

DAEDALEAN ASSOCIATES, Incorporated

PROGRESS REPORTS
NOS. 7 and 8

THE APPLICATION OF THE INTERNAL
FRICTION NONDESTRUCTIVE EVALUATION
TECHNIQUE FOR DETECTING INCIPIENT
CRACKING OF BYPASS LINES AND PIPES
IN BOILING WATER REACTOR PIPING SYSTEMS

Submitted to:

Nuclear Regulatory Commission
Division of Reactor Safety Research
Washington, D. C. 20555

Contract Number
NRC-04-78-242
Continuation - Phase II

Report of Progress During the Period
23 June 1980 through 15 August 1980

July 1980
NRC Research and Technical
Assistance Report

8009240 291

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PROGRESS DURING THE REPORTING PERIOD

During these reporting periods construction of the in-house pipe test loop was completed. Pipe specimens prepared by Battelle Pacific Northwest Laboratories were received July 9, 1980. The first pipe specimen has been installed in the load harness. The testing system utilizes filtered, deionized water obtained by passing water from the main building water supply through a ten micron particulate filter, a carbon bed filter, and two mixed resin bed deionizers. This operation yields water with a typical specific resistance greater than one megaohm per centimeter.

On July 22, 1980 Mr. Earl White from Battelle Columbus Laboratories visited DAI to inspect the in-house pipe test loop, water quality monitoring apparatus, and offer technical advice. Although satisfied with the basic construction of the system and the type of water quality apparatus, he suggested modifications to the system regarding some of the materials of construction. Specifically, only materials which are relatively chemically inert may be used (i.e., polyethylene, polypropylene, teflon, Kynar, etc. for low pressure applications; stainless steel 304 or 316 for high

pressure applications). As a result, several sections of the water system must be removed and/or replaced. Among these are: the low pressure water supply pump to the high pressure pump, the water pump inlet line, the water sample line, and the interconnecting lines between the carbon filter and mixed bed deionizers. These modifications are in the process of being completed. Figure 1 is a flow schematic of the water test loop as it has been modified. Figure 2 is a symbol key of the various components. Low pressure fittings and tubing are of either polyethylene, polypropylene, or Kynar. High pressure fittings are of 304 or 316 stainless steel. The pipe test sample is located at the water heater on the diagram.

SUMMARY OF IMPORTANT TRIPS, CONFERENCES,
MEETINGS AND BRIEFINGS

None

UNANTICIPATED TECHNICAL OR MANAGEMENT PROBLEMS

None

ANTICIPATED PROBLEMS

None

REQUIREMENTS FOR CHANGES IN KEY PERSONNEL

Mr. Donald Taylor, Project Engineer, has assumed the duties and replaced Mr. David Fresch on this project. Mr. Taylor will report directly to Mr. Ray Brasfield who continues as Department Head of the Material Systems Division of DAI. The assignment of Mr. Taylor as Project Engineer for this program will ensure the accomplishments anticipated and enable DAI to achieve the specific objectives for this phase of the program.

ANTICIPATED COST AND COMPLETION SCHEDULE

Based on the progress to date, it is anticipated that the program will be completed on schedule and within the estimated cost.

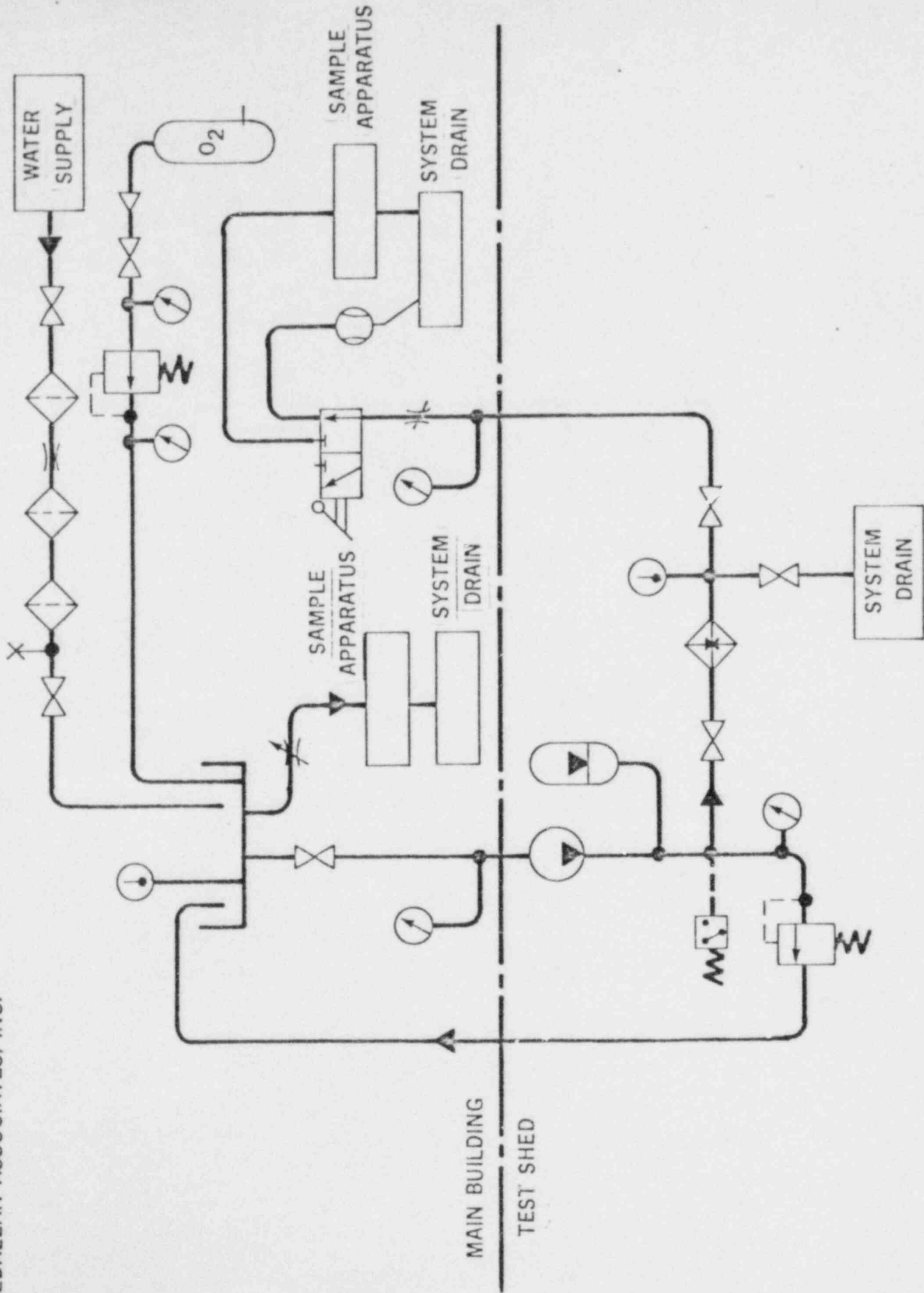


FIGURE 1 - SCHEMATIC OF NRC PIPE TEST SYSTEM

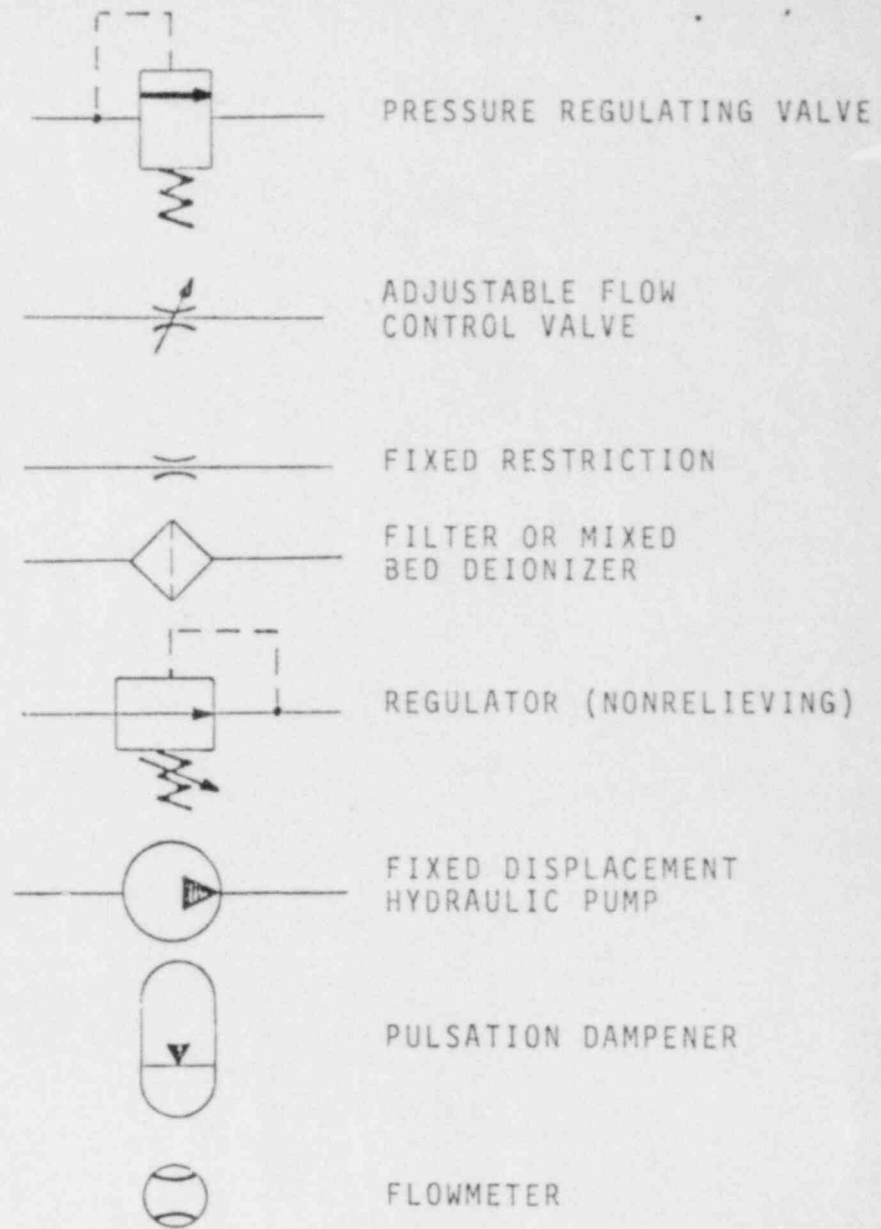
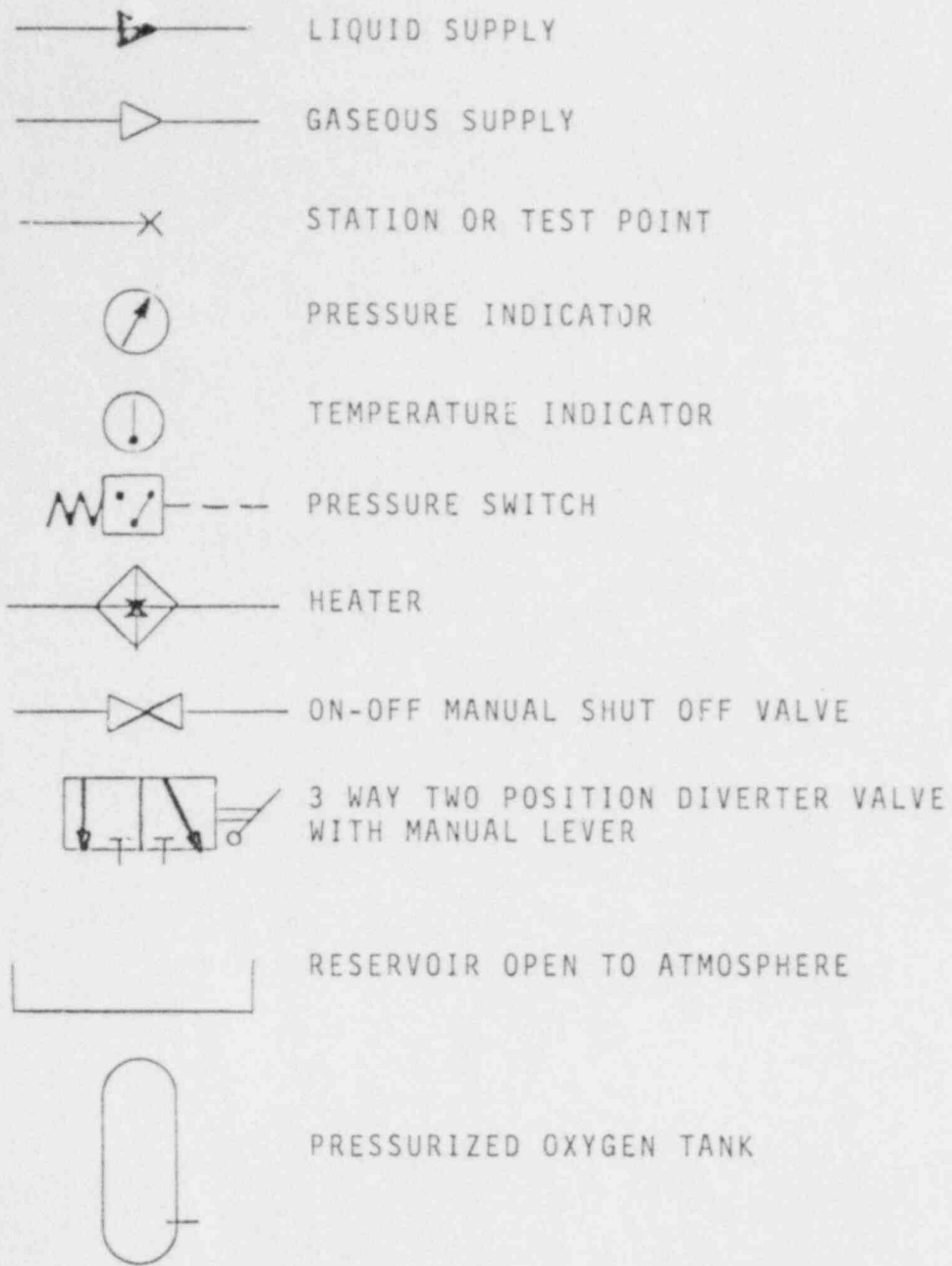


FIGURE 2 - SYMBOL KEY

