MPR ASSOCIATES, INC.

RESPONSE TO
U.S. NUCLEAR REGULATORY COMMISSION
LETTER LSO5-83-05-067 DATED
MAY 27, 1983 TO MR. P. B. FIEDLER
OYSTER CREEK
NUCLEAR GENERATING STATION

Prepared for:

General Public Utilities Nuclear
Parsippany, New Jersey

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TABLE OF CONTENTS

1.0 INTRODUCTION

This document provides responses to the U.S. Nuclear Regulatory Commission (NRC) Letter LSO5-83-05-067, dated May 27, 1983, addressed to Mr. P. B. Fiedler, Vice President and Director, Oyster Creek Nuclear Generating Station, Reference 3.1. The letter requests additional information about the electromatic relief valve (ERV) tests conducted at Oyster Creek during August 1977 after installation of Y-quencher discharge devices in the torus. A report of those tests was submitted to the NRC in May 1978, Reference 3.2.

2.0 RESPONSES

Responses are provided here to the two questions raised in the NRC Letter, Reference 3.1. The responses are presented in the order in which the questions are discussed in the NRC letter.

2.1 Frequency Content of Measured Pool Boundary Pressure

Additional information was requested about the pressures measured by transducers mounted on the inside wetted surface of the torus shell during the electromatic relief valve (ERV) actuation tests discussed in Reference 3.2. In particular, power spectral density (PSD) plots were requested from pressure time-history data recorded by the transducer experiencing the largest pressure excursions.

The traces from pressure transducer P3, shown in Figure IV-7 of Reference 3.2, are typical of the largest pressures recorded during the tests. Power spectral density (PSD) plots generated from its pressure time history output are provided in Figures 1 to 4 for a selection of test conditions.

Figure 1 - Two valves open with the ERV line cold. The bubble time history represented by this PSD was used as the reference for SRV-related dynamic analysis of the torus.

Figure 2 - Single valve open with a cold ERV line. Note the bubble characteristic frequency (approximately 6 Hz) is comparable to that shown in Figure 1 for the two valve test. Note also that the magnitude of the PSD is an order of magnitude less for the single valve test when compared with the peak of the double valve test.

Figure 3 - Another two valve cold pipe test to illustrate reproducibility in the frequency characteristics of the PSD from one test to the other.

Figure 4 - Two valves open with the ERV line hot, i.e., subsequent opening of the ERV's after a cold pipe test. Note that the PSD is of the same general shape as the cold pipe test, but laterally shifted in the frequency domain.

2.2 Pipe Temperatures Prior to Valve Actuations

Information was also requested about pipe temperature measurements that may have been recorded by existing plant sensors prior to the ERV actuations.

Some temperature data was recorded from the plant sensors during the tests. These sensors were located in the discharge pipe directly downstream of each ERV and also at a point in the 14-inch header piping about half way between the valves and the torus (see Figures III-1 and IV-8 of Reference 3.2). These sensors were existing plant instrumentation and their output was not recorded with test instrumentation oscillograph or magnetic tape recording equipment.

From sensor readings manually recorded during the tests, the following results are available. The average temperature in the discharge pipe at the test initiating valve prior to cold pipe tests was 190°F. For hot pipe tests, this average temperature was 258°F. With regard to the average temperature in the 14-inch header piping, only the temperature before cold pipe tests was recorded. This average temperature was 131°F.

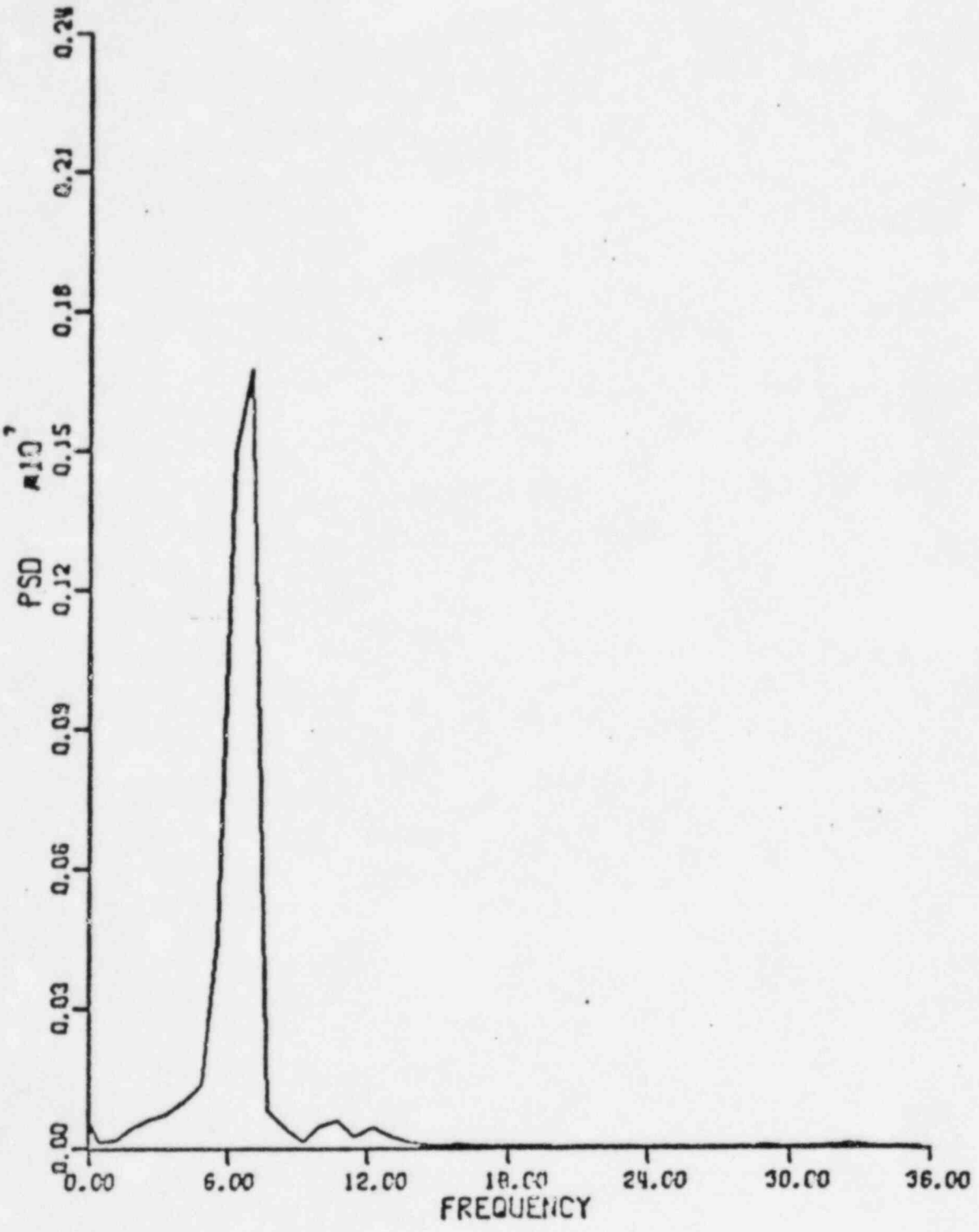

FIGURE 1 - POWER SPECTRAL DENSITY -
TWO VALVES - COLD PIPE

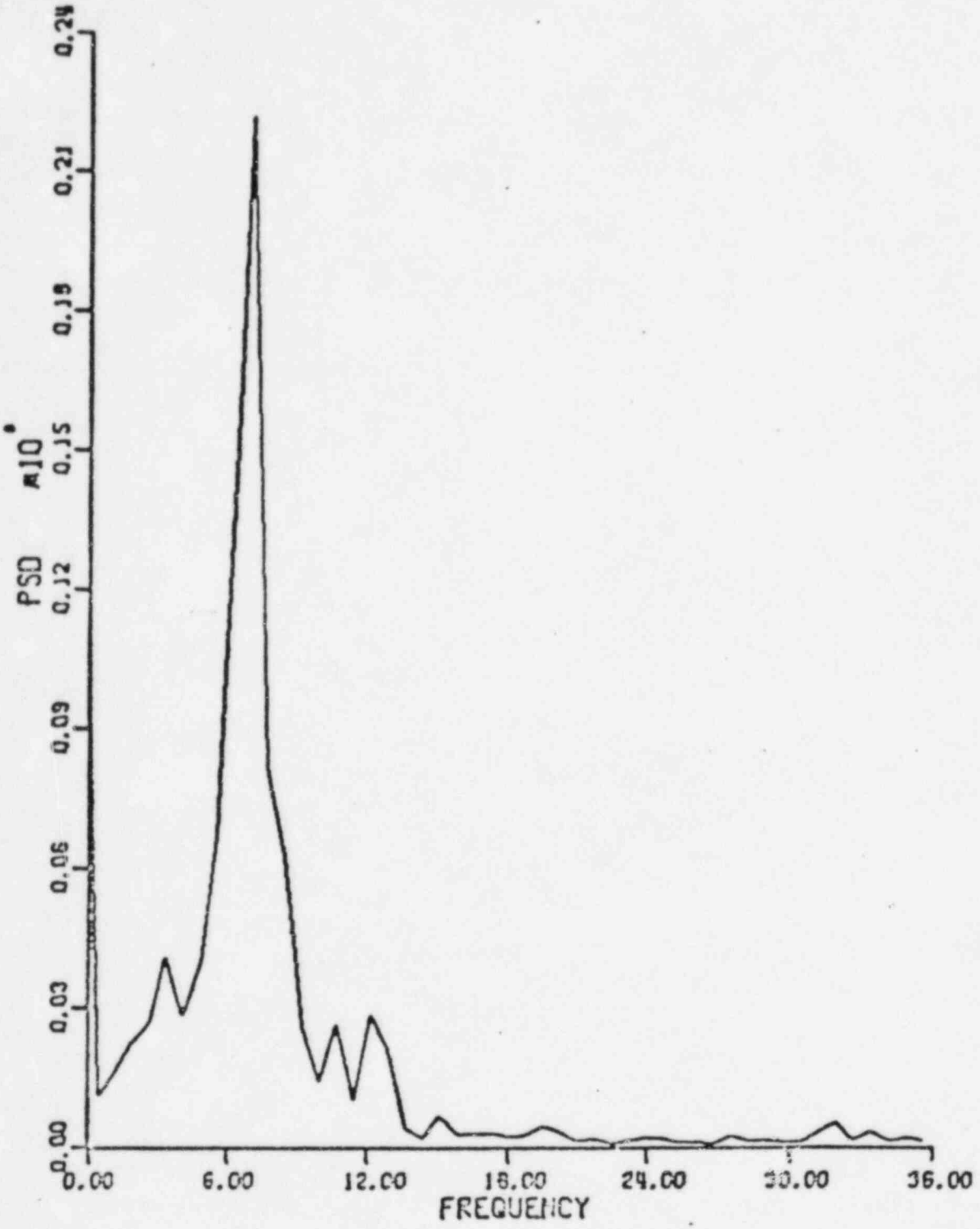

FIGURE 2 - POWER SPECTRAL DENSITY -
SINGLE VALVE - COLD PIPE

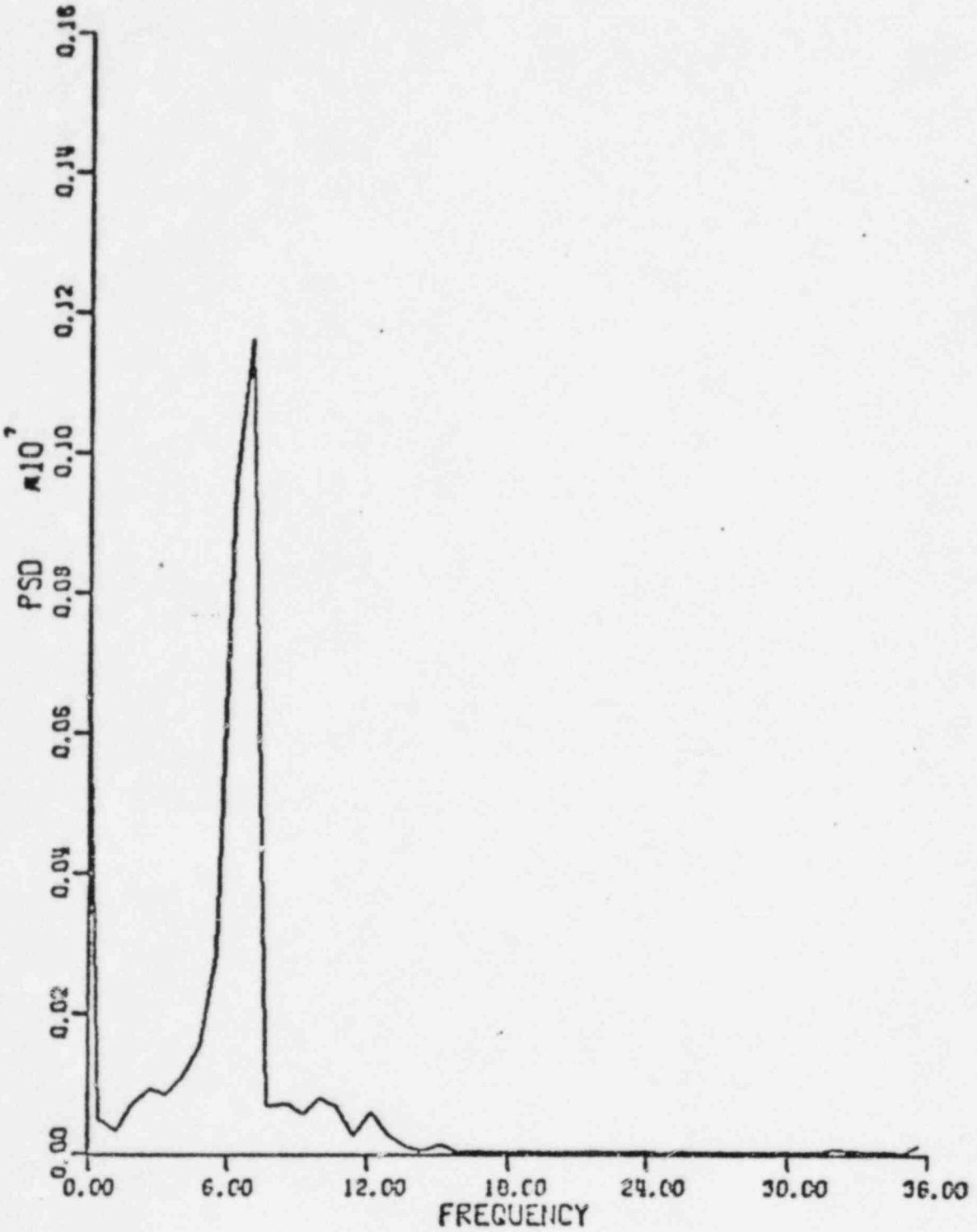

FIGURE 3 - POWER SPECTRAL DENSITY -
TWO VALVES - COLD PIPE

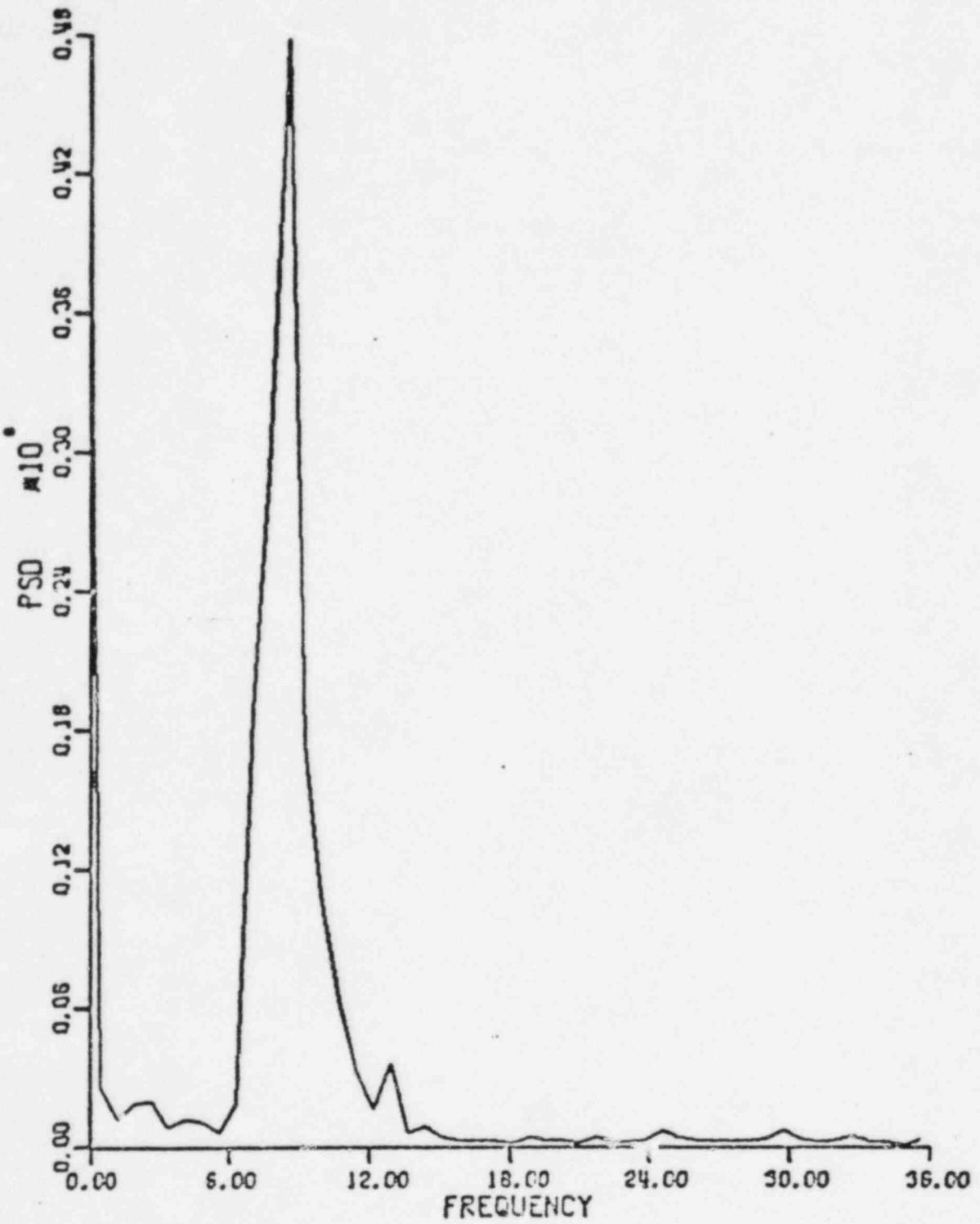

FIGURE 4 - POWER SPECTRAL DENSITY -
TWO VALVES - HOT PIPE

3.0 REFERENCES

3.1 U.S. Nuclear Regulatory Commission Leter LSO5-83-05-067 from Mr. D. M. Crutchfield to Mr. P.B. Fiedler, Oyster Creek Nuclear Generating Station, May 27, 1983.

3.2 Jersey Central Power and Light Company. Letter to the Director of Nuclear Reactor Regulation transmitting the "Oyster Creek Nuclear Generating Station Report on the Modified Electromatic Relief Valve Discharge Device", May 11, 1978.