation of the condition of installed snubbers to identify those that are damaged, degraded, or inoperable as caused by physical means, leakage, corrosion, or environmental exposure. To verify that a snubber can operate within specific performance limits, the licensee performs functional testing that typically involves removing the snubber and testing it on a specially-designed test stand. Functional testing provides a 95 percent confidence level that 90 percent to 100 percent of the snubbers operate within the specified acceptance limits. The performance of visual examinations is a separate process that complements the functional testing program and provides additional confidence in snubber operability.

The TS specifies a schedule for snubber visual inspections that is based on the number of inoperable snubbers found during the previous visual inspection. The schedules for visual inspections and for the functional testing assume that refueling intervals will not exceed 18 months. Because the current schedule for snubber visual inspections is based only on the number of inoperable snubbers found during the previous visual inspection, irrespective of the size of the snubber population, licensees having a large number of snubbers find that the visual inspection schedule is excessively restrictive.

Some licensees have spent a significant amount of resources and have subjected plant personnel to unnecessary radiological exposure to comply with the visual examination requirements.

To alleviate this situation, in Generic Letter (GL) 90-09 the staff developed an alternate schedule for visual inspections that maintains the same confidence level as the existing schedule and generally will allow the licensee to perform visual inspections and corrective actions during plant outages. Because this line-item TS improvement will reduce future occupational radiation exposure and is highly cost effective, the alternative inspection schedule is consistent with the Commission's Policy Statement on TS improvements.

The alternative inspection schedule is based on the number of unacceptable snubbers found during the previous inspection in proportion to the sizes of the snubber populations or categories. A snubber is considered unacceptable if it fails the acceptance criteria of the visual inspection. The alternative inspection interval is based on a fuel cycle of up to 24 months and may be as long as 2 fuel cycles, or 48 months for plants with other fuel cycles, depending on the number of unacceptable snubbers found during the previous visual inspection. The inspection interval may vary by ±25 percent to coincide with the actual outage.

In its letter dated November 15, 1991, as supplemented March 11, 1992, the licensee proposed changes to TS 4.6.I for the snubber visual examination schedule. Since the alternative inspection schedule proposed by the licensee is consistent with the guidance provided in GL 90-09, the staff finds the proposed changes acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New York State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (56 FR 66928). Accordingly, the amendment

meets the eligibility criteria for categorical exclusion set forth in 10 CFR51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor:
J. Rajan

Date: April 13, 1992

SHOCK SUPPRESSORS (SNUBBERS)
SURVEILLANCE AND MAINTENANCE EXTENSIONS

ATTACHMENT 3

3.6 (cont'd)

2. With one or more snubbers inoperable, within 72 hours during normal operation, or within 7 days during Cold Shutdown or Refueling mode of operation for systems which are required to be operable in these modes, complete one of the following:

   a. replace or restore the inoperable snubber(s) to operable status or,

   b. declare the supported system inoperable and follow the appropriate limiting condition for operation statement for that system or,

   c. perform an engineering evaluation to show the inoperable snubber is unnecessary to assure operability of the system or to meet the design criteria of the system, and remove the snubber from the system.

3. With one or more snubbers found inoperable, within 72 hours perform a visual inspection of the supported component(s) associated with the inoperable snubber(s) and document the results. For all modes of operation except Cold Shutdown and Refueling, within 14 days complete an engineering evaluation as per Specification 4.6.I.6 to ensure that the inoperable snubber(s) has not adversely affected the supported component(s). For Cold Shutdown or Refueling mode, this evaluation shall be completed within 30 days.

Amendment No. 20, 92, 98, 148, 180),

4.6 (cont'd)

2. Visual inspection shall verify (1) that there are no visible indications of damage or impaired OPERABILITY, (2) attachments to the foundation or supporting structure are secure, and (3) in those locations where snubber movements can be manually induced without disconnecting the snubber, that the snubber has freedom of movement and is not frozen up. Snubbers which appear inoperable as a result of visual inspections may be determined OPERABLE for the purpose of establishing the next visual inspection interval, providing that (1) the cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers that may be generically susceptible; and (2) the affected snubber is functionally tested in the as found condition and determined OPERABLE per Specifications 4.6.I.7 or 4.6.I.8, as applicable. Hydraulic snubbers which have lost sufficient fluid to potentially cause uncovering of the fluid reservoir-to-snubber valve assembly port or bottoming of the fluid reservoir piston with the snubber in the fully extended position shall be functionally tested to determine operability.

3. Once every 24 months each operating cycle, 10% of each type of snubbers shall be functionally tested for operability, either in place or in a bench test. For each unit and subsequent unit that does not meet the requirements of 4.6.I.7 or 4.6.I.8, an additional 10% of that type of snubber shall be functionally tested until no more failures are found, or all units have been tested.

3.6 (cont'd)

4.6 (cont'd)

c. Snubber release rate, where required, is within the specified range in compression or tension. For snubbers specifically required not to displace under continuous load, the ability of the snubber to withstand load without displacement shall be verified.

9. Snubber Service Life Monitoring

A record of the service life of each snubber, whose failure could adversely affect the primary coolant or other safety-related system, the date at which the designated service life commences, and the installation and maintenance records on which the designated service life is based shall be maintained as required by specification 6.10.B.13.

every 24 months. At least once per operating cycle, the installation and maintenance records for each snubber, whose failure could adversely affect the primary coolant or other safety related system, shall be reviewed to verify that the indicated service life has not been exceeded or will not be exceeded prior to the next shceduled snubber service life review. If the indicated service life will be exceeded prior to the next scheduled snubber service life review, the snubber service life shall be reevaluated or the snubber shall be replaced or reconditioned so as to extend its service life beyond the date of the next schedule service life review. This reevaluation, replacement or reconditioning shall be indicated in the records.

3.6 and 4.6 BASES (cont'd)

in each category from th previous inspection. The intervals may be increased up to 48 months if few unacceptable snubbers are found in the previous inspection. The visual inspection interval will not exceed 48 months. However, as for all surveillance activities, unless otherwise noted, allowable tolerances of 25% are applicable for snubbers. Table 4.6-1 establishes three limits for determining the next visual inspection interval corresponding to the population of each category of snubbers. For a category that differs from the representative s[illegible] provided, the values for the next inspection interval may be found by interpolation from the limits provided in Columns A, B, and C. Where the limit for unacceptable snubbers in Columns A, B, or C is determined by interpolation and includes a fractional value, the limit may be reduced to the next lower integer. The first inspection interval determined using Table 4.6-1 shall be based upon the previous inspection interval as established by the requirements in effect before amendment ( ). Any inspection whose results require a shorter inspection interval will override the previous schedule. When the cause of the rejection of a snubber is clearly established and remedied for that snubber and for any other snubbers that may be generically susceptible, and verified by inservice functional testing, that snubber may be exempted from being counted as inoperable. Generically susceptible snubbers are those which are of a specific make or model that have the same design features directly related to rejection of the snubber by visual inspection, and are similarly located or exposed to the same environmental conditions such as temperature, radiation, and vibration. When a snubber is found inoperable, an engineering evaluation is performed, in addition to the determination of the snubber mode of failure, in order to determine if any safety related component or system has been adversely affected by the inoperability of the snubber. The engineering evaluation shall determine whether or not the snubber mode of failure has imparted a significant effect or degradation on the supported component or system.

every 24 months

To provide assurance of snubber functional reliability, a representative sample of the installed snubbers will be functionally tested during each operating cycle. Selection of a representative sample of 10% of each type of safety related snubbers provides a confidence level within acceptable limits that these supports will be in an operable condition. Observed failures of these sample snubbers shall require functional testing of additional units.

Hydraulic snubbers and mechanical snubbers may each be treated as a different entity for the above surveillance programs.

The service life of a snubber is evaluated using manufacturer input and information and also through consideration of the installation and maintenance records (newly installed snubber, seal replaced, spring replaced, in high radiation area, in high temperature area, etc...). The requirement to monitor the snubber service life is included to ensure that the snubbers periodically undergo a performance evaluation in view of their age and operating conditions. These records will provide statistical bases for future consideration of snubber service life. The requirements for the maintenance of records and the snubber service life review are not intended to affect plant operation.