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DENTON, H. Office of Nuclear Reactor Regulation, Director (post 851125

SUBJECT: Forwards four requests for relief from requirements re 850501 second 10-yr inservice insp plan. Response to NRC S60305 request for addl info provided.

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Iowa Electric Light and Power Company

May 14, 1986
NG-86-1692

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

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
Second 10-Year Inservice Inspection (ISI) Plan
Reference: 1) Letter, R. McGaughy (Iowa Electric) to H. Denton (NRC), dated May 1, 1985 (NG-85-1911)
2) Letter, M. Thadani (NRC) to L. Liu (Iowa Electric) dated March 5, 1986
File: A-107a, A-286

Dear Mr. Denton:

By letter dated May 1, 1985, Iowa Electric submitted our second 10-year Inservice Inspection Plan for the Duane Arnold Energy Center (DAEC). Following this submittal, the need for four (4) additional relief requests was identified. These relief requests, HT-011, HT-012, HT-013 and NDE-004, are attached (Attachment 1) and we ask that they be considered in the review of our Inservice Inspection Plan. NRC Staff members also requested additional information (Reference 2) pertaining to the Inservice Inspection Plan. This letter sets out the NRC request followed by Iowa Electric's response.

1. Relief from performing a 100% volumetric examination of one circumferential and one longitudinal weld in the reactor vessel belt-line region was requested in relief request number NDE-001, which also requested relief from a 100% volumetric examination of one circumferential and one meridional bottom head weld. In the alternative examination of these welds, partial surface and volumetric examination to the extent possible, you should define the percentage of each weld to be examined. You should also discuss:

   (a) The possibility of examining more than one weld in the same category to achieve an examination volume equivalent to the Code requirement.

   Response: On the basis of past examinations of DAEC reactor vessel welds, we have determined that only 5 percent of every circumferential weld and 10 percent of every longitudinal and meridional weld are accessible. These examinations were

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performed during the first 10-year ISI interval and met the requirements of the 1974 Edition through Summer 1975 Addenda of the ASME Section XI Code. Relief Request NDE-001 has been revised to reflect this (Attachment 2).

(b) the possibility of performing a volumetric examination of these welds from the internal surface of the reactor vessel.

Response: Iowa Electric has investigated the possibility of performing an examination of welds from the internal surface of the reactor vessel. We were unable to identify a vendor with the capability of performing this examination in a boiling water reactor. Also, because the reactor vessel was not fabricated with the intent of performing internal exams, it is highly unlikely that the weld surface is suitable for an adequate volumetric examination.

2. Relief Request Numbers HT-001 through HT-010 request relief from certain pressure test requirements. The DAEC ISI program for its second 40-month period beginning June 1, 1978, of the first inspection interval, did not include these pressure test relief requests.

(a) Were these pressure tests performed during the first interval? If all of the required pressure tests were not performed and relief not granted during the first ISI interval, request for relief after the fact may be required, in accordance with 10 CFR 50.55a(g)(5)(iv).

Response: While we were doing the first 10-year Inservice Inspection system hydrostatic pressure tests, it was found to be impractical to perform certain Code required tests. At that time, requests for relief were submitted to the NRC for review and subsequently approved in an SER issued March 31, 1986. These requests for relief were dated February 28, 1985 (NG-85-0820) and July 1, 1985 (NG-85-2258) with additional information submitted January 15, 1986 (NG-86-0204).

(b) Are there any other non-performed examinations required during the first ISI interval which would require relief after the fact?

Response: Iowa Electric is currently in the process of preparing a 10-year ISI Summary Interval Report. This is scheduled for submittal July 31, 1986.

During the preparation of this report, eight welds were identified as not having been examined. These welds are scheduled to be examined in accordance with the 1974 Edition through Summer 1975 Addenda of the ASME Section XI Code.

3. You should give the exact reason for the inability to pressurize the following sections of piping (i.e., maximum pressure source less than required, no hydro pump source, design pressure limitations, etc.).

   (a) Relief Request HT-001 - Piping between the check valves and stop valves at the discharge of each river water supply pump.

   Response: There are no connection points or pressure taps between each of these pairs of valves; thus, there is no practical method of pressurizing the section of piping and components between these valves to conduct the required hydrostatic pressure test (refer also to Relief Request 20 approved in the SER issued March 31, 1986).

   (b) Relief Request HT-002 - Piping between V-23-4 and MO-2300 in the HPCI system.

   Response: There are no connection points or pressure taps between these valves; thus, there is no practical method of pressurizing the section of piping between these two valves to the required test pressure (refer also to Relief Request 21 approved in the SER issued March 31, 1986).

   (c) Relief Request HT-004 - Piping between valves CV-1850 and V-18-1453 through V-18-1541 of the CRD system.

   Response: There are no connection points or taps between these valves; thus, there is no practical method of pressurizing the section of piping between these valves on each hydraulic control unit (refer also to Relief Request 19 approved in the SER issued March 31, 1986).

   (d) Relief Request HT-006 - Recirculation pump seal leak detection line of the reactor recirculation system.

   Response: This request for relief was submitted for the first 10-year program (letter dated July 1, 1985) and revised by letter dated January 5, 1986. To clarify the request for relief, Relief Request HT-006 has been revised (Attachment 2). This revised relief request give the reason for the inability to pressurize the piping section.

4. Relief Request Numbers HT-003, HT-007, HT-009, and HT-010 request relief from hydrostatic testing due to the inability to isolate the required piping or components.

   (a) If valves are not available to isolate components or piping segments for hydrostatic testing, you should consider alternative isolation methods, such as freeze plugs.

   Response: Iowa Electric has requested relief from those exams we feel are impractical to perform due to safety, economic and ALARA concerns. We have considered the options of freeze plugs or installing blank flanges to perform the required hydrostatic tests and found neither to be practical. This conclusion was reached after considering the diameter of piping affected, piping material involved (carbon steel), and the availability of flange connections.

   (b) HT-009 and HT-010 request hydrostatic testing at pressures below that required by the Code. You should specify the minimum expected hydrostatic test pressure in absolute units and in percentage of that required.

   Response: Refer to Attachment 3.

5. Is Relief Request Number HT-003 requesting relief from both the requirements of hydrostatic testing and functional pressure testing?

   Response: No. This relief request applies only to the hydrostatic test (refer also to Relief Request 10 submitted February 23, 1985).

6. Relief Request Number SV-001 (sic) states that the visual (VT-4) examination of snubbers will not include stroking to prove snubber functionality. According to Section XI, Paragraph IWA-2214 of the Code, the visual (VT-4) examination shall confirm functional adequacy, verification of the settings, or freedom of motion. This examination may require (1) disassembly of components or devices and (2) operability test. You should describe visual (VT-4) examination, to be performed on snubbers, which will insure functionality and revise the ISI plan accordingly.

   Response: Refer to Attachment 4, which replaces page 17 of the original ISI plan and inserts pages 17a and 17b.

Should you have any questions, please contact this office.

Very truly yours,

R. W. McGaughy

Richard W. McGaughy
Manager, Nuclear Division

RWM/SAR/ta*

Attachments: 1) Relief Requests HT-011, HT-012, HT-013, NDE-004
2) Revised Relief Requests NDE-001, NT-006
3) Relief Requests HT-009, HT-010 - Supplementary Information
4) Revised ISI Program Plan Pages 17, 17a, and 17b

cc: S. Reith
L. Liu
L. Root
M. Thadani
NRC Resident Office
H. McLamb (Iowa Bureau of Boiler Inspection)
Commitment Control No. 86-0127

Attachment 1
NG-86-1692
May 14, 1986

HT-011
HT-012
HT-013
NDE-004

COMPONENT OR ITEM	ASME XI CODE CLASS	PROGRAM TABLE	CODE CATEGORY	CODE ITEM
PRESSURE RETAINING COMPONENTS				
SYSTEM: Main Steam	2	---	C-H	C7.20 C7.21

Main steam lines and components from the outboard MSIVs to the main turbine stop valves.

CODE REQUIREMENT

The pressure retaining components within the boundary of each system specified in the examination categories of Table IWD-2500-1 shall be pressure tested and examined in accordance with Table IWD-2500-1.

BASIS FOR RELIEF

The test requirement for the above-mentioned components is not practical due to system design. Hydrotesting these components at the required pressure will result in overpressurization of the reactor coolant system. This section of piping is designed for an internal pressure of 1140 psig which would require a test pressure of 1425 psig. Due to the inherent design features of the main steam isolation valves (MSIVs), the pressure in the steam line would unseat the MSIVs and pressurize the reactor coolant system inside the MSIVs to the test pressure. Subjecting the reactor coolant system to this elevated pressure is not desirable from a safety standpoint.

ALTERNATE EXAMINATION

These sections of piping will be tested to a pressure equal to the hydrostatic test pressure of the Class 1 reactor coolant system (approximately 1180 psig).

SCHEDULE FOR IMPLEMENTATION

NOVEMBER 1, 1985 -START OF SECOND INSPECTION INTERVAL-

COMPONENT OR ITEM	ASME XI CODE CLASS	PROGRAM TABLE	CODE CATEGORY	CODE ITEM
SYSTEM: Control Rod Drive - Scram Discharge	2	---	C-H	C7.20

Piping and components in the scram discharge flowpath downstream of the scram discharge manual isolation valves (V-18-1542 through V-18-1630). Refer to P&ID 118.

CODE REQUIREMENT

The pressure retaining components within the boundary of each system specified in the examination categories of Table IWD-2500-1 shall be pressure tested and examined in accordance with Table IWD-2500-1.

BASIS FOR RELIEF

Design pressure for the scram discharge piping and components is 1146 psig; thus, the required test pressure is 1433 psig. The scram discharge volume is provided with float-type level switches that have a failure mode of collapsed or leaking ball floats. As a result, the General Electric Co. has issued an advisory letter recommending that the maximum hydrostatic test pressure for the switches be limited to a maximum of 1250 psig. Due to the arrangement of the DAEC scram discharge piping, it is not practical to isolate all of the switches during the hydrostatic test because each of the points available for introducing test pressure is unisolable from a switch.

Note also that a reduced test pressure is acceptable since the maximum expected pressure within the CRD scram discharge volume during a scram is only 65 psig.

ALTERNATE EXAMINATION

The scram discharge piping and components will be subjected to a hydrostatic test at a nominal test pressure of 1225 psig, at the system low point. This pressure allows for a tolerance needed to permit proper pressure control in order to remain below 1250 psig at the pressure switches.

SCHEDULE FOR IMPLEMENTATION

NOVEMBER 1, 1985 -START OF SECOND INSPECTION INTERVAL-

DUANE ARNOLD ENERGY CENTER
TEN-YEAR EXAMINATION SUMMARY
ASME SECTION XI SYSTEMS

MAJOR ITEM: REQUEST FOR RELIEF NO. HT-013
TABLE: SECTION 10
-REQUEST FOR EXAMINATION RELIEF-

COMPONENT OR ITEM	ASME XI CODE CLASS	PROGRAM TABLE	CODE CATEGORY	CODE ITEM
SYSTEM: Residual Heat Removal	2	---	C-H	C7.20 C7.21

A piping segment (8-HBB-25) approximately 51 feet in length downstream of fuel pool cooling cross-connect valve V-34-1 that is embedded within a concrete wall.

CODE REQUIREMENT

The pressure retaining components within the boundary of each system specified in the examination categories of Table IWD-2500-1 shall be pressure tested and examined in accordance with Table IWD-2500-1.

BASIS FOR RELIEF

There is no practical means of inspecting the embedded portion of piping.

ALTERNATE EXAMINATION

The outer extremities of the pipe segment will be inspected for any indication of leakage within the wall.

SCHEDULE FOR IMPLEMENTATION

NOVEMBER 1, 1985 -START OF SECOND INSPECTION INTERVAL-

DUANE ARNOLD ENERGY CENTER
TEN-YEAR EXAMINATION SUMMARY
ASME SECTION XI SYSTEMS

MAJOR ITEM: REQUEST FOR RELIEF NO. NDE-004
TABLE: SECTION 4.2
-REQUEST FOR EXAMINATION RELIEF- PAGE 1 OF 1

COMPONENT OR ITEM		ASME XI CODE CLASS	PROGRAM TABLE	CODE CATEGORY	CODE ITEM
SYSTEM:	Code Classification Boundary	3	3.1 3.2	D-A D-B D-C	D1.10-D1.60 D2.10-D2.60 D3.10-D3.60

CODE REQUIREMENT

IWD-2500-1, footnote (1) to code category D-A, D-B or D-C specifies ... "the system boundary (code class 3) extends up to and including the first normally closed valve or valve capable of automatic closure as required to perform the safety related function."

BASIS FOR RELIEF

Iowa Electric Light & Power has determined that boundary selection or classification break(s) can be taken ... "with no valve present as long as a failure on the lower classified side of the class break does not adversely affect the safety function of the higher classified side." As such, IELP has further determined that the Standard Review Plan (SRP) NUREG-0800, Section 3.2.2, paragraph III, supersedes the IWD-2500-1 footnote (1) as stated above.

ALTERNATE EXAMINATION

SCHEDULE FOR IMPLEMENTATION

NOVEMBER 1, 1985 -START OF SECOND INSPECTION INTERVAL-

Attachment 2
NG-86-1692
May 14, 1986

NDE-001, Rev. 1
HT-006, Rev. 1

DUANE ARNOLD ENERGY CENTER
TEN-YEAR EXAMINATION SUMMARY
ASME SECTION XI SYSTEMS

MAJOR ITEM: REQUEST FOR RELIEF NO. NDE-001, Rev 1

-REQUEST FOR EXAMINATION RELIEF-

TABLE: SECTION 10
PAGE 1 OF 1

COMPONENT OR ITEM	ASME XI CODE CLASS	PROGRAM TABLE	CODE CATEGORY	CODE ITEM
REACTOR VESSEL				
(1) Circumferential Weld (Vessel)	1	1.1	B-A	B1.11
(2) Longitudinal Weld (Vessel)	1	1.1	B-A	B1.12
(3) Circumferential Weld (Bottom Head)	1	1.1	B-A	B1.21
(4) Meridional Weld (Bottom Head)	1	1.1	B-A	B1.22

CODE REQUIREMENT

(1) Volumetric examination of one circumferential weld (VCB-A2) and
(2) Volumetric examination of one longitudinal weld (VLA-A1) in the beltline region of the vessel (essentially 100% per Footnote 2, IWB-2500-1)
(3) Volumetric examination of one circumferential weld (HCA-B1) and
(4) Volumetric examination of the one meridional weld (HMA-B2)
-Examinations permissible at or near end of interval-

BASIS FOR RELIEF

(1)(2) The design and construction precludes the possibility of total code compliance. The biological shield that surrounds the vessel and the limited accessible region(s) have removable metal "windows" designed for vessel nozzle and inner radius examination with random "plugs" for circumferential welds only. The design did not anticipate nor was it constructed to the latest code requirement.

(3)(4) The design and construction allows a substantial portion of the bottom head circumferential weld and meridional weld to be examined and consistent with the footnotes of IWB-2500-1 relating to the accessibility of welds requiring examination.

ALTERNATE EXAMINATION

(1)(2)(3)(4) Five percent of each reactor vessel and bottom head circumferential weld and 10 percent of each reactor vessel longitudinal and bottom head meridional weld will be examined. These examination percentages are consistent with our first inspection interval and meet the requirements of the 1974 edition through Summer 1975 addenda of the ASME Section XI Code.

Visual examination required by Category B-P will be fulfilled each inspection period (IWB-5221) prior to plant start-up after each refueling outage and hydrostatic testing (IWB-5222) will be conducted at or near the end of the inspection interval.

SCHEDULE FOR IMPLEMENTATION

NOVEMBER 1, 1985 -START OF SECOND INSPECTION INTERVAL-

COMPONENT OR ITEM	ASME XI CODE CLASS	PROGRAM TABLE	CODE CATEGORY	CODE ITEM
PRESSURE RETAINING COMPONENTS				
SYSTEM: Reactor Recirculation	3	---	D-A	D1.1

Recirculation pump seal pressure sensing line.
Referenced P&ID M-116.

CODE REQUIREMENTS

The pressure retaining components within the boundary of each system specified in the examination categories of Table IWD-2500-1 shall be pressure tested and examined in accordance with Table IWD-2500-1.

BASIS FOR RELIEF

This piping includes the pressure sensing instrument lines leading from the recirculation pump backup seals (number two seals). There are no isolation valves between the seals and the piping, thus there is no practical method of pressurizing the piping to the Code required test pressure.

Due to the design of the recirculation pump seal assemblies, this piping is limited in pressure to that of the number two seal cavities. During normal operation and hydrostatic testing, this piping is pressurized to approximately 500 psig. Pressurizing these lines to the required hydrostatic test pressure of 1683 psig is impractical due to the potential for damage to the number one pump seals.

ALTERNATE EXAMINATION

Pressure test in accordance with IWD-5221 will be performed.

SCHEDULE FOR IMPLEMENTATION

NOVEMBER 1, 1985 -START OF SECOND INSPECTION INTERVAL-

ASME SECTION XI REQUEST FOR RELIEF HT-009 - SUPPLEMENTARY INFORMATION

SYSTEM	Design Pressure (psig)	Code Test Pressure (psig)	Bounding Elevations	Operating Pressures (psig)	Requested Test Pressures (psig)	Percentage of that Required by Code
River Water Supply - Both Loops	125	138[1]	Max 775' Min 729'	50 69	Range 122[2]-126[3] Range 142[2]-146[4]	88.4%
Emergency Service Water - Both Loops	157	173[1]	Max 860' Min 717'	55 117	Range 117[2]-121[3] Range 179[2]-183[4]	67.6%

ASME SECTION XI REQUEST FOR RELIEF HT-010 - SUPPLEMENTARY INFORMATION

Residual Heat Removal (RHR)-B Loop	375	469[5]	Max 808' Min 718'	281 320	Range 453[2]-457[3] Range 493[2]-497[4]	96.6%
RHR Discharge to Fuel Pool Cooling	375	469[5]	Max 826' Min 751'	273 304	Range 459[2]-464[3] Range 492[2]-497[4]	97.9%
RHR Suction	175	219[1]	Max 829' Min 718'	113 162	Range 180[2]-184[3] Range 228[2]-232[4]	82.2%

[1]Code Test Pressure = 1.10 x System Design Pressure
[2]Minimum - Low end of control band
[3]Maximum - High end of control band
[4]Based on limiting maximum test pressure to 106% of Code Required Test Pressure
[5]Code Test Pressure = 1.25 x System Design Pressure

Attachment 4
NG-86-1692
May 14, 1986

ISI Plan Pages 17, 17a, and 17b

TABLE 4.1-SUBSECTION IWF-SUMMARY OF PLANNED INSERVICE INSPECTION EXAMINATIONS

COMPONENT OR SYSTEM	EXAMINATION METHOD	EXTENT AND FREQUENCY	EXAMINATION PERIOD	REMARKS
		ALL CATEGORIES		(*) 100% IN ACCORDANCE WITH INSPECTION SCHEDULE ESTABLISHED FOR COMPONENTS UNDER IWB, IWC AND IWD.
VESSELS	VIS	F-A - PLATE AND SHELL TYPE SUPPORTS	ALL (*)	
PIPING	VIS	F-B - LINEAR TYPE SUPPORTS	ALL (*)	
PUMPS	VIS			
VALVES	VIS	F-C - COMPONENTS STANDARD SUPPORTS	ALL (*)	EXAMINATION EXTENT IN ACCORDANCE WITH FIGURE IWF-1300-1 REQUIREMENTS.

IWF-CATEGORY F-A,F-B,F-C

	ITEM		
(F-A) (F-B) (F-C)	F1.10 F2.10 F3.10	MECHANICAL CONNECTIONS TO PRESSURE RETAINING COMPONENTS AND BUILDING STRUCTURE	TYPICAL; ALL CODE ITEMS VISUAL, VT-3
(F-A) (F-B) (F-C)	F1.20 F2.20 F3.20	WELD CONNECTIONS TO BUILDING STRUCTURE	TYPICAL; ALL CODE ITEMS VISUAL, VT-3
(F-A) (F-B) (F-C)	F1.30 F2.30 F3.30	WELD AND MECHANICAL CONNECTIONS AT INTERMEDIATE JOINTS IN MULTICONNECTED INTEGRAL AND NONINTEGRAL SUPPORTS	TYPICAL; ALL CODE ITEMS
(F-A) (F-B) (F-C)	F1.40 F2.40 F3.40	COMPONENT DISPLACEMENT SETTINGS OF GUIDES AND STOPS, MISALIGNMENT OF SUPPORTS, ASSEMBLY OF SUPPORT ITEMS	TYPICAL; ALL CODE ITEMS VISUAL, VT-3

IWF-CATEGORY FC (ONLY)

	ITEM		
(F-C)	F3.50	SPRING TYPE SUPPORTS, CONSTANT LOAD TYPE SUPPORTS, SHOCK ABSORBERS, HYDRAULIC AND MECHANICAL TYPE SNUBBERS.	VISUAL, VT-4

(as described on pages 17a and 17b)

GENERAL COMMENTS

- AS REFERENCED IN SECTION 3.0, CODE CLASS 3, IWD, - THE PROCEDURAL REQUIREMENTS ARE UNDER SEPARATE COVER. THE EXTENT (100%) AND FREQUENCY (DURING THE INTERVAL) WILL BE FOR ALL CODE CLASS SAFETY RELATED SYSTEMS (NOTE SECTION 11.0) LESS EXEMPTIONS. THE ASME XI ARTICLE IWF-2000, PARAGRAPH IWF-2510(b) REQUIREMENTS MAY BE EXPANDED TO INCLUDE ADDITIONAL PIPING SYSTEMS REGARDLESS OF DESIGN REDUNDANCY.
- THE REPAIR (IF REQUIRED) WILL BE COMPLETED UNDER SECTION 7.0 OF THIS PLAN AND IN ACCORDANCE WITH THE ASME XI CODE CLASS SUPPORT COMPONENT.
- THE IWF AUGMENTED REQUIREMENTS FOR SNUBBER FUNCTIONAL TESTING (IWF-5000) IS UNDER SEPARATE COVER AND SCHEDULED IN ACCORDANCE WITH DAEC OPERATING LICENSE AND TECHNICAL SPECIFICATION SURVEILLANCE ITEM 4.6.H.

VT-4 MECHANICAL SNUBBER
VISUAL INSPECTION GUIDELINE ACCEPTANCE CRITERIA

Support Cylinder

- The support cylinder should be free of corrosion, pitting, paint or excessive deposits of dirt or foreign matter.
- There should be no scratching or wear indicated.

Bolting and fasteners:

- All bolts and fasteners should be made up and tight.
- Lockwires should be installed where required.

Front-end support (at pipe)

* - The rod-eye bushing and washers shall be properly positioned in the clevis attachment.

- The spherical bearing should be free to rotate.
- Cotter pins are in place.
- Pipe clamp should be in proper alignment with the snubber and strut assembly.

Rear-end support (at structural attachment):

* - Wall anchors (where installed) should be tight and secure.

* - The rod-eye bushing and washers shall be properly positioned in the clevis attachment.

- The spherical bearing shall be free to rotate.

Overall:

* - The unit should not show indications of binding, bending, side loading or over-stressing.

* - There should be no indications on the snubber indicating physical damage or abuse, excessive corrosion, or other abnormalities.

- The unit is neither bottomed-out or over-extended.

* Cause for rejection per Technical Specification 4.6.H.2. Determination of snubber operability, where the snubber is not obviously inoperative, shall be the responsibility of Design Engineering.

VT-4 HYDRAULIC SNUBBER
VISUAL INSPECTION GUIDELINE ACCEPTANCE CRITERIA

Shaft:

- The shaft should be free of corrosion, pitting, paint or excessive deposits of dirt or foreign matter.
- There should be no scratching or wear indicated.

Bolting and fasteners:

- All bolts, fasteners, and the shaft-strut threaded connection should be made up properly and tight.
- Lockwires should be installed where required.

Front-end support (at pipe)

* - The rod-eye bushing and washers shall be properly positioned in the clevis attachment or pipe clamp.
- The spherical bearing should be free to rotate.
- Cotter pins are in place and fully expanded.
- Pipe clamp should be in proper alignment with the snubber and strut assembly.

Rear-end support (at structural attachment):

* - Wall anchors (where installed) should be tight and secure.

* - The rod-eye bushing and washers shall be properly positioned in the clevis attachment.
- The spherical bearing shall be free to rotate.

Overall:

* - The unit should not show indications of binding, bending, side loading or over-stressing.
- There should be no indications on the snubber indicating physical damage or abuse, excessive corrosion or other abnormalities.

* - There should be no indications of excessive fluid leakage (ie. fluid on the floor or adjacent equipment or structures, or dramatic loss of fluid from the reservoir). The indicator rod must agree within 1-1/2 marks with the net piston rod extension. This is true only for indications in the "low" or "EXT" direction. If the snubber appears to be overfilled, no action is necessary.
- The cylinder vent hole should be clear.
- The unit is neither bottomed-out nor over extended.

* Cause for rejection per Tech Specification 4.6.H.2. Determination of snubber operability, where the snubber is not obviously inoperable, shall be the responsibility of Design Engineering.