IE Bulletin No. 75-05
April 14, 1975

OPERABILITY OF CATEGORY I HYDRAULIC SHOCK AND SWAY SUPPRESSORS

DESCRIPTION OF CIRCUMSTANCES:

The Metropolitan Edison Company notified the Region I Office of Inspection and Enforcement by telephone on March 21, 24 and 25, 1975, of the finding of eight inoperable hydraulic shock suppressors on the main steam lines inside containment at the Three Mile Island 1 facility.

The licensee reported that these suppressors were removed for overhaul (seal replacement) and testing during a planned maintenance program. The suppressors were determined to be inoperable (suppressor lockup could not be achieved) during piston displacement tests performed by the licensee. The tests were performed on a test rig which actuates the piston with air pressure. These suppressors, representing equipment originally installed at the facility, were specified to achieve lockup at a velocity not exceeding 10 in. per minute. The test rig at the facility was reported to have a capability of testing at velocities up to 50 in. per minute. The specific cause of the reported failures has not been determined. Spare suppressors were installed as replacements after their acceptability was determined by the licensee by test.

For your information, RO Bulletins 73-3 and 73-4, dated July 27, 1973 and August 17, 1973 respectively (copies enclosed) discuss some prior experience concerning the operability of hydraulic suppressors.

In general, the installation of hydraulic suppressors provides a system for the restraint of Category I systems and components against excessive movement during seismic and fluid system transient conditions. Although in such a restraint system the failure or inoperability of a single suppressor would not normally defeat the design function of the restraint system, it is desirable to provide for the periodic testing of a representative sample from the total population of suppressors to assess the operational capability of the restraint system on a continuing basis.

ACTION TO BE TAKEN BY LICENSEES:

1. For all power reactor facilities with an operating license:

   Review the design and installation of your hydraulic restraint systems, and provide the following information to this office in writing within 30 days of the date of this Bulletin:

   a. The design requirements which the various suppressors are intended to meet, such as velocity, acceleration, load, etc. Also, indicate the margin available between the

design requirements and the requirements specified for purchase of these components.

b. Describe the testing of the hydraulic suppressors conducted by you or your supplier(s) prior to installation to assure their operation in accordance with design requirements.

c. Describe the surveillance (including testing) programs now underway or planned by you to assure continued operability of the hydraulic suppressors under the design conditions throughout the life of the facility.

2. For all power reactor facilities with a construction permit:

Report to this office in writing within 60 days of the date of this Bulletin or prior to completion of preoperational testing, whichever is earlier, the information requested in Items 1.a. thru 1.c. above.

A copy of your response to items 1 and 2 above should also be sent to: Assistant Director for Construction and Operations, Office of Inspection and Enforcement, USNRC, Washington, D. C. 20555.

RO Bulletin No. 73-3
July 27, 1973

DEFECTIVE HYDRAULIC SHOCK SUPPRESSORS AND RESTRAINTS

Information contained in an abnormal occurrence report from the Millstone 1 reactor, supplemented by additional information obtained by Regulatory Operations from other licensees, revealed that 51 of 112 hydraulic shock suppressors and restraints inspected were defective due to loss of hydraulic oil supply. These suppressors and restraints were manufactured by the Bergen-Patterson Company.

In the light of this information you are requested to take the following specific actions:

A. Determine whether Bergen-Patterson hydraulic shock suppressors and restraints are utilized in safety systems within your facility. Report the results of this determination to this office by noon, Monday, July 30, 1973.

B. If Bergen-Patterson suppressors and restraints are utilized in such systems:

1. Inspect prior to noon, July 30, 1973, each suppressor and restraint for proper hydraulic fluid level.

2. Report by telephone to this office by noon, Monday, July 30, 1973 the results of your actions to show:

   a. Number of suppressors and restraints installed in safety related systems.

   b. Number inspected.

   c. Number defective by model number and location of installation and failure mode.

   d. Confirmation of operability of defective suppressors and restraints. If repairs are not completed, your justification for continuing operation of your plant and your schedule for completion of repairs.

   e. Existing or planned surveillance schedule for suppressors and restraints.

3. For plants with existing surveillance of suppressors and restraints, if your inspection has been performed within the last 30 days and there is no history of defective suppressors and restraints or if all were repaired, this request for inspection prior to noon July 30, 1973, does not apply.

C. Reports made in response to A and B, above, should be confirmed in writing within 10 days.

D. For facilities with no Bergen-Patterson suppressors and restraints or with existing surveillance inspections of suppressors and restraints:

1. At the next reactor shutdown, inspect all hydraulic suppressors and restraints in safety related systems. Inform this office of your schedule for this inspection by noon, July 30, 1973.

2. When the inspection is performed, if defective suppressors and restraints are identified, the results of your inspection should be reported immediately by telephone to this office and confirmed in writing within 10 days. This report should include:

a. Number of suppressors and restraints inspected, identified by manufacturer.

b. Number of defective suppressors and restraints.

c. For each defective suppressor and restraint report:

(1) manufacturer (2) model number
(3) location of installation (4) failure mode

d. Confirmation of operability of defective suppressors and restraints. If repairs are not completed, your justification for operation of your plant and your schedule for completion of repairs.

e. Surveillance schedule.

3. If no defective suppressors and restraints are identified a report should be submitted within 10 days of completion of the inspection to show the number of suppressors and restraints inspected identified by manufacturer and model number.

If you have any questions concerning this request, please contact this office.

RO Bulletin No. 73-04
August 17, 1973

DEFECTIVE BERGEN-PATTERSON HYDRAULIC SHOCK ABSORBERS

INFORMATION

Reference is made to Regulatory Operations Bulletin 73-3, dated July 27, 1973, entitled DEFECTIVE HYDRAULIC SHOCK ABSORBERS AND RESTRAINTS which provided information on known problems with hydraulic shock absorbers and which requested actions, including inspections of installed hydraulic shock absorbers, by certain utilities.

The compiled results of these inspections of Bergen-Patterson shock absorbers, based on telephone reports from affected licensees to the five Regional Offices of the Directorate of Regulatory Operations, reveal that a large percentage of installed Bergen-Patterson hydraulic shock absorbers were not fully operational. In addition, preliminary information indicates that routine repairs, replacing defective seals and filling hydraulic oil reservoirs, may not be an adequate long-range solution to this problem. There is also some indication that deterioration of the affected hydraulic shock absorbers can occur over a relatively short period of time (less than 90 days).

ACTION INDICATED

1. Schedule and conduct a reinspection of Bergen-Patterson hydraulic shock absorbers installed in safety related systems following approximately 45 days and no longer than 90 days after the plant has been at operating temperature subsequent to the inspection performed as requested in RO Bulletin 73-3.

2. The inspection should include:

   a. Determination of condition of seals.

   b. Verification of overall integrity of shock absorber assemblies.

   c. Examination for loss of fluid, fluid leaks, and other signs of distress.

   d. Recording of piston rod extension and fluid level indicator positions.

3. Inform this office of the planned date for reinspection of the Bergen-Patterson hydraulic shock absorbers.

4. Provide this office with a prompt telephone report of the significant findings of this reinspection. If defective shocks are identified, a written report should be submitted to this office within 10 days following completion of the inspection; if no defective shock absorbers are identified, the written report should be submitted within 30 days following the completion of the inspection.

5. The written report should include:

   a. As appropriate, a description of the mode of failure, corrective action and tests performed to determine the adequacy of the repair.

   b. A description of the program for the development and subsequent installation of a permanent modification to the hydraulic shock absorber installation to assure proper operation. The description should include the technical basis for the conclusion that deficiencies in the Bergen-Patterson hydraulic shock absorbers have been resolved.