LILCO
LONG ISLAND LIGHTING

LONG ISLAND LIGHTING COMPANY
SHOREHAM NUCLEAR POWER STATION
P.O. BOX 618, NORTH COUNTRY ROAD • WADING RIVER, N.Y. 11792

Direct Dial Number

June 29, 1983

SNRC-923

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dynamic Qualification Test Results/
Pump and Valve Operability Tests
Shoreham Nuclear Power Station - Unit 1
Docket No. 50-322

Dear Mr. Denton:

Enclosed you will find revised responses to NRC requests 112.6, 112.9, 223.10 and 223.69. Our revised response to 223.69 refers to a new FSAR Table 3.9.4A-2 which provides the results of the seismic qualification of instrumentation and electrical equipment within the SWEC scope of supply, as well as a summary of mechanical equipment qualification including pump and valve operability. These revised responses and a revision of Section 3.9A will be included in the next formal FSAR revision scheduled for the beginning of August 1983.

This information, along with letter submittals, SNRC-916 and SNRC-921, should completely resolve Safety Evaluation Report outstanding issue number eight:

SNRC-916 Justification for interim operation with equipment not fully qualified (i.e., documentation packages not yet complete)

SNRC-921

a) Sample calculations of fatigue usage factors and clarification of how fatigue testing was conducted to assure the design basis response spectra is enveloped,

b) Confirmatory statement ensuring that complete SQRT test reports are included in our permanent plant files, including clarification of anomalies, and

c) The field modification status lists (Shoreham Category I Equipment Change Record for BOP and NSSS safety-related equipment).

FC-8935.1



B001
1/1

In accordance with R. L. Tedesco's letter to LILCO, dated January 21, 1981, four copies of this submittal, including enclosures are being forwarded directly to Dr. Morris Reich at Brookhaven National Laboratory.

Should you have any questions regarding this material, please do not hesitate to call.

Very truly yours,

J. L. Smith

J. L. Smith
Manager, Special Projects
Shoreham Nuclear Power Station

GJG/law S3

Enclosures

cc: J. Higgins
Dr. Morris Reich, BNL (4)
All Parties Listed in Attachment 1

ATTACHMENT 1

Lawrence Brenner, Esq.
Administrative Judge
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Herbert H. Brown, Esq.
Lawrence Coe Lanpher, Esq.
Karla J. Letsche, Esq.
Kirkpatrick, Lockhart, Hill
Christoper & Phillips
8th Floor
1900 M Street, N.W.
Washington, D.C. 20036

Dr. Peter A. Morris
Administrative Judge
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. Marc W. Goldsmith
Energy Research Group
4001 Totten Pond Road
Waltham, Massachusetts 02154

Dr. James H. Carpenter
Administrative Judge
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

MHB Technical Associates
1723 Hamilton Avenue
Suite K
San Jose, California 95125

Daniel F. Brown, Esq.
Attorney
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Stephen B. Latham, Esq.
Twomey, Latham & Shea
33 West Second Street
P.O. Box 398
Riverhead, New York 11901

Bernard M. Bordenick, Esq.
David A. Repka, Esq.
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Ralph Shapiro, Esq.
Cammer and Shapiro, P.C.
9 East 40th Street
New York, New York 10016

James Dougherty
3045 Porter Street
Washington, D.C. 20008

Matthew J. Kelly, Esq.
State of New York
Department of Public Service
Three Empire State Plaza
Albany, New York 12223

Request 112.18 (3.9.2.4)(5.2.1.7):

The information presented in Sections 3.9.2.4A, 3.9.2.4B, 5.2.1.7 of the FSAR concerning operability of active pumps and valves is not completly acceptable.

Design by analysis of active pumps and valves to assure structural integrity may not necessarily guarantee operability under faulted condition loadings. Acceptable procedures for pump and valve operability assurance are given in Attachment 1. Provide a commitment to an operability program for all Class 1, 2, and 3 active pumps and valves which is consistent with Attachment 1. As a minimum, we will require that in addition to appropriate analyses, the operability of all Class 1, 2, and 3 active pumps and valves in the Shoreham Nuclear Power Station, Unit 1 be assured by testing complex active devices such as pump motors, valve operators, and other electrical, mechanical, pneumatic or hydraulic appurtenances which are vital to the actuation and continued operation of the pumps and valves when subjected to faulted condition loads.

Response:

GE supplied active pumps and valves for the Shoreham Nuclear Plant were procured under specifications issued during 1970 and 1971. These pumps and valves meet the criteria that were applicable at the time of purchase, which pre-date the criteria of Branch Technical Position MEB-2. Assurance of the operability of the equipment was demonstrated as described in Sections 3.9.2.4B and 5.2.1.7. Equipment Procured at the same time as the Shoreham equipment is currently installed in operating plants such as Duane Arnold, Hatch 1, Brunswick & Fukushima-2.

Table 3.9.4A-2, in response to Requests 112.6, 112.9, and 223.10, presents the results of the operability assurance program employed for SWEC supplied active pumps and valves as well as a qualification summary of electrical equipment, instrumentation, and other mechanical equipment. Testing of complex active devices and valve operators has been employed as part of this program in addition to deflection analyses to ensure maintenance of operating clearances. These results indicate that acceptable programs have been employed to assure the operability of active pumps and valves for this installation.

In addition to the above, Class 1, 2, and 3 pumps and valves will be tested in accordance with ASME XI Code IWP, IWV to the extent practical within the limits of design and geometry.

Request 112.9 (3.10)(3.9.1.2A)(3.9.1.2B):

The response to question 110.10 and information presented in Sections 3.9.1.2A, 3.9.1.2B, 3.10A, and 3.10B is not entirely acceptable. In instances where seismic Category I electrical equipment and instrumentation and mechanical components have been previously tested to standards not entirely in accord with current NRC requirements, it is the staff's position that certain critical electrical and mechanical components within both the NSSS and BOP scope of supply may have to be retested. Identification and selection of such components will be based on an inspection by NRC personnel of installed equipment at the plant site.

Response:

The programs utilized for qualification of electrical and mechanical equipment, as outlined in Section 3.7.2.1A and referenced in Sections 3.9.1.2A and 3.10A, have conformed with, or exceeded when possible, applicable requirements. As stated in response to Acceptance Review Request 223.2, this program is consistent with the requirements of position B.1 of Branch Technical Position EICSB 10 that IEEE-344-1971 be met. On this basis, the applicant believes that the seismic capability of components has been adequately demonstrated.

Table 3.9.4A-2, in response to Requests 112.6, 112.9, and 223.10, provides the results of seismic qualification programs employed for electrical equipment, instrumentation and mechanical components within the S&W scope of supply. These results indicate that acceptable programs have been employed to assure the adequacy of Seismic Category I equipment.

For additional information on equipment within the NSSS scope of supply, refer to the response to Request 223.10.

Request 223.10 (RSP) (3.10):

Section 3.10 of the FSAR states that the Category I instrumentation and electrical equipment within General Electric's scope of supply have been qualified according to the procedures described in GE Topical Report "Seismic Qualification of Class I Electrical Equipment", NEDO-10678. This report has not been approved by the staff. It is the staff's position that only topical reports which have been reviewed and approved by the staff may be used as a basis for licensing reviews. Provide the seismic analysis, testing procedures, restraint measures, conclusions and results which have been used for seismically qualifying all BOP and NSSS Class IE equipment. The qualification program should include all information requested in Section 3.10 of the Standard Format and satisfy the requirements of IEEE Std 344-1971 as augmented by Branch Technical Position EICSB 10 in Appendix 7A of the Standard Review Plan.

Response:

In response to Acceptance Review Request 223.2, reference to NEDO 10678 was deleted. Further, Section 3.10B was revised to address seismic testing and/or analysis of Class IE typical equipment as well as compliance with IEEE 344-1971. As stated in response to Request 223.2, the position of paragraph B.1 of EICSB 10 is that IEEE 344-1971 contains acceptable methods for qualifying electrical and mechanical equipment.

Table 3.9.4A-2, in response to Requests 223.10, 112.6, and 112.9, presents the results of seismic qualification of instrumentation and electrical equipment within the SWEC scope of supply (as performed by the vendor), as well as a summary of mechanical equipment qualification including pump and valve operability. The information presented in the table confirms that seismic qualification programs for balance of plant instrumentation and electrical equipment have been conservatively implemented for this installation.

Table 3.10.1B-1 lists all essential equipment in the NSS scope of supply. The results of seismic qualification are listed in the table.

Request 223.69:

Tables 3.10.1B-1 and 223.10 of the FSAR submitted in response to request item 223.10 indicate that some of the results of the seismic qualifications are not available to date or the tests have not yet been performed. Update these tables to include all the missing information or indicate in the same tables when this information will be made available for our review.

Response:

Tables 3.10.1B-1 and 3.9.4A-2 include all currently available information on the results of seismic qualification. The remaining results will be incorporated as the information becomes available.

Interim justifications have been provided for those items which may not have their qualification fully completed by the time of fuel load.

TABLE 3.9.4A-2

DYNAMIC QUALIFICATION OF LILCO/SHOREHAM SAFETY-RELATED EQUIPMENT

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 39-1<br>4.16 kV Metal Clad Switchgear | 0.50 | 0.20 | 0.79 | 0.48 | 8 | Single Axis, Single Freq., Sine Beat Test, From 4-35 Hz | Operational and Structural Integrity Verified |
| 54-1<br>Fire Dampers | 0.50 | 0.30 | 0.60 | 0.30 | 9 | Single Axis, Single Freq., Sine Dwell Test From 1-33 Hz | Operational and Structural Integrity Verified |
| 57-1<br>Service Water Pumps | 0.40 | 0.22 | 0.70 | 0.43 | 22 | Equivalent Static Analysis for Stress and Deflection | S Max = 24500 psi<br>S Allow = 26200 psi<br>Defl. Max = .001 in.<br>Defl. Allow = .009 in. |
| 62G-1<br>Fuel Storage Pool Cooling Water Pump | 0.70 | 1.00 | 3.00 | 2.00 | >32 | Equivalent Static Analysis for Stress and Deflection | S Max = 23800 psi<br>S Allow = 30000 psi<br>Defl. Max = 0.016 in.<br>Defl. Allow = 0.032 in. |
| 62G-2<br>Reactor Bldg Sys and Cntl Rm AC Child Wtr Circ Pump | 1.30 | 0.50 | 1.6 | 1.07 | 10 | Equivalent Static Analysis for Stress and Deflection | S Max = 30900 psi<br>S Allow = 32400 psi<br>Defl. Max = 0.009 in.<br>Defl. Allow = 0.01 in. |
| 62G-3<br>Reactor Bldg Closed Loop Clg Wtr Circ Pump | 0.70 | 1.00 | 1.6 | 1.07 | 10 | Equivalent Static Analysis for Stress and Deflection | S Max = 5510 psi<br>S Allow = 6050 psi<br>Defl. Max = 0.009 in.<br>Def. Allow = 0.009 in. |
| 62W-1<br>Reactor Bldg Sys and Cntl Rm AC Child Wtr Circ Pump | 0.91 | 0.40 | 1.60 | 0.42 | 31 | Equivalent Static Analysis for Stress and Deflection | S Max = 18200 psi<br>S Allow = 22600 psi<br>Defl. Max = 0.0103 in.<br>Def. Allow = 0.017 in. |
| 81-1<br>Service Water Strainers | 0.28 | 0.23 | 0.42 | 0.28 | 17 | Dynamic Analysis Using Response Spectrum to Determine Stresses and Deformation | S Max = 1270 psi<br>S Allow = 1800 psi<br>Manual Operational Integrity Verified |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 88AD-1<br>10 in. - 300 lb<br>Globe Valve | 1.00 | 2.20 | 2.0 | 2.0 (1)* | >87 | Equivalent Static Analysis on Valve Yoke. | S Max = 30300 psi<br>S Allow = 42500 psi<br>Defl. Max = 0.001 in.<br>Defl. Allow = 0.0313 in. |
| | | | | | | Single Axis, Single Freq., Sine Beat Test on Operator, From 2 to 100 HZ | Operational and Structrual Integrity of Operator Verified |
| 88AD-2<br>10 in. - 300 lb<br>Globe Valve | 5.80 | 1.50 | 5.80 | 1.50 | >85 | Equivalent Static Analysis on Valve Yoke | S Max = 43800 psi<br>S Allow = 46700 psi<br>Defl. Max = 0.004 in.<br>Defl. Allow = 0.031 in. |
| | | | | | | Single Axis, Single Freq., Sine Beat Test on Operator, From 2 to 100 HZ | Operational and Structural Integrity of Operator Verified |
| 88AD-3<br>14 in. - 150 lb<br>Gate Valve | 3.50 | 2.0 | 3.50 | 1.20 (1) | 29 | Equivalent Static Analysis on Valve Yoke | S Max = 14500 psi<br>S Allow = 46700 psi<br>Defl. Max = 0.0012 in.<br>Defl. Allow = 0.032 in. |
| | | | | | | Single Axis, Single Freq., Sine Beat Test on Operator, From 2 to 100 HZ | Operational and Structural Integrity of Operator Verified |
| 88AD-4<br>14 in. - 800 lb<br>Gate Valve | 5.50 | 2.40 | 7.30 | 3.30 | 52 | Equivalent Static Analysis on Valve Yoke | S Max = 15100 psi<br>S Allow = 28800 psi<br>Defl. Max = 0.001 in.<br>Defl. Allow = 0.047 in. |
| | | | | | | Single Axis, Single Freq., Sine Beat Test on Operator, From 2 to 100 HZ | Operational and Structural Integrity of Operator Verified |
| 88AD-5<br>16 in. - 300 lb<br>Globe Valve | 3.20 | 4.20 | 6.30 | 4.30 | 114 | Equivalent Static Analysis on Valve Yoke | S Max = 29400 psi<br>S Allow = 46700 psi<br>Defl. Max = 0.0004 in.<br>Defl. Allow = 0.047 in. |

*( ) = notes on last page

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| | | | | | | Single Axis, Single Freq., Sine Beat Test on Operator, From 2 to 100 HZ | Operational and Structural Integrity of Operator Verified |
| 88AD-6<br>18 in. - 300 lb<br>Angle Globe Valve | 2.00 | 1.70 | 4.24 | 3.00 | 79 | Equivalent Static Analysis on valve Yoke. | S Max = 27600 psi<br>S Allow = 28800 psi<br>Defl. Max = 0.003 in.<br>Defl. Allow = 0.0469 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operational verified. |
| 88AD-7<br>20 in. - 150 lb<br>Gate Valve | 6.1 | 5.8 | 7.60 | 7.20 | 67 | Equivalent Static Analysis on valve Yoke. | S Max = 57000 psi<br>S Allow = 137000 psi<br>Defl. Max = 0.007 in.<br>Defl. Allow 0.047 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88AD-8<br>20 in. - 900 lb<br>Gate Valves | 5.60 | 3.80 | 4.90 | 3.80 (1) | 146 | Equivalent Static Analysis on Valve Yoke. | S Max = 17000 psi<br>S Allow = 35000 psi<br>Defl. Max = 0.0014 in.<br>Defl. Allow = 0.0469 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88AD-9<br>24 x 22 x 24 in. - 900 lb<br>Gate Valves | 4.70 | 5.60 | 4.30 | 5.60 (1) | 113 | Equivalent Static Analysis on Valve Yoke. | S Max = 17300 psi<br>S Allow = 35000 psi<br>Defl. Max = 0.008 in.<br>Defl. Allow = 0.0469 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 88AD-10<br>24 in. - 900 lb<br>Angle Globe Valve | 6.60 | 2.10 | 6.90 | 2.90 | 81 | Equivalent Static Analysis on Valve Yoke. | S Max = 25600 psi<br>S Allow = 27000 psi<br>Defl. Max = 0.003 in.<br>Defl. Allow = 0.048 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88AD-11<br>20 in. - 1500 lb<br>Stop Check Globe Valve | 3.90 | 2.20 | 9.80 | 3.50 | >100 | Equivalent Static Analysis on Valve Yoke. | S Max = 11700 psi<br>S Allow = 42500 psi<br>Defl. Max = 0.0006 in.<br>Defl. Allow = 0.047 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-1<br>3 in. Forged<br>B.B. Gate Valves | 8.70 | 9.90 | 5.40 | 9.50 (1) | 85 | Equivalent Static Analysis on Valve Yoke. | S Max = 16000 psi<br>S Allow = 28800 psi<br>Defl. Max = 0.015 in.<br>Defl. Allow = 0.02 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-2<br>3 in. Forged 900 lb<br>B.B. Bonnet Valve | 3.30 | 2.9 | 5.2 | 2.1 (1) | 58 | Equivalent Static Analysis on Valve Yoke. | S Max = 17500 psi<br>S Allow = 26200 psi<br>Defl. Max = 0.020 in.<br>Defl. Allow = 0.050 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 1-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-3<br>6 in. Motor<br>Operated Gate Valve | 5.10 | 3.90 | 5.10 | 3.90 | 53 | Equivalent Static Analysis on Valve Yoke. | S Max = 23700 psi<br>S Allow = 29100 psi<br>Defl. Max = 0.023 in.<br>Defl. Allow = 0.050 in. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| | | | | | | Single Axis, Single Freq. Sine Beat Test, 1-100 HZ, Cperator. | Operational and Structural Integrity Verified. |
| 88V-4<br>4 in. Forged B.B.<br>Gate & Globe Valves | 6.80 | 3.60 | 6.40 | 3.60 (1) | 58 | Equivalent Static Analysis on Valve | S Max = 22000 psi<br>S Allow = 26200 psi<br>Defl. Max = 0.018 in.<br>Defl. Allow = 0.050 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 1-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-5<br>6 in. - 900 lb Forged<br>B.B. Gate Valve | 6.40 | 5.20 | 6.40 | 5.20 | 53 | Equivalent Static Analysis on Valve Yoke and Operator Mounting. | S Max = 16500 psi<br>S Allow = 29100 psi<br>Defl. Max = 0.021 in.<br>Defl. Allow = 0.050 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 1 to 100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-6<br>6 in. Forged B.B.<br>Gate & Globe Valves | 8.60 | 5.90 | 13.80 | 7.30 | 88 | Equivalent Static Analysis on Valve Yoke. | S Max = 23600 psi<br>S Allow = 26200 psi<br>Defl. Max = 0.017 in.<br>Defl. Allow = 0.050 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From From 1-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-7<br>6 in. Cast Steel<br>B.B. Gate Valve | 1.30 | 1.30 | 3.0 | 3.0 | 87 | Equivalent Static Analysis on Valve Yoke. | S Max = 17400 psi<br>S Allow = 26300 psi<br>Defl. Max = 0.021 in.<br>Defl. Allow = 0.050 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 88V-8<br>6 in. Forged 900 lb B.B. Gate & Globe Valves | 8.00 | 2.50 | 5.70 | 3.20 (1) | 61 | Equivalent Static Analysis on Valve Yoke. | S Max = 19000 psi<br>S Allow = 26200 psi<br>Defl. Max = 0.014 in.<br>Defl. Allow = 0.050 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-9<br>8 in. Cast Steel B.B. Gate Valves | 2.50 | 1.30 | 3.00 | 3.00 | 86 | Equivalent Static Analysis on Valve Yoke. | S Max = 17500 psi<br>S Allow = 28800 psi<br>Defl. Max = 0.0064 in.<br>Defl. Allow = 0.02 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator, 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-10<br>8 in. Forged 150 lb B.B. Gate Valve | 4.50 | 2.10 | 4.40 | 3.60 (1) | 49 | Equivalent Static Analysis on Valve Yoke. | S Max = 17500 psi<br>S Allow = 26200 psi<br>Defl. Max = 0.019 in.<br>Defl. Allow = 0.050 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-11<br>4 in. Forged 900 lb B.B. Bonnet Valve | 7.40 | 3.30 | 4.90 | 3.10 (1) | 50 | Equivalent Static Analysis on Valve Yoke. | S Max = 20400 psi<br>S Allow = 29100 psi<br>Defl. Max = 0.013 in.<br>Defl. Allow = 0.050 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-12<br>10 in. Forged B.B. Gate Valve | 2.40 | 1.80 | 3.00 | 3.00 | 45 | Equivalent Static Analysis on Valve Yoke. | S Max = 22800 psi<br>S Allow = 28800 psi<br>Defl. Max = 0.0216 in.<br>Defl. Allow = 0.04 in. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-13<br>10 in. Forged 900 lb<br>B.B. Gate Valve | 7.90 | 2.10 | 5.90 | 4.40 (1) | 44 | Equivalent Static Analysis on Valve Yoke. | S Max = 28000 psi<br>S Allow = 29100 psi<br>Defl. Max = 0.025 in.<br>Defl. Allow = 0.040 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-14<br>10 in. Forged B.B.<br>Gate Valves | 2.80 | 1.20 | 3.00 | 3.00 | 36 | Equivalent Static Analysis on Valve Yoke. | S Max = 26100 psi<br>S Allow = 28800 psi<br>Defl. Max = 0.0367 in.<br>Defl. Allow = 0.04 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-15<br>20 in. 300 #<br>Cast Bolted Bonnet<br>Gate Valve | - | - | - | - | - | Combined Analysis and Test. | Awaiting Loads from Piping Analysis. |
| 88V-16<br>10 in. Forged 300 lb<br>B.B. Gate Valves | 6.80 | 3.80 | 4.20 | 5.40 (1) | 48 | Equivalent Static Analysis on Valve Yoke. | S Max = 20300 psi<br>S Allow = 26200 psi<br>Defl. Max = 0.044 in.<br>Defl. Allow = 0.050 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-17<br>10 in. Forged 900 lb<br>B.B. Gate Valve | 2.50 | 0.90 | 3.00 | 3.00 | 35 | Equivalent Static Analysis on Valve Yoke. | S Max = 27600 psi<br>S Allow = 29100 psi<br>Defl. Max = 0.037 in.<br>Defl. Allow = 0.040 in. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-18<br>14 in. Forged B.B.<br>Gate Valve | 6.60 | 1.60 | 3.00 | 3.00 (1) | 55 | Equivalent Static Analysis on Valve Yoke. | S Max = 16100 psi<br>S Allow = 28800 psi<br>Defl. Max = 0.0274 in.<br>Defl. Allow = 0.050 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-19<br>14 in. Cast B.B.<br>Gate Valve | 2.40 | 2.50 | 3.00 | 3.00 | 34 | Equivalent Static Analysis on Valve Yoke. | S Max = 20400 psi<br>S Allow = 28800 psi<br>Defl. Max = 0.040 in.<br>Defl. Allow = 0.050 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-20<br>16 in. Forged<br>B.B. Gate Valves | 9.30 | 7.30 | 9.30 | 7.30 | 58 | Equivalent Static Analysis on Valve Yoke. | S Max = 48500 psi<br>S Allow = 50000 psi<br>Defl. Max = 0.035 in.<br>Defl. Allow = 0.05 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-21<br>18 in. Cast B.B.<br>Gate Valve | 4.40 | 4.50 | 3.00 | 3.00 (1) | 50 | Equivalent Static Analysis on Valve Yoke. | S Max = 27200 psi<br>S Allow = 28800 psi<br>Defl. Max = 0.0181 in.<br>Defl. Allow = 0.050 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 88V-22<br>8 in. Forged 900 lb<br>B.B. Globe Valve | 1.80 | 0.80 | 3.00 | 3.00 | 95 | Equivalent Static Analysis on Valve Yoke. | S Max = 25100 psi<br>S Allow = 28800 psi<br>Defl. Max = 0.0477 psi<br>Defl. Allow = 0.050 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-23<br>8 in. Forged 900 lb<br>B.B. Globe Valve | 0.90 | 0.50 | 3.00 | 3.00 | 46 | Equivalent Static Analysis on Valve Yoke. | S Max = 27200 psi<br>S Allow = 28800 psi<br>Defl. Max = 0.0228 in.<br>Defl. Allow = 0.050 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 88V-24<br>3 in. Forged 150 lb<br>B.B. Gate Valve | 1.90 | 1.10 | 3.00 | 3.00 | 77 | Equivalent Static Analysis on Valve Yoke. | S Max = 26300 psi<br>S Allow = 41200 psi<br>Defl. Max = 0.008 in.<br>Defl. Allow = 0.050 in. |
| | | | | | | Single Axis Single Freq. Sine Beat Test on Operator From 2-100 HZ. | Operational and Structural Integrity of Operator Verified. |
| 89-1<br>Aux. Skid & Accessories | .43 | .20 | .30 | .20 (1) | 15 | Qualified by Dynamic Analysis Based on RRS. | S Max = 11800 psi<br>S Allow = 27000 psi (3) |
| | | | | | | Components by Single Axis Single Freq. Sine Beat Test From 1 - 60 HZ | Operability Verified |
| 89-2<br>Generator & Exciter Control Panel | 0.42 | 0.32 | 0.50 | 0.40 | 4 | Single Axis Single Freq. Sine Beat Test From 1-60 HZ. | Operability Verified |
| 89-3<br>Synchrondus Generator | 0.42 | 0.32 | 0.53 | 0.8 | 38 | Equivalent Static Analysis for Stress and Deflection. | S Max = 29000 psi<br>S Allow = 32000 psi<br>Defl. Max = 0.0055 in.<br>Defl. Allow = 0.35 in. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 89-4<br>Engine Control Panel | 0.42 | 0.32 | 0.50 | 0.40 | 2 | Single Axis, Single Freq. Sine Beat Test From 1-60 HZ. | Operability Verified |
| 89-5<br>Diesel Engine | 0.42 | 0.30 | .30 | .20 (1) | 71 | Response Spectrum Dynamic Analysis | S Max = 16300 psi<br>S Allow = 73500 psi |
| | | | | | | Single Axis Single Freq. Sine Beat Test From 1-60 HZ. | Operability Verified |
| 89-6<br>Starting Air Receiver | 0.42 | 0.32 | 0.50 | 0.40 | 4 | Single Axis Single Freq. Sine Beat Test From 1-60 HZ. | Structural & Operational Integrity Verified. |
| 89-7<br>Starting Air Compressor | 0.42 | 0.32 | 0.50 | 0.50 | 11 | Single Axis Single Freq. Sine Beat Test From 1-60 HZ. | Structural & Operational Integrity Verified. |
| 95-1<br>480 V Emergency SWGR Bus 111, 112, 113 | 0.50 | 0.35 | 1.50 | 1.50 | 5 | Simultaneous Hor. & Vert. Phase Coherent Random Multi-Freq. Test From 1-100 HZ for SWGR & Bus. | Structural & Operational Integrity Verified for Switchgear & Bus. |
| 95-2<br>125 V DC Switchgear | 0.42 | 0.32 | 1.50 | 1.50 | 5 | Simultaneous Hor. & Vert. Phase Incoherent Random Multi-Freq. Test From 1. to 100 HZ. | Structural & Operational Integrity Verified |
| 102-1<br>Reactor Building Exh. Boost Fam | 0.70 | 1.00 | 1.20 | 1.00 | 51 | Equivalent Static Analysis for Stress and Deflection. | S Max = 21600 psi<br>S Allow = 24000 psi<br>Defl. Max = 0.0028 in.<br>Defl. Allow = 0.061 in. |
| 102-2<br>Control Room Centrifugal Booster Fan. | 0.91 | 0.47 | 1.20 | 0.80 | 27 | Equivalent Static Analysis for Stress and Deflection. | S Max = 20600 psi<br>S Allow = 24000 psi<br>Defl. Max = 0.00539 in.<br>Defl. Allow = 0.02010 in. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 105-1 Control Rm A/C Filter Trains | 0.72 | 0.39 | 0.96 | 0.39 | 17 | Equivalent Static Analysis for Filter Trains | S Max = 18100 psi<br>S Allow = 36000 psi<br>Defl. Max = 0.024 in.<br>Defl. Allow = 0.125 in. |
| | | | | | | Single Freq. Single Axis Sine Beat Test for Components & Solenoid, 1-60 HZ. | Operational & Structural Integrity Verified. |
| 105-2 Reactor Bldg Stand by Vent System | 0.85 | 0.73 | 0.85 | 0.73 | 11 | Equivalent Static Analysis for Filter Trains | Max Load Factor = 0.75<br>Allow Load Factor = 1.00<br>Defl. Max = 0.113 in.<br>Defl. Allow = 0.125 in. |
| | | | | | | Single Freq. Single Axis Sine Beat Test for Electrical Components & Solenoid, 1-60 HZ. | Operational & Structural Integrity Verified. |
| 106-1 Centrifugal Water Chillers | 0.50 | 0.20 | 1.1 | 0.74 | 9 | Equivalent Static Analysis for Chiller Ass'y. | S Max = 23700 psi<br>S Allow = 24000 psi<br>Defl. Max = 0.00098 in.<br>Defl. Allow = 0.0075 in. |
| | | | | | | Multi-Freq. Multi-Axis Random Test for Machine Mounted Components, 1-100 HZ. | Operational and Structural Integrity Verified. |
| 106-2 Standby Vent System Control Panel | 0.60 | 0.27 | 2.30 | 1.60 | 13 | Multi-Frequency, Multi-Axis Random Test, 1-100 HZ. | Operational & Structural Integrity Verified. |
| 111-1 Air Operated Valves | 0.90 | 0.40 | 1.0 | 1.0 | 17 | Equivalent Static Analysis for Stress and Deflection on Valve and Actuator | S Max = 17200 psi<br>S Allow = 38000 psi<br>Negligible Deflection. |
| | | | | | | Single Axis, Single Freq. Sine Dwell Test on Solenoid, 1-40 HZ. | Operability Demonstrated |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 111-2<br>12 in. Control Room Isolation Valve | 0.801 | 0.868 | 3.00 | 3.00 | 22 | Equivalent Static Analysis for Stress and Deflection on Valve and Actuator | S Max = 24200 psi<br>S Allow = 27000 psi<br>Negligible Deflection. |
| | | | | | | Single Axis, Single Freq. Sine Beat Test On Operator, 1-80 HZ. | Operability Demonstrated |
| 111-3<br>Air Oporated Valves | 5.15 | 0.70 | 5.60 | 1.00 | 13 | Equivalent Static Analysis for Stress & Deflection on Valve and Actuator. | S Max = 29800 psi<br>S Allow = 38000 psi<br>Negligible Deflection |
| | | | | | | Single Axis, Single Freq. Sine Dwell Test On Solenoid, 1-40 HZ. | Operability Demonstrated |
| 114-1<br>Chilled Water Surge Tank | 0.30 | 0.20 | 0.91 | 0.47 | 44 | Equivalent Static Analysis | S Max = 15700 psi<br>S Allow = 19200 psi |
| 114-2<br>Chilled Water Surge Tank | 0.5 | 0.3 | 0.91 | 0.47 | 43 | Static Analysis | S Max = 15500 psi<br>S Allow = 19300 psi |
| 114-3<br>Diesel Fuel Oil Storage Tanks | 2.00 | 1.30 | 2.00 | 1.30 | 14 | Equivalent Static Analysis | S Max = 24000 psi<br>S Allow = 32800 psi |
| 114-4<br>Diesel Fuel Oil Day Tank | 0.90 | 0.40 | 0.90 | 0.46 | 28 | Equivalent Static Analysis | S Max = 10400 psi<br>S Allow = 30200 psi |
| 115-1<br>480 Volt Motor Control Center | 0.52 | 0.62 | 1.6 | 1.1 | 4 | Multi-Freq. Multi-Axis, Random Motion Test From 1-100 HZ. | Operational & Structural Integrity Verified. |
| 115-2<br>480 VAC Circuit Breaker Panelboards | 0.52 | 0.40 | 1.20 | 0.85 | 20 | Multi-Freq. Multi-Axis, Random Motion Test From 1-100 HZ. | Operational & Structural Integrity Verified. |
| 116-1<br>125 Volt Control Storage Batteries and Racks. | 01.0 | 0.36 | 1.1 | 0.7 | >40 | Multi-Freq. Multi-Axis, Random Motion Test From 1.0-40 HZ. | Operational & Structural Integrity Verified. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 118A-1<br>125 V Static<br>Battery Charges | 0.30 | 0.19 | 0.33 | 0.20 | 8 | Single Axis Single Freq. Sine Beat Test From 1-40 HZ. | Operational & Structural Integrity Verified. |
| 120-1<br>BOP Main<br>Control Board | .55 | .47 | .96 | .39 | 15 | Equivalent Static Analysis for Panel | S Max = 9056 psi<br>S Allow = 25000 psi |
| | | | | | | Single Freq., Single Axis Sine Dwell, 1-33 HZ. | Operational & Structural Integrity Verified. |
| 124-1<br>Breaker Distribution<br>Panel | 0.35 | 0.40 | 1.00 | 0.70 | 15 | Multi-Frequency Multi-Axis, Random Test From 1-100 HZ. | Operational & Structural Integrity Verified. |
| 124-2<br>AC & DC Distribution<br>Panel Board | 0.30 | 0.20 | 0.31 | 0.41 | 21 | Single Frequency Single Axis, Sine Beat Test From 1-35 HZ. | Operational & Structural Integrity Verified. |
| 125-1 through 11<br>Instrumentation Panels | 0.90 | 0.46 | 1.0 | 1.0 | - | Static Stress Analysis of the panels. Single Frequency Biaxial Sine Dwell Testing of Instruments, 1-100 HZ. | Awaiting Final Test Report from Vendor. Preliminary Report Demonstrates Structural and Operational Integrity. |
| 134-1<br>Reactor Containment<br>Electrical Penetrations<br>(GE) | 1.30 | 0.65 | 2.80 | 4.00 | 24 | Single Frequency Single Axis Dwell Test From 0-100 HZ. | Operational & Structural Integrity Verified. |
| 159-1<br>Limit Switches<br>(NSSS) | 3.2 | 2.5 | 7.0 | 7.0 | >60 | Single Frequency Single Axis Test, 1-100 HZ, Sine Dwell | Structural and Functional Integrity Demonstrated. |
| 168-1<br>125 V DC Motor<br>Control Centers | 0.45 | 0.60 | 0.96 | 1.35 | >100 | Multi-Frequency Multi-Axis Random Motion Test From 1-100 HZ. | Operational & Structural Integrity Verified. |
| 172-1<br>Air Operated<br>Valves | 4.80 | 4.80 | 3.00 | 3.00 (2) | 11 HZ | Equivalent Static Analysis for Stress & Deflections on Yoke & Actuator. | S Max = 26100 psi<br>S Allow = 27000 psi<br>Negligible Deflection. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 175-1 Vacuum Breaker Valves | Dynamic Anal-Response Spectra Test-Dynamic Analysis of Disc | | | | | Response Spectra Dynamic Analysis for Stress. Slam Test for Operability following LOCA Impact. | Awaiting Final Qualification Reports from Vendor. Preliminary Report Demonstrates Structural and Operational Integrity. |
| 190-1 Spent Fuel Pool Cooling Water Heat Exchanger | 0.70 | 1.00 | 0.70 | 1.00 | 25 | Equivalent Static Analysis for Stress. | S Max = 22700 psi<br>S Allow = 25700 psi |
| 190-2 Reactor Builing Closed Loop Cooling Water Heat Exchanger | 1.20 | 0.70 | 1.20 | 0.70 | 12 | Equivalent Static Analysis for Stress. | S Max = 16800 psi<br>S Allow = 22000 psi |
| 190-3 Booster Heat Exchanger | 1.20 | 0.70 | 1.20 | 0.70 | 5 | Equivalent Static Analysis for Stress. | S Max = 37600 psi<br>S Allow = 40000 psi |
| 191-1 Safety and Relief Valves | 6.90 | 3.10 | 6.90 | 3.00 (1) | >60 | Equivalent Static Analysis for Stress. | S Max = 10500 psi<br>S Allow = 16000 psi |
| 197-1 20 in. MOV Butterfly | 0.98 | 0.76 | 3.00 | 3.00 | >100 | Equivalent Static Analysis for Stress & Deflection on Yoke. | S Max = 21700 psi<br>S Allow = 30000 psi<br>Deflection Vendor Accepted. |
| | | | | | | Single Freq. Single Axis Sine Beat Test on Operator From 2-100 HZ. | Operability & Structural Integrity Verified. |
| 197-2 16 in. MOV Butterfly | 1.0 | 0.7 | 3.00 | 3.00 | >100 | Equivalent Static Analysis for Stress & Deflection on Yoke. | S Max = 5580 psi<br>S Allow = 9200 psi<br>Deflection Vendor Accepted. |
| | | | | | | Single Freq. Single Axis Sine Beat Test on Operator From 2-100 HZ. | Operability & Structural Integrity Verified. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 197-3<br>6 in. MOV<br>Butterfly | 1.16 | 2.10 | 3.00 | 3.00 | >100 | Equivalent Static Analysis for Stress & Deflection on Yoke. | S Max = 8150 psi<br>S Allow = 9200 psi<br>Deflection Vendor Accepted. |
| | | | | | | Single Freq. Single Axis Sine Beat Test on Operator From 1-80 HZ. | Operability & Structural Integrity Verified. |
| 197-4<br>Butterfly MOV | 0.90 | 0.26 | 3.00 | 3.00 | >33 | Equivalent Static Analysis for Stress and Deflection on Valve. | S Max = 24800 psi<br>S Allow = 30000 psi<br>Deflections Acceptable. |
| | | | | | | Single Freq. Single Axis Dwell From 5-60 HZ on Operator. | Operability and Structural Integrity Verified. |
| 197-5<br>10 in. MOV<br>Butterfly | 0.52 | 0.64 | 3.00 | 3.00 | >100 | Equivalent Static Analysis for Stress and Deflection on Yoke. | S Max = 9160 psi<br>S Allow = 9200 psi<br>Deflections Vendor Accepted. |
| | | | | | | Single Freq. single Axis Sine Beat Test on Operator From 1-80 HZ. | Operability and Structural Integrity Verified. |
| 197-6<br>12 in. MOV<br>Butterfly | 1.1 | 0.30 | 3.00 | 3.00 | >100 | Equivalent Static Analysis for Stress and Deflection on Yoke. | S Max = 26900 psi<br>S Allow = 30000 psi<br>Deflections Vendor Accepted. |
| | | | | | | Single Freq. Single Axis Sine Beat Test on Operator. From 2-100 HZ. | Operability and Structural Integrity Verified. |
| 197-7<br>18 in. MOV<br>Butterfly | 0.24 | 2.1 | 3.00 | 3.00 | >100 | Equivalent Static Analysis for Stress and Deflection on Yoke. | S Max = 29800 psi<br>S Allow = 30000 psi<br>Deflections Vendor Accepted. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| | | | | | | Single Freq. Single Axis Sine Beat Test on Operator. From 2-100 HZ. | Operability and Structural Integrity Verified. |
| 197-8<br>24 in. MOV Butterfly | 0.9 | 0.6 | 3.00 | 3.00 | >100 | Equivalent Static Analysis for Stress and Deflection on Yoke. | S Max = 24200 psi<br>S Allow = 30000 psi<br>Deflections Vendor Accepted. |
| | | | | | | Single Freq. Single Axis Sine Beat Test on Operator From 2-100 HZ. | Operability and Structural Integrity Verified. |
| 203-1<br>Diaphrahm Valves Motor Operated & Manual | 2.3 | 1.5 | 3.00 | 3.00 | >48 | Equivalent Static Analysis for Stress and Deflections on Valve. | S Max = 32600 psi<br>S Allow = 50200 psi<br>Deflections Vendor Accepted. |
| | | | | | | Single Freq., Single Axis Sine Beat Test on Operator From 1-100 HZ. | Operability and Structural Integrity Verified |
| 214-1<br>1 1/2 in. Forged Bonnetless Globe Valve | 2.3 | 0.7 | 3.00 | 3.00 | >90 | Equivalent Static Analysis for Stress and Deflection on Yoke. | S Max = 17200 psi<br>S Allow = 27000 psi<br>Defl. Max = 0.0027 in.<br>Defl. Allow = 0.005 in. |
| | | | | | | Single Frequency, Single Axis Sine Beat Test Operator From 1-100 HZ. | Operational and Structural Integrity Verified. |
| 214-2<br>1/2 in. 600 lb Bonnetless Vertical Globe Valve | 2.3 | 0.7 | 3.00 | 3.00 | 66 | Equivalent Static Analysis for Stress and Deflection on Yoke. | S Max = 24400 psi<br>S Allow = 29700 psi<br>Defl. Max = 0.011 in.<br>Defl. Allow = 0.050 in. |
| | | | | | | Single Frequency, Single Axis Sine Beat Test on Operator from 1-100 HZ. | Operational and Structural Integrity Verified. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 214-3<br>1" Bonnetless<br>Globe Valve | 0.60 | 0.50 | 3.0 | 3.0 | 55 | Static Analysis, Yoke | S Max = 28900 psi<br>S Allow = 29100 psi<br>Defl. Max = .016 in.<br>Defl. Allow = 0.50 in. |
| | | | | | | Single Axis/Single Freq. Sine Beat, 1-100 HZ, Operator | Demonstrated Structural and Operational Integrity |
| 235-1<br>Core Spray Loop<br>Level Pump | 0.60 | 0.70 | 2.00 | 2.00 | >60 | Equivalent Static Analysis for Stress and Deflection. | S Max = 24100 psi<br>S Allow = 25600 psi<br>Defl. Max = 0.006 in.<br>Defl. Allow = 0.032 in. |
| 238-1<br>Carbon Dioxide System<br>Electric Control | 0.90 | 0.44 | 1.20 | 0.65 | 17 | Multi-Frequency, Multi-Axis Random Motion Test From 1-40 HZ. | Structional & Operational Integrity Verified. |
| 240-1<br>Cooling Fan &<br>Structural Support | 0.91 | 0.40 | 0.96 | 0.40 | 39 | Equivalent Static Analysis for Stress & Deflection. | S Max = 37300 psi<br>S Allow = 41000 psi<br>Defl. Max = 0.0034 in.<br>Defl. Allow = 0.050 in. |
| 248-1<br>Transformer -<br>Emergency 120 Volt<br>Panels B2 & R2 | 0.45 | 0.60 | 1.90 | 0.64 | 9 | Multi-Frequency, Multi-Axis, Random Motion Test From 1-250 HZ. | Operational & Structural Integrity Verified. |
| 248-2<br>Transformers<br>75, 25, and 50 KVA | 0.45 | 0.30 | 1.9 | 0.64 | 18 | Multi-Frequency, Biaxial Testing, 1-250 HZ | Structural and Operational Integrity Demonstrated |
| 253-1<br>Bonnetless Vertical<br>Globe Valve | 6.4 | 2.7 | 3.74 | 3.22 (2) | 78 | Equivalent Static Analysis for Stress & Deflection on Yoke. | S Max = 23411 psi<br>S Allow = 26200 psi<br>Defl. Max = 0.0043 in.<br>Defl. Allow = 0.005 in. |
| | | | | | | Single Axis Single Frequency Sine Beat Test From 1-100 HZ. | Operational and Structural Integrity Verified. |
| 253-2<br>1 1/2 in. Forged<br>Bonnetless Globe<br>Valve | 2.6 | 0.8 | 3.00 | 3.00 | 90 | Equivalent Static Analysis for Stress & Deflection on Yoke. | S Max = 17200 psi<br>S Allow = 26200 psi<br>Defl. Max = 0.0027 in.<br>Defl. Allow = 0.005 in. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| | | | | | | Single Axis Single Frequency Sine Beat Test From 1-100 HZ. | Operational and Structural Integrity Verified. |
| 253-3<br>1 in. Forged<br>Bonnetless Vertical<br>Globe Valve | 2.3 | 8.0 | 5.90 | 2.70 (2) | 74 | Equivalent Static Analysis for Stress & Deflection on Yoke. | S Max = 28800 psi<br>S Allow = 32400 psi<br>Defl. Max = 0.0036 in.<br>Defl. Allow = 0.005 in. |
| | | | | | | Single Axis Single Frequency Sine Beat Test From 1-100 HZ. | Operational and Structural Integrity Verified. |
| 253-4<br>1 1/2" Forged<br>Inclined Bonnetless<br>Globe Valve | 2.8 | 2.7 | 3.0 | 3.0 | 175 | Static Analysis, Yoke | S Max = 13100 psi<br>S Allow = 26300 psi<br>Defl. Max = .002<br>Defl. Allow = .050 |
| | | | | | | Single Axis/Single Frequency Testing, 1-100 HZ, Operator | Structural and Operational Integrity Demonstrated |
| 270-1<br>Computer Room, Relay Room, & Emergency Switchgear Room Return Fans | 0.90 | 0.46 | 0.95 | 0.43 (1) | 27 | Equivalent Static Analysis for Stress & Deflection on Fan and Motor. | S Max = 2550 psi<br>S Allow = 5710 psi<br>Defl. Max = 0.0045 in.<br>Defl. Allow = 0.0189 in. |
| 270-2<br>Control Room Chiller Equipment Room Exhaust Fans | 0.37 | 0.20 | 0.70 | 0.43 | >37 | Equivalent Static Analysis for Stress & Deflection on Fan and Motor. | S Max = 31100 psi<br>S Allow = 32000 psi<br>Defl. Max = 0.011 in.<br>Defl. Allow = 0.062 in. |
| 270-3<br>Battery Room Ventilation Fans | 0.30 | 0.19 | 0.70 | 0.43 | >105 | Equivalent Static Analysis for Stress & Deflection on Fan and Motor. | S Max = 14100 psi<br>S Allow = 24000 psi<br>Defl. Max = 0.00189 in.<br>Defl. Allow = 0.047 in. |
| 270-4<br>Diesel Generator Room Supply Fans | 0.90 | 0.46 | 0.95 | 0.46 | 20 | Equivalent Static Analysis for Stress & Deflection on Fan and Motor. | S Max = 20500 psi<br>S Allow = 32000 psi<br>Defl. Max = 0.0081 in.<br>Defl. Allow = 0.0578 in. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 270-5 Reactor Building Exhaust Fan | 0.90 | 0.90 | 0.90 | 0.90 | 15 | Equivalent Static Analysis for Stress & Deflection on Fan and Motor. | S Max = 23800 psi<br>S Allow = 24000 psi<br>Defl. Max = 0.0153 in.<br>Defl. Allow = 0.0848 in. |
| 270-6 Screenwell Pump House Supply Fans | 1.10 | 0.50 | 0.95 | 0.43 (1) | 27 | Equivalent Static Analysis for Stress & Deflection on Fan and Motor. | S Max = 16100 psi<br>S Allow = 32000 psi<br>Defl. Max = 0.0045 in.<br>Defl. Allow = 0.0189 in. |
| 276-1 Reactor Building Standby Vent System Cooling Coil Bank | 0.90 | 0.90 | 0.90 | 0.90 | 5 | Equivalent Static Analysis for Stress | Min. Factor of Safety = 1.026 |
| 276-2 Reactor Building Standby Vent System Unit Cooler | 1.20 | 0.70 | 1.20 | 0.70 | 5 | Equivalent Static Analysis for Stress & Deflection. | S Max = 15900 psi<br>S Allow = 16100 psi<br>Defl. Max = .00067<br>Defl. Allow = 0.28100 |
| 276-3 Reactor Building Standby Vent System Unit Cooler | 1.70 | 1.00 | 1.20 | 1.00 (1) | 5 | Equivalent Static Analysis for Stress & Deflection | Minumum Factor of Safety; Stress = 1.00 |
| 276-4 Reactor Building Motor Control Center Room Unit Cooler | 0.90 | 0.90 | 1.20 | 0.90 | 5 | Equivalent Static Analysis for Stress & Deflection | Minumum Factor of Safety; Stress = 1.10 |
| 276-5 Reactor Building Standby Vent System Unit Cooler | 0.90 | 1.00 | 1.20 | 1.00 | 5 | Equivalent Static Analysis for Stress & Deflection | Minumum Factor of Safety; Stress = 1.26 |
| 276-6 Reactor Building Standby Vent System Unit Cooler | 1.30 | 0.80 | 1.30 | 0.80 | 5 | Equivalent Static Analysis for Stress & Deflection | Minumum Factor of Safety; Stress = 1.07 |
| 276-7 Unit Cooler | 1.30 | 0.80 | 1.30 | 1.00 | 5 | Equivalent Static Analysis for Stress & Deflection | S Max = 1450 psi<br>S Allow = 10000 psi<br>Defl. Max = 0.0010 in.<br>Defl. Allow = 0.0036 in. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 281-1<br>10 in. 150 lb<br>Bronze Butterfly<br>Valves | 1.2 | 1.3 | 3.00 | 3.00 | 39 | Equivalent Static Analysis for Stress & Deflection on Yoke. | S Max = 29900 psi<br>S Allow = 70000 psi<br>Defl. Max = 0.0364 in.<br>Defl. Allow = >>.0364 in. |
| | | | | | | Single Frequency, Single Axis Sine Beat Test From 1-80 HZ on Operator | Operational and Structural Integrity Verified. |
| 289-1<br>Hydrogen Recombiner<br>Power Panel | 0.45 | 0.60 | 1.30 | 3.50 | 14 | Multi Frequency Multi Axis Random Plus Sine Beat Test From 1.25-100 HZ | Operational & Structural Integrity Verified. |
| 289-2<br>Hydrogen Recombiner<br>Units | 0.45 | 0.60 | 4.00 | 3.40 | 14 | Multi Frequency Multi Axis Random Plus Sine Beat Test From 1-100 HZ | Operational & Structural Integrity Verified. |
| 289-3<br>Hydrogen Recombiner<br>Control Panel | 0.52 | 0.32 | 2.50 | 1.70 | 6 | Multi Frequency Multi Axis Random Plus Sine Beat Test From 1-100 HZ | Operational & Structural Integrity Verified. |
| 310-1<br>Electric Motor<br>Operated Control<br>Valves | 2.3 | 0.7 | 3.00 | 3.00 | 25 | Equivalent Static Analysis for Stress on Valve Yoke. | S Max = 7990 psi<br>S Allow = 10500 psi<br>(3) |
| | | | | | | Single Frequency, Single Axis Sine Dwell Test, Operator, 2-60 HZ | Operational and Structural Integrity Verified |
| 310-2<br>Electric Motor<br>Operated Control<br>Valves | 2.3 | 1.0 | 3.00 | 3.60 | 25 | Equivalent Static Analysis for Stress on Valve Yoke. | S Max = 7922 psi<br>S Allow =10500 psi |
| | | | | | | Single Frequency, Single Axis Sine Dwell Test for Operability and Actuator, 2-60 HZ | Operational and Structural Integrity Verified. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 310-3 Electric Motor Operated Control Valves Yoke | 1.5 | 0.8 | 3.00 | 3.00 | 40 | Equivalent Static Analysis for Stress on Valve Yoke | S Max = 4000 psi<br>S Allow = 18900 psi |
| | | | | | | Single Frequency Single Axis Sine Dwell Test, Operator, 2-60 HZ. | Operational and Structural Integrity Verified. |
| 318-1 Air Operated Valve | 6.9 | 3.0 | 6.90 | 3.00 | >60 | Static Analysis for Stress and Deflection on Yoke. | S Max = 11400 psi<br>S Allow = 21200 psi<br>Defl. Max = 0.0047<br>Defl. Allow = 0.131 |
| | | | | | | Single Frequency, Single Axis Test From 3-100 HZ on Solenoid Valve. | Structural and Operational Integrity Verified. |
| 318-2 Pressure Control Valve | 2.6 | 1.9 | 3.00 | 3.00 | 33 | Static Analysis for Stress & Deflection on Yoke. | S Max = 20400 psi<br>S Allow = 26200 psi<br>Defl. Max = 0.028 in.<br>Defl. Allow = 0.111 in. |
| | | | | | | Single Frequency, Single Axis Test From 3-100 HZ on Solenoid Valve. | Structural and Operational Integrity Verified. |
| 318-3 6 in. Class 150 Air Operated Valve | 2.50 | 1.50 | 3.00 | 3.00 | 51 | Static Analysis for Stress and Deflection on Valve Yoke. | S Max = 14900 psi<br>S Allow = 26200 psi<br>Defl. Max = 0.0228 in.<br>Defl. Allow = 0.111 in. |
| | | | | | | Single Frequency, Single Axis Test From 1-133 HZ on Solenoid Valve. | Structural and Operational Integrity Verified. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 318-4 Air Operated control Valves | 5.2 | 2.0 | 4.20 | 3.00 (1) | 53 | Equivalent Static Analysis for Stress & Deflection on Valve Yoke. | S Max = 15700 psi<br>S Allow = 17500 psi<br>Defl. Max = 0.0215 in.<br>Defl. Allow = 0.111 in. |
| | | | | | | Single Frequency Single Axis Test From 1-40 HZ on Solenoid Valve. | Operational and Structural Integrity Verified. |
| 318-5 Air Operated control Valves | 2.3 | 1.7 | 4.20 | 3.00 | 35 | Equivalent Static Analysis for Stress & Deflection on Valve Yoke. | S Max = 20400 psi<br>S Allow = 26200 psi<br>Defl. Max = 0.0215 in.<br>Defl. Allow = 0.111 in. |
| | | | | | | Single Frequency, Single Axis Test From 1-40 HZ on Solenoid Valve. | Operational and Structural Integrity Verified. |
| 318-6 Air Operated Control Valve | 3.00 | 3.00 | 4.20 | 3.00 | >100 | Equivalent Static Analysis for Stress & Deflection on Valve. | S Max = 26600 psi<br>S Allow = 37500 psi<br>Defl. Max = 0.0021 in.<br>Defl. Allow = 0.131 in. |
| | | | | | | Single Frequency Single Axis Test From 1-40 HZ on Solenoid Valve. | Operational and Structural Integrity Verified. |
| 318-7 Air Operated Control Valve | 6.80 | 3.70 | 4.20 | 3.00 (1) | 53 | Equivalent Static Analysis for Stress & Deflection on Yoke. | Factor of Safety = 1.01 |
| | | | | | | Single Frequency Single Axis Test From 1-40 HZ on Solenoid Valve. | Operational and Structural Integrity Verified. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 319-1 Volume Control Dampers | 0.80 | 0.60 | 0.75 | 0.51 (1) | 27 | Equivalent Static Analysis for Stress & Deflection on Damper. | Stress Factor of Safety 3.2<br>Defl. Max = 0.059 in.<br>Defl. Allow =0.111 in. |
| | | | | | | Multi Frequency Multi Axis Random Motion Test from 1-250 HZ on Actuator. | Operational and Structural Integrity Verified. |
| 319-2 Volume Control Dampers | 2.00 | 1.50 | 2.00 | 1.50 | 21 | Equivalent Static Analysis for Stress & Deflection on Damper. | Stress Factor of Safety >3.9 |
| | | | | | | Multi Frequency Multi Axis Random Motion Test From 1-250 HZ on Actuator. | Operational and Structural Integrity Verified. |
| 319-3 Control Panels | 0.50 | 0.34 | 5.0 | 7.0 | 24 | Instruments by Multi-Frequency Multi Axis Random Motion Test From 1-250-HZ. | Operational and Structural Integrity Verified. |
| | | | | | | Static Stress Analysis of Panel with Frequencies Verified by Test. | S Max = 8465 psi<br>S Allow = 32,400 psi |
| 319-4 Volume Control Dampers & Instruments | 0.52 | 0.32 | 0.75 | 0.51 | 33 | Dampers by Equivalent Static Analysis for Stress & Deflection. | Stress Factor of Safety > 2.8<br>Defl. Max = 0.073 in.<br>Defl. Allow = 0.100 in. |
| | | | | | | Instruments by Multi Frequency Multi Axis Random Motion Test From 1-250 HZ. | Operational and Structural Integrity Verified. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 319-5 Volume Control Dampers & Instruments | 0.67 | 0.78 | 0.75 | 0.51 (1) | 24 | Dampers by Equivalent Static Analysis for Stress & Deflection. | Stress Factor of Safety >3.3<br>Defl. Max = 0.059 in.<br>Defl. Allow = 0.111 in. |
| | | | | | | Instruments by Multi Frequency Multi Axis Random Motion Test From 1-250 HZ. | Operational and Structural Integrity Verified. |
| 332-1 A Control Panel & Four Digital Radiation Monitors | 0.60 | 0.40 | 1.40 | 1.00 | 6 | Multi-Frequency Multi-Axis Random Motion Test From 1-100 HZ. | Operational & Structural Integrity Verified. |
| 344-1 Drywell Gas Monitor | 1.00 | 0.40 | 10.0 | 10.0 | 18 | Multi-Frequency Multi-Axis Random Motion Test From 1-40 HZ on Instruments and 1-100 HZ on Panel. | Operational & Structural Integrity Verified. |
| 344-2 Primary Containment Gas Analyzer Remote Control Panel | .82 | 0.41 | 0.90 | 0.90 | 29 | Equivalent Static Analysis for Stress on Panel. | S Max = 11100 psi<br>S Allow = 22000 psi |
| | | | | | | Multi Frequency, Biaxial Test From 1-40 HZ on Instruments. | Operational and Structural Integrity Verified. |
| 348-1 Pressure Temperature Switch | 2.20 | 1.00 | 3.00 | 3.00 | 50 | Single Frequency, Single Axis Sine Dwell Test From 1-32 HZ. | Operational & Structural Integrity Verified. |
| 348-2 Pressure Temperature Switch | 1.95 | 1.95 | 3.00 | 3.00 | >50 | Single Frequency Single Axis Sine Dwell Test From 1-32 HZ. | Operational & Structural Integrity Verified. |
| 406-1 Resistance Temperature Detectors | 1.95 | 1.95 | 6.00 | 6.00 | >35 | Single Frequency Single Axis Sine Sweep From 1-35 HZ. | Operational & Structural Integrity Verified. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 406-2 Electronic Transmitters | 1.95 | 1.95 | 17.00 | 17.00 | N.A. | Multi Frequency Multi Axis Random Motion Test From 1-250 Hz. | Operational & Structural Integrity Verified. |
| 406-3 Pressure Transmitter | 1.95 | 1.95 | 8.50 | 8.50 | 20 | Multi Frequency Multi Axis Random Motion Test From 1-250 Hz. | Operational & Structural Integrity Verified. |
| 406-4 Resistance Temperature Detector | 1.2 | 0.60 | 2.8 | 2.5 | N.A. | Multi Frequency Biaxial Testing, 1-100 Hz | Operational & Structural Integrity Demonstrated |
| 406-5 Trip Calibration Units (NSSS) | 1.5 | .6 | 15. | 15. | 60 | Single Frequency, Single Axis Test, 5-33 HZ. | Structural and Operational Integrity Demonstrated. |
| 406-6 Pressure Transmitters (NSSS) | 0.5 | 0.5 | 9.40 | 7.50 | >100 | Multi Axis Multi Frequency Random Motion Test From 1-60 HZ. | Operational & Structural Integrity Demonstrated |
| 406A-1 Resistance Temperature Detectors | 1.0 | 0.60 | 3.0 | 3.0 | 60 | Multi Frequency Biaxial Testing, 1-100 Hz | Operational & Structural Integrity Demonstrated |
| 407-1 Gauge Type Level Switch | 0.51 | 0.41 | 2.80 | 1.10 | 17 | Multi Frequency Multi Axis Random Motion Test From 1-250 Hz. | Operational & Structural Integrity Verified. |
| 407-2 Gauge Type Level Switch | 1.00 | 0.45 | 2.80 | 1.10 | 17 | Multi Frequency Multi Axis Random Motion Test From 1-40 Hz. | Operational & Structural Integrity Verified. |
| 420-1 Diesel Fuel Oil Transfer Pumps | 1.10 | 0.50 | 6.50 | 1.05 | 13 | Equivalent Static Analysis for Stress & Deflection | S Max = 7550 psi<br>S Allow = 15000 psi<br>Defl. Max = 0.00186 in.<br>Defl. Allow = 0.015 in. |
| 421-1 Power Supply (NSSS) | .75 | .60 | 6.0 | 6.0 | 38 | Multi Frequency Biaxial Testing, 1-100 HZ. | Operability and Structural Integrity Demonstrated. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 423-1 Reactor Building Standby Vent System & Control Room A.C. Chilled Water & Service Water Air Operated Valves | 0.8 | 0.7 | 3.00 | 3.00 | 23 | Equivalent Static Analysis for Stress & Deflections on Valve. | S Max = 56300 psi<br>S Allow = 82800 psi<br>Deflections Vendor Approved. |
| | | | | | | Single Frequency Single Axis Sine Dwell Test From 1-33 HZ on Solenoid. | Operational & Structural Integrity Verified. |
| 423-2 Temperature Control Valves | 1.8 | 1.1 | 3.00 | 3.00 | 22 | Equivalent Static Analysis for Stress & Deflections on Valve. | S Max = 81900 psi<br>S Allow = 82800 psi<br>Deflections Vendor Approved. |
| | | | | | | Single Frequency Single Axis Sine Dwell Test From 1-33 HZ on Solenoid. | Operational and Structural Integrity Verified. |
| 423-3 Temperature Control Valves | 1.9 | 2.3 | 3.00 | 3.00 | 21 | Equivalent Static Analysis for Stress & Deflections on Valve. | S Max = 84400 psi<br>S Allow = 85000 psi<br>Deflections Vendor Approved. |
| | | | | | | Single Frequency Single Axis Sine Dwell Test From 1-33 HZ on Solenoid. | Operational and Structural Integrity Verified. |
| 427-1 Spent Fuel and Control Rod Storage Racks | Loads by Dynamic Analysis With Time History. 0.5 g's Used for Vertical Seismic. | | | | | Equivalent Static Analysis for Stress | S Max = 97200 psi<br>S Allow = 106500 psi |
| 438-1 Automatic Transfer Switch | 0.50 | 0.80 | 1.30 | 1.30 | 13 | Multi Frequency Multi Axis Random Motion Test From 1-90 HZ. | Operational & Structural Integrity Verified |
| 439-1 480 V. Motor Generator Sets | 1.20 | 0.90 | 1.20 | 1.00 | 27 | Equivalent Static Analysis for Stress & Deflection. | S Max = 5990 psi<br>S Allow = 10000 psi<br>Defl. Max = 0.009 in.<br>Defl. Allow = 0.047 in. |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|
| 447-1 Main Steam Relief Valve Quencher | Loads From S&W Specification SH1-447 | | | | N.A. | Static Analysis for Stress | S Max = 23000 psi<br>S Allow = 23400 psi |
| 456-1 Electrical Penetrations (Conax) | 1.30 | .65 | 10. | 13. | 26 | Multi Frequency Biaxial Testing, 1-200 HZ. | Structural and Operational Integrity Verified. |
| 473-1 Level Transmitters and Receivers | 0.24 | 0.40 | 7.5 | 7.2 | 14 | Multi-Frequency Biaxial Testing, 1-200 Hz | Structural and Operational Integrity Demonstrated |
| 475-1 Digital Radiation Monitoring Equipment | 0.60 | 0.60 | 4.00 | 4.00 | 4 | Multi Frequency Single Axis Random Plus Sine Beat Test From 1-100 HZ. | Operational & Structural Integrity Verified |
| 475-2 Microcomputer Panel | 0.60 | 0.60 | 6.00 | 6.00 | 19 | Multi Frequency Single Axis Random Motion Test From 1-100 HZ. | Operational & Structural Integrity Verified |
| 475-3 High Range Area Detector | 2.3 | 0.70 | 10.0 | 9.0 | >100 | Multi-Frequency Biaxial Testing, 1-200 Hz | Structural and Operational Integrity Verified |
| 475-4 Radiation Monitor-Instrumentation | - | - | - | - | - | Test | Awaiting Test Report from Vendor |
| 492-1 Pressure Reducing Valve | 2.5 | 2.5 | 10.0 | 10.0 | >100 | Single Axis, Single Frequency Sine Dwell Testing, 1-100 Hz. | Operational & Structural Integrity Demonstrated |
| 493-1 Floor Controller | 3.5 | 3.5 | 7.5 | 7.5 | >100 | Single Axis, Single Frequency Sine Dwell Testing, 1-100 Hz. | Operational & Structural Integrity Demonstrated |
| 600-1 Solenoid Operated Valves | 1.50 | 1.30 | 3.00 | 3.00 | >105 | Equivalent Static Analysis for Stress & Deflection. | S Max = 25400 psi<br>S Allow = 30000 psi<br>Deflections Acceptable |

TABLE 3.9.4A-2 (CONT'D)

| SPECIFICATION AND EQUIPMENT DESCRIPTION | REQ'D G'S HOR | REQ'D G'S VERT | QUAL'D G'S HOR | QUAL'D G'S VERT | FREQ (HZ) | METHOD OF QUALIFICATION | RESULTS |
|---|---|---|---|---|---|---|---|

Notes

(1) Stress and deflection margin adequate to account for required G's greater than qualified G's.

(2) Needs resolution

(3) Deflections are calculated only if they affect operability.

PROPOSED RULE PR-53 (48FR 19382) (22)

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

W. L. STEWART
VICE PRESIDENT
NUCLEAR OPERATIONS

June 27, 1983


Secretary of the Commission
U. S. Nuclear Regulatory Commission
Attn: Docketing and Service Branch
Washington, D. C. 20555

Serial No. 374
NO/JHL/HSM:acm

Gentlemen:

COMMENTS TO PROPOSED REGULATION
10 CFR PART 53

The Virginia Electric and Power Company is pleased to have the opportunity to comment on the proposed rules for the Criteria and Procedures for Determining the Adequacy of Available Spent Nuclear Fuel Storage Capacity (10 CFR Part 53) as described in the Federal Register of April 29, 1983 (48FR19382). Attachment 1 provides Vepco's comments to the proposed regulation 10 CFR Part 53.

Very truly yours,

W. L. Stewart

Attachment

DS 10
add: J. V. Cameron
1130 SS
1/1

Attachment 1

1. Section 53.11; we take exception to the proposed requirement that a utlity wait until two (2) years prior to the date it anticipates losing full core reserve before filing a request for determination. If a utility determines that it will lose full core discharge in more than two (2) years and can demonstrate that there are no reasonable alternatives available, there is no reason not to file a request for determination. The two (2) year time frame appears to be arbitrary and is not conducive to proper utility or DOE (should the NRC make an affirmative determination) planning for the storage of spent nuclear fuel.

2. Section 53.13(a); Section 53.13(a) requests information on "technical, economic, regulatory or public health and safety constraints that would prevent the use of any of the alternatives set forth in paragraph(c) of the section." We suggest the word "prevent" be removed and substitute "render unreasonable or impracticable" as some things such as high costs or radiative exposure would not prevent the use of an alternative but would render it an unreasonable or impracticable choice.

3. Section 53.13(c)(5); We would like to suggest that you change "approved" to "licensed".

4. Section 53.15; We do not agree with the restrictive conditions regarding the withdrawal of a request for determination. We suggest that the utility should be able to unilaterially withdraw its request at any time.

5. Section 53.30(a)(7); We suggest the following revision: Legal impediments to the implementation of an alternative, such as state and local laws, actions of state and local administrative or regulatory bodies, or pre-existing contractural agreements, that cannot be alleviated in a timely manner.

6. Section 53.30(d); We suggest deleting the word "timely" and substituting "good faith" to describe the "efforts to initiate activities reasonably calculated to implement licensed alternatives to Federal interim storage." While a utility should be required to demonstrate diligent and good faith efforts, such efforts may simply be untimely through no fault of the utility.

7. Section 53.30(d)(1) and (3); We suggest that "approved" alternatives be deleted and substitute "licensed" alternatives.

8. Section 53.27; We suggest that the determination of eligibility for federal interim storage include the concept that a utility may be diligently pursuing licensed alternatives to federal interim storage which have uncertainties on the schedule for implementation. For example, licensing actions by the NRC, court decisions, or other approvals beyond the control of the utility may be required prior to implementation of an alternative to federal interim storage. The Commission should be able to find that a utility is eligible for federal interim storage until another alternative becomes available. The utility would then have access to federal interim storage until an alternative can be implemented, as long as the utility continues to make diligent, good faith efforts to implement the alternative.

-53 (19)
(48 FR 19382)

LILCO LONG ISLAND LIGHTING

LONG ISLAND LIGHTING COMPANY

175 EAST OLD COUNTRY ROAD · HICKSVILLE, NEW YORK 11801

SNRC-906

MILLARD S. POLLOCK
VICE PRESIDENT-NUCLEAR

June 17, 1983


Secretary of the Commission
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Docketing and Services Branch
Docket No. 50-322

Dear Sir:

On April 29, 1983, the Commission published proposed rules on "Criteria and Procedures for Determining the Adequacy of Available Spent Nuclear Fuel Storage Capacity." The Long Island Lighting Company has reviewed these proposed rules and offers the following comments for your consideration.

§53.11(b) requires that a person submitting a request for Commission determination, file no sooner than two years prior to anticipated loss of full core reserve and no later than June 30, 1989. These time limitations create a situation whereby anyone losing full core reserve after June 30, 1991 is precluded from entering into a contract with DOE regardless of whether or not a demonstration of need can be made.

Although the Nuclear Waste Policy Act of 1982 established timing limitations on the interim storage of spent fuel by DOE (DOE can enter into contracts no later than January 1, 1990, and all fuel must be removed no later than three years after startup of a disposal facility), there is no indication that Congress intended to preclude all reactors that lose full core discharge capability after June 30, 1991 from entering into a storage contract with DOE.

Circumstances could exist whereby a valid demonstration of need could be made with more than two years lead time. It is inappropriate to rule out the opportunity to make such a demonstration for those utilities that lose full core discharge after June 30, 1991. Therefore, the requirement of filing no earlier than two years prior to loss of full core reserve should be removed from the rule.

DS 10 add:
J. K. Cameron, 1130.55

1/0

6/30/83 DD

Thank you for the opportunity of making our views known on this matter.

Sincerely yours,

M. S. Pollock
Vice President-Nuclear

cc: J. Higgins
All parties listed in Attachment 1

ATTACHMENT 1

Lawrence Brenner, Esq.
Administrative Judge
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dr. Peter A. Morris
Administrative Judge
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dr. James H. Carpenter
Administrative Judge
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Daniel F. Brown, Esq.
Attorney
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Bernard M. Bordenick, Esq.
David A. Repka, Esq.
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

James Dougherty
3045 Porter Street
Washington, D.C. 20008

Herbert H. Brown, Esq.
Lawrence Coe Lanpher, Esq.
Karla J. Letsche, Esq.
Kirkpatrick, Lockhart, Hill
Christopher & Phillips
8th Floor
1900 M Street, N.W.
Washington, D.C. 20036

Mr. Marc W. Goldsmith
Energy Research Group
4001 Totten Pond Road
Waltham, Massachusetts 02154

MHB Technical Associates
1723 Hamilton Avenue
Suite K
San Jose, California 95125

Stephen B. Latham, Esq.
Twomey, Latham & Shea
33 West Second Street
P.O. Box 398
Riverhead, New York 11901

Ralph Shapiro, Esq.
Cammer and Shapiro, P.C.
9 East 40th Street
New York, New York 10016

Matthew J. Kelly, Esq.
State of New York
Department of Public Service
Three Empire State Plaza
Albany, New York 12223

DOCKET NUMBER
PROPOSED RULE PR-53 (20)
(48 FR 19382)

Consumers Power Company

David J VandeWalle
*Nuclear Licensing Administrator*

General Offices: 1945 West Parnall Road, Jackson, MI 49201 • (517) 788-1636


June 28, 1983

Secretary of the Commission
Att: Docketing and Service Branch
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Proposed Rule - Criteria and Procedures for Determining the Adequacy of Available Spent Nuclear Fuel Storage Capacity (10CFR53)

Consumers Power Company appreciates the opportunity to comment on the above proposed rule. Our comments are discussed below:

First, we are concerned with the lack of specificity of proposed criteria for a commission determination regarding the adequacy of storage capacity to ensure continued orderly operation of a facility. Specifically, the terms and phrases, as noted in the following subparagraphs of Section 53.30(a) should be better defined:

Subparagraph (1) Suitability of the site
(2) Licensee's diligent and good faith efforts
(3) Timely manner
(4) Excessive reduction in code design
(5) Extraordinary costs
(6) Licensee's diligent and good faith efforts
(7) Timely manner
(8) Clearly unreasonable

Second, the second sentence of Section 53.11(b) should be deleted or revised. As it presently reads, it limits the submission for a determination to no sooner than two years prior to loss of full core reserve. This limitation, combined with the June 30, 1989 deadline for such a submission, prevents a utility from obtaining interim storage if full core reserve is lost after July 1, 1991. In addition, the two-year limitation may prevent a utility from obtaining interim storage in the event of an emergency such as a need to drain the spent fuel pool to repair a leak.

David J VandeWalle
David J VandeWalle
Nuclear Licensing Administrator

DJV 83-67

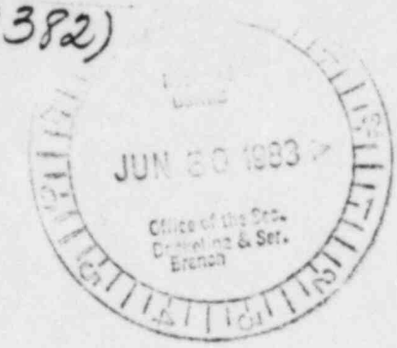
DS 10
add: J.K. Cameron
113053

1/0

6/30/83 PD

Groundwater Alliance
Box 4090
Ketchum, Idaho 83340

-53 (18)
(48FR 19382)




Secretary of the Commission;
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Attention: Docketing and Service Branch

Comments on proposed 10 CFR Part 53, Criteria and Procedures for Determining the Adequacy of Available Spent Nuclear Fuel Storage Capacity

Section 53.30(d) which requires the utility to demonstrate that it has made"diligent and good faith efforts" to provide alternatives to federal AFR storage is inadequate. There is a need for specific criteria to be laid out which must then be met by the utility as proof that they are making diligent efforts. As the rule now reads the Commission has total descretion is deciding whether a utility has made a diligent effort or not. There is no way to insure consistency in the decision making in regards to allowing a utility the use of federal AFR storage. There is also no way for the public to evaluate the utility's need for federal AFR storage or their efforts to provide alternatives. We support the criteria proposed by the Union of Concerned Scientists.

Section 53.30(a)(3) should be eliminated.

Section 53.13 needs to be revised. It sounds as if the Commission is limiting a utility's alternatives for storage to the four statutory categories and any other technologies approved by the Commission. The utility must be required to pursue all reasonable promising and feasible alternatives to federal AFR storage whether the Commission has ever heard of them or not.

Of special concern to us here in Idaho is the total lack of public participation in the decision making process. We have a right for our opinions to be heard when a utility requests a determination on federal AFR storage. We will be greatly affected by the Commission's decisions because the Idaho National Engineering Laboratory will be the likely site for a federal AFR storage facility. There will be a large

DS10 - F.X. Cameron, 11305S 1/0 6/30/83 PD

increase in the amount of nuclear materials transported into Idaho, and there will be an ever increasing threat to our environment, especially the Snake River Plain Aquifer which flows beneath INEL. The Commission should allow public comment on all utility requests for federal AFR storage and provide the public with all of the available information.

Section 135(b) of the Nuclear Waste Policy Act 1982 is intended to allow for federal AFR storage as a last resort. The proposed rules do not set up adequate criteria to insure that the intention of the Act is carried out. The Commission must do all it can to insure that there will never be a need for federal AFR storage.

Additionally, the Groundwater Alliance is opposed to any civilian nuclear power plant spent fuel being stored at the Idaho National Engineering Laboratory.

Elizabeth Paul for
The Groundwater Alliance

Elizabeth Paul

DOCKET NUMBER
PROPOSED RULE PR-53 (23)
(48 FR 19382)

LAW OFFICES OF
DEBEVOISE & LIBERMAN

1200 SEVENTEENTH STREET, N.W.
WASHINGTON, D.C. 20036
TELEPHONE (202) 857-9800


June 28, 1983

Mr. Samuel J. Chilk
Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Proposed 10 C.F.R. Part 53; Adequacy of Spent Fuel Storage Capacity; 48 Fed. Reg. 19832 (April 29, 1983).

Dear Mr. Chilk:

On April 29, 1983, the Nuclear Regulatory Commission published in the Federal Register proposed rules to establish criteria and procedures for determining the eligibility of a person owning and operating a licensed nuclear power plant to contract with the Department of Energy for use of "last resort" federal government spent nuclear fuel storage pursuant to Section 135 of the Nuclear Waste Policy Act of 1982. Essentially, the Nuclear Waste Policy Act provides for limited federal government storage capacity for those licensees who, despite their best efforts, are unable to expand their own storage capacity in a timely manner so as to permit continued orderly operation. On behalf of Arkansas Power and Light Co., Texas Utilities Generating Company, and Washington Public Power Supply System, we submit the following comments on these proposed rules.

In summary, the proposed rules reflect the Commission's generic finding that full core reserve capacity, while not essential for safety purposes and not a regulatory requirement, is necessary for continued orderly reactor operation from an economic and operational standpoint. Generally, for multi-unit sites, full core reserve for one unit would be assumed to suffice unless the licensee establishes otherwise. The regulations would provide that a licensee which anticipates that its own storage capacity will not be adequate (including full core reserve) for its own needs pending the selection and development of geologic repositories must, before July 1, 1990 (but not sooner than two years before anticipated loss of full core reserve or the effective date of the rule, whichever is earlier), file a request with NRC for a determination of inadequacy under the proposed Part 53. As to procedural matters, proposed Part 53 determinations of inadequacy would not be considered subject to the hearing requirements of Section 189 of the Atomic Energy Act of 1954, as amended.

DS 10
add: G.V. Cameron, 1130 SS

110

The Commission will determine:

(1) whether the licensee cannot reasonably provide adequate spent fuel storage capacity on-site or at another site within its utility system (§50.27(a)(1)) through described methods (in §53.27(a)(2)), consider whether full core reserve will be maintained (§50.30(b)) and whether economic, technological, regulatory, and possible health and safety factors would make any alternative to Federal interim storage impractical (§50.30(d));

(2) whether the licensee is "diligently pursuing licensed alternatives to the use of federal storage capacity" (§§50.27(a)(2) and 50.30(d));

As to the second consideration, proposed §53.13(c) would provide for the licensee to submit information on its pursuit of, and the constraints on its timely use of, (1) expansion of storage capacity including high density racks and fuel rod compaction, (2) construction of additional spent fuel capacity, (3) acquisition of modular or mobile spent nuclear fuel storage equipment, for use at the site or any of its other sites; (4) transshipment to any of its other sites, or (5) "[a]ny other technologies that have been approved by the Commission". This wording tracks Subsection 135(g) of the Waste Policy Act regarding criteria for the eligibility determination if considered in isolation. The provision governing determinations specifies the first four of these (§50.27(a)(2)), thus paralleling the provisions of the Waste Policy Act on determinations, subsection 135(b)(1)(B). We believe that Subsections 135(b) and 135(g) must be read together to harmonize the regulations with the legislative intent. We are concerned that the "catch all" reference in §50.13(c)(5) to "[a]ny other technologies that have been approved by the Commission", fails to give effect to the concept of "licensed alternatives" contained in Subsection 135(b)(1)(B). If there emerges some other new technology which licensees must consider for this purpose, it should be one actually licensed by the Commission some reasonable period of time prior to the application for an eligibility determination. That is, if a utility, to be eligible for AFR storage, is to be held accountable at the time of the determination for exploration or attempted exploitation of some presently unspecified technology, then the licensing of that technology for at least one previous application should predate the filing under Part 53 by a suitable interval -- at least three years. Otherwise, the utility will not be able to plan its actions and evaluate alternatives in an orderly way nor predict whether it will be able to satisfy the eligibility criteria. Thus, if the "catch all" provision is to be retained, it should be revised as we have proposed.

Similarly, as to whether the licensee is diligently pursuing licensed alternatives, the proposed rule indicates, in §§53.13(c) and 50.27(a)(2)(iii) that such alternatives may include acquisition of modular or mobile spent nuclear fuel storage equipment, or casks. The same reasoning applies here as to the "catch-all" provision. In this regard, we believe that the Commission should promulgate at an appropriate place in its regulations, perhaps in Part 50 or Part 72, reasonable criteria for the approval of mobile or modular storage devices to supplement existing criteria for shipping casks or ISFSI's. Once such modular or mobile storage devices have been licensed, then subsequent applications would, after a three-year period, have to reflect consideration of this previously-licensed alternative.

As to the maintenance of full core discharge capability, we, of course, agree that the maintenance of such capability is not a safety essential and should not be a regulatory requirement, but also agree that for economic and operational reasons full core discharge capability is desirable. The Commission's determination in this regard is consistent with the Nuclear Waste Policy Act and its legislative history. However, §50.12(c)(5)(ii) appears to be inconsistent with this determination and should be deleted as should the words "under the following conditions" in §50.12(c)(5); the present text of §50.12(c)(5)(i) should be added to Subsection (c)(5).

With certain improvements, we would be generally satisfied with the specification of the contents of applications and the related illustrative considerations specified in the proposed rule which would be recognized as tending to make the exploitation of measures to increase a licensee's storage capacity impractical, viz: (1) site suitability, (2) inability to meet NRC regulatory requirements due to factors beyond the licensee's control despite diligent and good faith efforts by the licensee, (3) inability to obtain storage or shipping equipment in a timely manner, (4) modifications that would result in excessive reduction of design margins, (5) extraordinary costs of implementation, (6) unforeseen or unavoidable delays, (7) legal impediments such as state and local laws, and (8) occupational or offsite doses or on-site construction hazards.

Our first group of comments relate to proposed §50.30(a) (setting forth criteria for determinations) or §50.13 (pertaining to the contents of a request) or both. Subsection 50.13(a) calls for information on factors that would "prevent" exploitation of alternatives. The legislative intent was to provide "last resort" storage where licensed alternatives are clearly unreasonable, and that concept should be substituted for the concept of prevention or preclusion. Subsection 50.13(a) refers to "extraordinary costs to consumers." Subsection 50.30(a)(5) states that the Commission will consider

"Extraordinary costs of implementation that are clearly unreasonable in view of the amount of additional storage capacity needed or the time for which additional storage capacity is needed."

At the outset, the word "extraordinary" should be deleted in both places. The legislative intent would be satisfied if the "clearly unreasonable" standard were retained in §50.30(a)(5) and substituted in §50.13(a). Moreover, §50.35(a) implies that the Commission will require information on: the amount of additional capacity needed and the unit costs of providing such capacity; the time for which the capacity is needed and the period for recovery of such costs; and perhaps comparative information on what would be reasonable under the circumstances, though the cost of government storage would presumably be the standard. However, proposed §50.13 does not specifically call for information on any of these factors. The language of §50.30(a)(5) also implies that the reasonableness of cost is relevant only when relatively small increments of capacity are needed or capacity is needed for a limited time, or both, when there may good reason to provide lower cost storage for substantial quantities for longer periods. We suggest that §50.30(a)(5) be revised to read as follows:

(5) Costs of implementation which have been persuasively shown by the licensee to be unreasonable because of the unit costs of adding capacity or the period for which storage is required compared with the costs of interim storage over the same period for the same capacity pursuant to Subtitle B of the Nuclear Waste Policy Act of 1982.

Consequently, proposed §50.13 should be amended to invite licensees to include any information in addition to that specified which is relevant to any of the criteria in §50.30(a) or the determination to be made under §50.27. This would have the effect of harmonizing these sections in at least one other respect. Subsection 50.30(a)(1) refers to site suitability, including structural integrity, while §50.13 refers only to "structural limitations." Alternatively, the Commission may wish to synthesize and conform the contents of §§50.13 and 50.30(a).

Next, we believe that the reference to "legal impediments such as state and local laws . . . that cannot be alleviated in a timely manner" should be clarified so as not to encourage or endorse the enactment or enforcement of state and local laws involving matters committed exclusively to the NRC, DOT, or other agencies of the federal government. We would suggest that the reference to state and local laws be clarified and amplified as follows:

(7) Legal impediments to the implementation of an alternative, such as state and local laws pertaining to matters within the jurisdiction of those levels of government, which are valid and enforceable or though not valid, cannot reasonably be invalidated or enforcement enjoined in a timely manner.

Turning to the procedures which would be provided by Proposed Part 53, we note that requests for determination of inadequacy must be filed no later than June 30, 1989 (Section 53.11(b)), but that requests must be filed no earlier than two years before the licensee anticipates loss of full core reserve or the effective date of Part 53, whichever is later.

First, we believe that the June 30, 1989 deadline for applications under Part 53 should be explained by a note in the rule or at least in the accompanying information. We surmise that the June 30, 1989 cutoff is based on the January 1, 1990 expiration of the DOE Secretary's authority to enter into interim storage contracts and the six month maximum period for NRC determinations. (Subsections 136(a) and 135(b)(3) of the Nuclear Waste Policy Act, respectively). There is no limitation in the Nuclear Waste Policy Act on the interval between either the determination of eligibility or the signing of the contract and the anticipated loss of full core reserve. That clarification is important because of our second and more substantial concern, which is the proposed restriction of applications under Part 53 to instances where full core reserve will be lost no more than two years following the applications.

Please consider the circumstances of a licensee which has no practical alternative for increasing its own storage capacity, but anticipates losing full core reserve in the mid-1990's or somewhat later. The proposed rule would bar any application by such a licensee. It is not a sufficient answer that there is some, even a substantial possibility, that one or more of the following circumstances may be present in 1989: the Secretary's authority is about to expire; all presently authorized federal storage capacity may have been committed by that time; the first geologic repository should open "soon" thereafter; or monitored retrievable storage may be available "soon". As to the first, the Secretary can contract to serve future needs subject to the limitations of the Act. As to the second, further capacity may be provided or, though committed, some capacity may not have been used, or though such capacity was used for a time, some or all of the spent fuel in storage may have been shipped to the receiving facility at the repository. As to the third, the Appendix to the Commission's proposed decision in the Waste Confidence rulemaking reveals that there may be a "backlog" at the opening of the first and even the second repositories and that spent fuel will still be generated during initial implacements, so that it may take

twenty to thirty years to reach "equilibrium" at the assumed implacement rate.[1] As to the third point, MRS is presently only at the assessment of need/feasibility study stage (subsection 141(b) of the Nuclear Waste Policy Act). Of course, federal storage capacity may be fully committed and used, the Secretary's authority may have expired and not been renewed or extended, and authorized federal storage capacity may not have been increased. The Commission can guard against these eventualities by providing in Part 53 that it may then have to suspend processing of applications or even suspend filing. But we can see no reason why the NRC should establish criteria in such a way as to deprive licensees of access to storage based merely on expectations of commitments of storage capacity when the statute does not require it. To the contrary, given that DOE's schedule calls for the opening of a geologic repository in the late 1990's at the earliest, and given that the Commission has noted that it expects a "backlog" awaiting implacement, it would be more consistent with what Congress must be taken to have intended and with the Commission's own subsequent findings to use no cutoff or at least no shorter period than ten years, while assigning priority in eligibility to those applications with the most urgent need and providing for suspension of determinations.

We note that the proposed rule would delegate to NRC's Executive Director for Operations ("EDO") or his designee responsibility for making an initial determination of: (1) whether adequate storage capacity to ensure continued orderly reactor operations cannot reasonably be provided by the Licensee, and (2) whether the Licensee is diligently pursuing licensed alternatives to assure the availability of adequate capacity as soon as possible. (§53.27) This initial determination will constitute NRC's final determination unless, within 30 days of its issuance, the Commission itself decides to review (§53.28). Upon issuance of the final determination or at the expiration of the period for review of the initial determination, the Commission will notify DOE's Office of Civilian Radioactive Waste Management and will publish a notice of issuance in the Federal Register. (§53.29).

The Supplementary Information which accompanies the proposed rule reflects that the Commission has decided that the making of a determination pursuant to Section 135 of the Waste Act, to be implemented by the rules, is not a proceeding for the granting, suspending, revoking or amending of a license under Section 189 of the Atomic Energy Act and that,

---

1 We understand that the implacement rate assumed by DOE is more a function of logistics between the reactor or other storage site than it is of physical or operational constraints on either implacement itself or at-repository receiving capacity.

> "[A]ccordingly, there is no opportunity for a hearing in connection with a request for a Commission determination. Similarly, there is no right to petition the Commission for review of the Executive Director for Operations' initial determination . . .".

The eligibility determination is essentially a step in a contractual process. Accordingly, we would not think it necessary or appropriate to provide an opportunity for persons other than the one seeking the determination to petition the Commission for review. However, one can foresee a situation where a Licensee is convinced that it has no feasible options for further increase in its storage capacity, but the EDO makes an initial determination to the contrary based on what, in the Staff's view, the Licensee could have done some years earlier. The Licensee could have grounds for showing clear error, yet would face shutting the reactor down unless the Commission took review sua sponte and invited briefing or unless the licensee successfully petitioned the courts for review. We are inclined to believe it would be preferable for such review to be conducted by the Commission, in the first instance, rather than by the courts. The Commission should want to hear from the person best able to call error to its attention and should have an opportunity to correct that error before it has to defend the error in court.

There seem to be at least two situations not covered by the proposed regulations but which should be provided for in order to carry out the legislative intent. The first is one in which, at the time of the application, spent fuel is in storage at a licensed AFR storage facility, but for some reason it must be removed to another location. Such fuel, if returned, may preclude maintenance of full core reserve, and if so should be eligible for last resort storage. Appropriate amendments to §§53.1(a), 53.12 and 53.13 or both, and perhaps 50.30 should be made to provide for such situations. Second, temporary storage needs of an exigent nature (such as to permit repair or expansion of existing pools) should be eligible for special treatment which would give recognition to the temporary nature of the need both in the criteria for eligibility and as well in the procedures and schedules for processing determination requests. This could be easily accommodated by providing for waivers or exceptions in such cases.

Finally, we note that Commissioner Asselstine has requested comments "on whether a short public comment period would be appropriate after the Commission publishes a notice of a determination request in the Federal Register as required in Section 53.11(c)". As noted above, we consider the eligibility determination a step in a contractual process. As such, we think it not inappropriate that a Notice of Receipt of a request be published, but we see no reason to solicit comments. The solicitation of comments seems to us to imply that some formal

disposition will be made of comments which question or oppose an eligibility determination, which in turn may give rise to replies to comments and so on. Leaving the matter at notice without solicitation of comments, on the other hand, implies no specific disposition will be made of any unsolicited comments which may be submitted, and is likely to reduce unnecessary paperwork both for the Commission and licensees.

We appreciate the opportunity to submit these comments.

Sincerely,

Joseph B. Knotts, Jr.

Telephone (617) 872-8100
TWX 710-380-7619

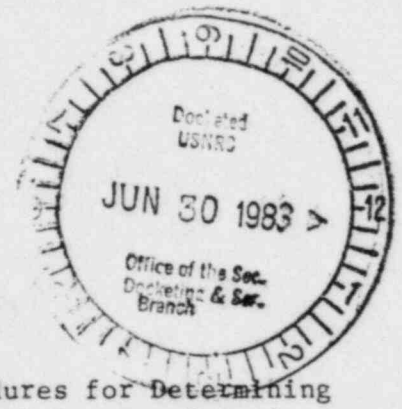
YANKEE ATOMIC ELECTRIC COMPANY

1671 Worcester Road, Framingham, Massachusetts 01701

2.C.2.1
FYC 83-8

June 28, 1983

DOCKET NUMBER
PROPOSED RULE PR-53 (27)
(48 FR 19382)




Secretary of the Commission
United States Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Docketing and Service Branch

Subject: Comments Pertaining to Criteria and Procedures for Determining the Adequacy of Available Spent Nuclear Fuel Storage Capacity; Proposed Rule (48FR19382, 29 April 1983)

Dear Sir:

Yankee Atomic Electric Company appreciates the opportunity to comment on the subject document. Yankee Atomic owns and operates a nuclear power plant in Rowe, Massachusetts. The Nuclear Services Division also provides engineering and licensing services for other nuclear power plants in the Northeast including Vermont Yankee, Maine Yankee, and Seabrook 1 and 2.

We wish to adopt the comments filed on this subject by the Utility Nuclear Waste Management Group (UNWMG), who represents forty-three member utilities. The proposed rules are pursuant to statutory requirements in the Nuclear Waste Policy Act of 1982. In sum, we affirm the UNWMG endorsement of the proposed rule, which would establish that interim Federal storage space for high level radioactive wastes could be made available by the DOE, if the Commission makes a determination, consistent with Section 135(g) of the Act, that:

(1) full core reserve storage capacity for spent fuel is necessary for "continued orderly operation", and

(2) the owner and operator of the reactor is "diligently pursuing licensed alternatives to the use of Federal Storage Capacity".

In addition, in response to Commissioner Asselstine's query, we believe that determinations made by the Commission should not be subject to a mandatory "short public comment period."

These determinations are not a "proceeding...for the granting, suspending, revoking, or amending of any license or construction permit...." under Section 189a of the Atomic Energy Act. Thus, there is no statutory opportunity to request a hearing in Connection with the Commission's determination. Yankee Atomic does not believe that public comment regarding certain agency actions is per say objectionable. We do believe, however, that

DS 10
add: J. K. Cameron
113055

1/0

Acknowledged by card.....

purely ministerial functions required of the Commission need not be the subject of public debate. The Commission's determination is incident to the intentions of Congress, who has specifically provided for Federal interim storage of spent nuclear fuel. In this context, however, the Congress did not choose simultaneously to amend the Atomic Energy Act to expand the scope of opportunities to which the right to public hearing attaches. Thus, the Congress has not delegated to the Commission the authority to require a "short public comment period", after the Commission has published its determination.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

Robert E. Helfrich

R. E. Helfrich
Generic Licensing Activities

REH/ds

**Commonwealth Edison**
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

DOCKET NUMBER
PROPOSED RULE PR-53
(48 FR 19382)

(25)



June 27, 1983

Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Attention: Docketing and Service Branch

Subject: NRC Proposed Rule "Criteria and Procedures for Determining the Adequacy of Available Spent Nuclear Fuel Storage Capacity - 10 CFR Part 53", (48 FR 19382, April 29, 1983)

Dear Sir:

Commonwealth Edison has reviewed the subject proposal and offers the attached comments. We appreciate having been given the opportunity to comment.

Respectfully,

D. L. Farrar
Director of Nuclear Licensing

Attachment

6845N

DS 10
add: J.Y. Cameron, 1130SS

1/1

Acknowledged by card.....

Commonwealth Edison Company Comments on

"Proposed Criteria and Procedures for Determining the Adequacy of Available Spent Nuclear Fuel Storage Capacity" (48 FR 19382, April 29, 1983)

1. We strongly support and endorse the Commission's "...generic finding that full core reserve is necessary for continued, orderly operation...".

2. All references to a federal storage site should be written as an interim federal storage site to distinguish it from the ultimate storage facility.

3. Except for utilities which encounter storage difficulties soon, a request for Commission determination must be filed no earlier than 2 years prior to anticipated loss of full core reserve (Paragraph 53.11(b)). The Executive Director for Operations must issue a final determination on the request no more than six (6) months after the request is received (Paragraph 53.28(c)). This allows only 1-1/2 years to develop an alternate stragtegy in cases where the utility's request is denied. The interval should be increased to 4-5 years.

4. Accurate planning for interim or temporary spent fuel storage capacity at a reactor is dependent upon the expected availability of a permanent disposal site, particularly a life of plant plan for reactors licensed beyond 2005. Therefore, Subpart B, Section 53.12(c)(1) should read "The type and capacity of existing and planned spent nuclear fuel storage facilities at the reactor site for the next ten years and for the license term assuming a reasonable date for federal ultimate disposal availability".

6845N

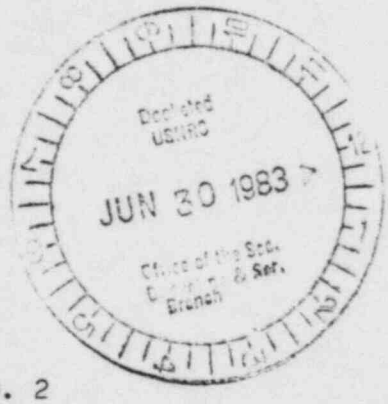
PR-53 (48 FR 19382) (17)

CP&L

SERIAL: LAP-83-264

Carolina Power & Light Company

June 28, 1983




Mr. Samuel J. Chilk
Secretary of the Commission
Attention: Docketing and Service Branch
U. S. Nuclear Regulatory Commission
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261
LICENSE NO. DPR-23
AND
SHEARON HARRIS NUCLEAR POWER PLANT
UNIT NOS. 1 AND 2
DOCKET NOS. 50-400 AND 50-401
AND
BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 AND 50-324
LICENSE NOS. DPR-71 AND DPR-62
COMMENTS ON PROPOSED RULE - 10 CFR PART 53

Dear Mr. Chilk:

Carolina Power & Light Company appreciates the opportunity to comment on the proposed rule, 10 CFR Part 53, "Criteria and Procedures for Determining the Adequacy of Available Spent Nuclear Fuel Storage Capacity." Our comments are provided in the attachment to this letter.

Should you have any questions regarding our comments, please contact me.

Yours very truly,

W. J. Hurford
Manager
Technical Services

WJH/pgp (7160MSG)
Attachment

DS10
D. F. Cameron, 113055

1/1

6/30/83
PD

411 Fayetteville Street • P. O. Box 1551 • Raleigh, N. C. 27602

ATTACHMENT
CAROLINA POWER & LIGHT COMPANY
COMMENTS ON PROPOSED 10CFR, PART 53
"CRITERIA AND PROCEDURES FOR DETERMINING THE
ADEQUACY OF AVAILABLE SPENT NUCLEAR FUEL STORAGE CAPACITY"

Comment Number 1

Carolina Power & Light Company fully agrees with the NRC's determination that full-core reserve is necessary for the continued orderly operation of a nuclear power plant.

Comment Number 2

We believe that the 50- to 90-day reactor shutdown time may be (if full-core reserve was needed but not available) too brief to locate and move fuel to an alternative storage location.

Comment Number 3

The proposed requirement that a utility wait two years before the anticipated loss of full-core reserve before submitting a request for federal storage is overly restrictive. A utility should have the option of submitting a request as soon as it is determined that it will lose full-core reserve and can demonstrate that there are no reasonable alternatives available.

Comment Number 4

Some provisions should be included in the rule for emergency storage of fuel should repair be required on a storage pool and other reasonable storage alternatives are unavailable.

Comment Number 5

Some utilities may have fuel stored at nonsystem locations. If a situation unexpectedly arises when this fuel must be removed from the nonsystem facility, it may be advantageous to ship the fuel to a federal storage facility versus a reactor site, particularly if relocation to a reactor site would cause the loss of full-core reserve.

Comment Number 6

CP&L believes that because any determination on a request for interim federal storage should be based on only technical findings, the opportunity for public comment on any request would be inappropriate and time consuming.

Comment Number 7

All references to the phrase "a person owning and operating a civilian nuclear power reactor" should be changed to "a person owning or operating a civilian nuclear power reactor." There are some cases where the owner of the spent nuclear fuel may not be the operator of the reactor.

Comment Number 8

In Section 53.12 (c) (3), the word "location" should be deleted. The exact location of each assembly in a spent fuel pool is not necessary for any determination by the NRC.

Comment Number 9

In Section 53.13 (a), the phrase "that would prevent the use of any of the alternatives . . ." should be replaced with "which would render unreasonable or impractical the use of any of the alternatives . . ." There may a situation or alternative such that cost or radiation exposure considerations might not actually prevent the use of an alternative, but may make its choice unreasonable or impractical.

Comment Number 10

Also in Section 53.13 (a), state and local regulatory actions should be added to the list of factors outside the control of the licensee. Such regulatory actions can be just as effective in delaying or preventing utility action as state and local laws.

Comment Number 11

In Section 53.13 (b), the phrase "each of the alternatives set forth . . ." should be changed to "each of the previously licensed alternatives set forth . . ." A utility should be required to pursue only licensed storage alternatives. They should not be required to pursue any alternative that is not yet licensed by the Commission.

Comment Number 12

In Section 53.15, the utility should have the right to withdraw without prejudice its request at any time up to the final determination if it determines that it no longer requires federal storage, as long as there has been no adverse consequence resulting from a detrimental reliance upon the filing of the request.

Comment Number 13

Section 53.27 (a) (2) (ii) and Section 53.27 (a) (2) (iii) should be clarified to indicate that these options being "diligently" pursued are options which have been licensed by the Commission.

Comment Number 14

In Section 15.28 (d), a utility should have the right to petition the Commission for a review of an initial determination; and the Commission should review any petition which is filed.

Comment Number 15

In Section 53.30 (a), the requirements should be based on Section 53.27 (a) (1) and Section 53.27 (a) (2).

Comment Number 16

The word "extraordinary" should be deleted from Section 53.30 (a) (5) since costs are already described as "clearly unreasonable" in that sentence.

Comment Number 17

Section 53.30 (a) (7) should include state and local regulatory actions to the list of legal impediments.

Comment Number 18

The word "timely" in Section 53.30 (d) should be changed to "good faith" in describing the efforts of a utility. A utility may be making every effort to find alternatives; but through no fault of its own, some efforts may simply be untimely. The alternatives again should be described as "licensed alternatives." This change should also be made for Section 53.30 (d) (1) and Section 53.30 (d) (3) to clarify that alternatives need be licensed ones.

Comment Number 19

In Section 53.30 (d) (1), the term "as early as possible so as to provide sufficient time" should be deleted as well as the words "timely" and "prompt development" in Section 53.30 (d) (3).

Comment Number 20

A new Section 53.31 should be added to provide for expedited review and determination in the event of an unanticipated storage emergency. Such an event could require Commission attention to assure the public health and safety or to avoid a lengthy forced outage at the reactor site.

Comment Number 21

CP&L urges the Commission to continue to work with the Department of Energy and the utilities to insure the licensability of on-site alternatives and the transshipment of spent nuclear fuel.

DOCKET NUMBER
PROPOSED RULE PR-53
(48 FR 19382)
(26)



**Coalition for Nuclear Power Postponement**
2612 East Robino Drive, Wilmington, DE 19808
Telephone (302) 999-7380

June 28, 1983

Comments on Proposed Rules Changes To 10 CFR 50; Criteria and Procedures for Determining Adequacy of Available Spent Fuel Storage Capacity

Please forgive me for being late with my comments on this particular issue. I hope that you will consider my letter nontheless.

"An ounce of prevention is worth a pound of cure"- or in the case of spent fuel management by utilities, alittle dilligence will prevent a very large boondoggle, and that is exactly how I feel about your proposed rules.

A little sincere dilligence by utilities will anticipate need for storage alternatives well in advance of critical situations arising. Utilities can forecast growth projections so well when they want to force a new nuclear plant down our throats- so why can't they plan for their wastes with the same tenacity? Present them with a gilt-edged taxpayer-paid alternative,with no strings and plenty of loopholes as you do now, and all incentive goes out the window.

Once you adopt criteria that realistically lays groundwork for hardship cases, then you should adopt regulations stipulating ample opportunity for both public comment, and full Commission review, approval and rejection.

Because we are dealing with utilities such as Delmarva Power & Light and Public Service Electric & Gas, both of whom have been cited in recent years for fraudulent practices with regard to purchases of fuel stocks, failure to report incidents at the Salem Reactors in a timely manner, failure to adhere to mandated maintenance procedures at Salem I, resulting in the February 1983"accidents", failure to produce workable Evacuation Plans in accordance with specified timetables,etc.,etc.,it can be seen that to hand rules like these to utilities will nurture non-compliance. Furthermore, I despise having to pay daily for the mistakes of only these two utilities, but to add spent fuel disposition of all of the nation's reactors to my tax burden(above all of the programs I now subsidize for the nuclear industry) with no chance for public comment,is a deplorable action on your part.

In concluaion, I submit that increased dilligence on your part to exact compliance with operating practices and anticipatory calculations by all of the nation's nuclear utilities be your sole purpose and goal, and in regard to your proposed rules cited above, after having reviewed the comments submitted by the Union of Concerned Scientists in April, 1983, I say that they be incorporated forthwith as sum and substance of your regulatory action, in lieu of your proposals in the Federal Register.

Yours truly,
Donald C. Frisco
Donald C. Frisco, Chairman

DS10
add D.K. Cameron, 113055
9/1

Acknowledged by card.....

78 Elmwood Avenue · Buffalo, New York 14201 (716) 884-1000
River Road, Columbia, NJ 07832 (201) 841-9529

PR-53
(48FR 19382)
(21)


Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
Attention: Docketing and Service Branch

Dear Mr. Chilk:

Enclosed are the comments of the Sierra Club on Proposed Rule 10 CFR Part 53, Criteria and Procedures for Determining the Adequacy of Available Spent Nuclear Fuel Storage Capacity.

cc: J. Riley
B. Yaeger
E. Winchester
L. Finaldi
G. Coan
G. Hull
D. Berick
F. Millar
W. Jordan

Sincerely yours,

M. Resnikoff

Marvin Resnikoff
River Road
Columbia, NJ 07832

DS 10
add: D. K. Cameron
113055

1/1

sierra club
radioactive waste
campaign

6/30/83 PR

78 Elmwood Avenue · Buffalo, New York 14201 (716) 884-1000

River Road, Columbia, NJ 07832 (201) 841-9529

June 28, 1983

Comments of the Sierra Club on Proposed Regulations, 10 CFR Part 53
Criteria and Procedures for Determining the Adequacy of Available
Spent Nuclear Fuel Storage Capacity

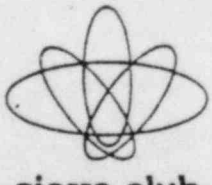
INTRODUCTION

Congress intended that federal temporary storage facilities, authorized under Subtitle B of the Nuclear Waste Policy Act of 1982 (NWPA) be "last resort" facilities. All parties to this highly contentious debate are in agreement on this point. Only utilities who could not reasonably provide their own storage space would be eligible to use this "last resort" temporary storage facility. Und Section 135(g) of the NWPA, the Commission must develop criteria on whether a utility is able to provide its own capacity. Those that cannot are eligible to use the federal away from reactor facility (AFR).

The draft criteria for determining the adequacy of available fuel storage capacity, proposed 10 CFR Part 53, ignore this Congressional intent and therefore open the federal AFR on a first come, first serve basis, until the 1900 metric tonnes (MT) capacity is exhausted. Thereafter, in the not too distant future, we expect the next logical step, legislation to increase the maximum capacity of the federal AFR. Our worst fears will then be realized and the Congressional intent, so carefully crafted as a political compromise by differing interests, will then have been completely scuttled.

Contrary to the intent of Congress, under the proposed criteria utilities need only wait until storage space is nearly exhausted before producing a study, in order to show "diligence" in pursuing licensed alternatives. The Commission has provided no guidance on what constitutes "diligent pursuit" of storage alternatives. None of the "last resort" language is embodied in the NRC criteria. Rather than timely action, the Commission would accept a utility study. The Commission would allow no public input into this decision on AFR eligibility, not even the opportunity for public comment. It would strictly be a Staff decision. Minimizing transportation risk, language also present in Subtitle B, does not make its way into the NRC criteria. These criteria must be redrawn to embody the nature of the compromises made in formulating the NWPA.

The Sierra Club has been opposed to the use of AFR facilities for several years because we believed that the program would become yet another federal bailout for the nuclear power industry, would become a defacto federal repository, and would lessen the incentives for developing and employing a federal permanent repository. Our concerns also stem from the unnecessary transportation risk. Citizens along transportation routes would be subjected to twice the risk since fuel would eventually have to be moved from the temporary storage facility to a permanent repository. We are particularly concerned that the proposed criteria do not attempt to minimize the transportation risks.



sierra club
radioactive waste
campaign

SPECIFIC COMMENTS

Criteria for Diligent Pursuit of Alternatives

Without "diligent pursuit" of alternatives, a utility could sit on its hands until space ran out, then cry for federal help. The criteria for diligent pursuit, 10 CFR 53.30(d), a utility must have

> "demonstrated diligent and timely efforts to initiate activities reasonably calculated to implement alternatives to Federal interim storage of spent fuel on a schedule commensurate with the need to support the continued orderly operation of the reactor".

The criteria for determining "diligent efforts" are extremely weak. According to 53.30(d)(3), a "plan that evaluates the feasibility of alternatives to Federal storage" is sufficient. That is, a utility need only produce a piece of paper which would be evaluated by Staff before becoming eligible for federal AFR storage. At the least, the utility must demonstrate "action" rather than a"plan". This section of Section 53.30(d) must be stricken. It should be replaced with criteria for determining "diligent pursuit recommended by the Union of Concerned Scientists:

1. Within 60 days of the effective date of this rule, and every 12 months thereafter, each utility that does not have on-site storage capacity sufficient to accomodate all spent fuel to be generated during the term of the operating license must file a report on the following:

   (a) The date on which the utility expects to lose full-core storage capacity.

   (b) The actions that the utility has taken to date to avoid the need for federal AFR storage, including.

      (i) the identity and description of all studies done by or for the utility on alternatives to federal AFR storage,

      (ii) the reasons that any alternatives have been rejected or are not being pursued, if that is the case,

      (iii) the amount of time that the utility estimates would be required to develop, obtain approval for, and implement any alternatives that are under consideration.

   (c) The actions that the utility plans to take in the future to avoid the need for federal AFR storage, including a specific timetable and a detailed description of the various studies and other actions that the utility intends to take.

2. Once a utility has determined that it will lose full core storage capacity before the expiration of its operating license, it must file an application for expanded storage or some other alternative to federal AFR storage within six months. In lieu of such an application, the utility may file a justification for its decision not to file an application, accompanied by its plan, with a specific timetable, for developing and implementing such an application.

3. A utility will not be considered to have met the diligence standard unless it has filed an application for approval of an alternative to federal AFR storage within one year after determining that it will lose full core storage capacity before the expiration of its operating license, unless the utility demonstrates that all alternatives to federal AFR storage are physically impossible or economically impracticable.

These suggested criteria provide Commission Staff with a historical basis for determining whether the utility had diligently pursued alternatives.

Opportunity for Public Comment

According to Section 53.11(a), "the Commission will publish notice of receipt" of a utility request for adequacy of storage in the Federal Register. No provision is made for public comment. It is up to the Staff to judge whether the utility is "diligently pursuing" alternatives. We are confident the Commission would benefit from public input on a utility application. For example, we may be able to show, with information not made available by the utility to the Commission, that the utility was "diligiently pursuing" alternatives. We therefore strongly support Commissioner Asseltine's view that a short comment period would be appropriate and in the public interest. Without public input the Commission would be relying exclusively on Staff information. We read that Section 53.11(c) read:

> "Upon receipt of a request for a determination, the Commission will publish notice of receipt of the request in the Federal Register and allow a 60 day time period for public comment. The Commission will make....site."

Definition of Spent Nuclear Fuel Storage Alternatives

Contrary to the specific legislative language, Section 53.13(c)(5) limits the storage alternatives to those "that have been approved by the Commission."

The language of the NWPA, Section 135(g), states "such other technologies as may be approved by the Commission." The proposed criteria must be altered to conform to the legislative language. Utilities should be studying any feasible alternative to AFR storage and not just those previously licensed by the Commission.

Necessity of Full Core Reserve

Contrary to the NWPA, the Commission has determined that "maintenance of full core reserve is necessary for the continued orderly operation of a reactor." This finding is premature, without proper public notice and input, and should be deferred and more carefully considered. The reason is the following:

Each nuclear reactor has additional fuel pool space in the shipping cask loadout area, depending on the reactor. In general, this space is equivalent to a full core. In the event that the entire fuel pool has been compacted and capacity is exhausted, full core reserve is still available in the cask loadout area in case the core must be removed from the reactor so that the reactor can be inspected. A temporary storage rack could fit into this space. After the reactor is inspected and repaired, fuel could be reinserted in the reactor and the temporary storage rack removed. Maine Yankee Atomic Power Corporation has proposed using such a rack at the Maine Yankee reactor. This storage scheme allows utilities an additional three years grace period to develop additional storage methods. Since reactors will not begin to exhaust storage space until 1986, this buys utilities an additional three years, until 1989, to develop alternative storage methods. It is inconceivable that utilities could not develop alternative storage methods in the next six years and longer time period. The Commission should therefore withhold judgment on the wisdom of full core reserve until there has been a full and open discussion of this issue.

Transportation Risk

According to Section 135(a)(3), in selecting methods of providing storage capacity, the Secretary of DOE must "seek to minimize the transportation of spent nuclear fuel". Any means of minimizing transportation risks through storage alternatives available to the Secretary are likewise available to the utilities. In particular, the Secretary may acquire dry storage casks for utility use at the reactor site in order to minimize transportation. The Commission, however, is under no similar compunction, to minimize transportation risks. This infortunate omission is the result of legislating in the final hours of a legislative session. We urge the Commission, in its deliberations, to likewise minimize the transportation risks. On-site storage methods should be given Commission preference over transhipments. Transhipments should be given preference over AFR's. We suggest that 10 CFR Part 53.13 (c) be amended to read:

"(c) Spent nuclear fuel storage alternatives, in order of preference--"

Similarly, Part 53.27(a)(2), should read,

"...through the alternatives, in order of preference, including--"