DAMAGED COMPONENTS OF A BERGEN-PATERSON SERIES 25000 HYDRAULIC TEST STAND

Description of Circumstances:

During functional testing of hydraulic snubbers at a power reactor facility, test results were adversely influenced by the use of damaged components in the test stand connectors to the snubber being tested.

The following paragraphs are the manufacturer's (Bergen-Paterson) description of the problem together with recommended procedures to avoid such problems in the future:

A number of HSSA-3 (Hydraulic Shock and Sway Arrester) Units, 1-1/2" bore x 6" stroke, with 3,000 pound load rating, exhibited nonuniform performance. The bleed rates were erratic and in some instances a structural lockup was observed. A sample of units were disassembled and found to be in proper working order.

Attention was then directed to the testing machine's fixturing. The series 25000 test stand utilizes a 2 pin loading system to simulate actual strut load connections which does not allow transmission of bending moments in the vertical plane. Unlike the actual strut which employs a ball bushing, the test stand's fixturing is a simplified pin connection.

An inspection of the load pins and bushings during the review of the test fixturing indicated that they were damaged due to a prior overload condition. These damaged components induced bending moments into the test units which produced mechanical binding between the piston rod and its bearing.

The noted moment type loading condition does not occur on units in service since all strut assemblies incorporate ball bushings in the cross-pin connection at each end of the strut, providing a universal action thereby assuring pure axial loading.

Bergen-Paterson recommends that the pinned connections and fixtures of the Series 25000 test stand or other test equipment used for snubber testing be periodically inspected and replaced if indications of damage are noted.

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Bergen-Paterson's recommended inspection frequency is as follows:

A. Prior to initial start of a Test Program.

B. After each 60 credits of units tested - with credits assigned per the following schedule:

HSSA UNIT SIZE	CREDITS
3	1
10	1
20	2
30	3
50	5
70	5

Inspection acceptance criteria for Test Fixture Components are:

Cross Pins	Straightness 0.015 in.
Bushings	Cylindricity 0.015 in.
Fit	.020 in. Max Diametral

While there are a limited number of this specific test stand currently in use, it is considered likely that similar hydraulic snubber test equipment may have comparable problems. All holders of Reactor Operating Licenses or Construction permits should consider the following items in their review of this matter:

1. Review the snubber testing device utilized at your facility to determine if a comparable problem could develop in the mounting fixtures.

2. Consider the need for a periodic inspection and replacement of components that could adversely affect the test results.

No written response to this Circular is required. If you require additional information regarding this matter, contact the Director of the appropriate NRC Regional Office.

IE Circular No. 78-07
May 31, 1978

LISTING OF IE CIRCULARS ISSUED IN 1978

Circular No.	Subject	Date of Issue	Issued To
78-01	Loss of Well Logging Source	4/5/78	All Holders of Well Logging Source Licenses
78-02	Proper Lubricating Oil for Terry Turbines	4/20/78	All Holders of Reactor Operating Licenses (OL) or Construction Permits (CP)
78-03	Packaging Greater Than Type A Quantities of Few Specific Activity Radioactive Material for Transport	5/12/78	All Holders of Reactor Operating Licenses (OL), Construction Permits (CP), Fuel Cycle, Priority I Material and Waste Disposal Licenses
78-04	Installation Error That Could Prevent Closing of Fire Doors	5/15/78	All Holders of an NRC Operating Licenses (OL) or Construction Permits (CP)
78-05	Inadvertent Safety Injection During Cooldown	5/23/78	All Holders of an NRC Operating Licenses (OL) or Construction Permits (CP)
78-06	Potential Common Mode Flooding of ECCS Equipment Rooms at BWR Facilities	5/25/78	All Holders of Reactor Operating Licenses (OL), or Construction Permits (CP)