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ACRS-2146
PDR 03/15/84
DATE ISSUE: 11/25/83

PROPOSED MEETING MINUTES OF THE
ACRS EXTREME EXTERNAL PHENOMENA SUBCOMMITTEE MEETING

OCTOBER 12, 1983 - WASHINGTON, D.C.

The ACRS Subcommittee on Extreme External Phenomena met on October 12, 1983 at 1717 H Street, N.W., in Room 1167, Washington, D.C. The purpose of this meeting was to discuss the use of the tau effect methodology and, in particular, its use in the seismic design analysis of the Diablo Canyon plant. The information obtained during these discussions was to be used in the development of response to a request from Comissioner Gilinsky for ACRS comment on the use of the tau effect methodology into the Diablo Canyon seismic (Ref. letters dated September 8 and 28, 1983 from V. Gililsky to J. J. Ray). The Subcommittee had discussions with its Consultants, the NRR staff, and representatives of Pacific Gas and Electric Company.

The notice for this meeting was published in the Federal Register on Monday, September 26, 1983. A copy of the notice for this meeting is included as Attachment A. A list of Attendees is included as Attachment B. A schedule for this meeting is included as Attachment C, and selected portions of the handouts for this meeting is included as Attachment D. A complete set of meeting handouts are included in the ACRS Files. The meeting was begun at 3:00 p.m., with a short executive session in which Dr. Okrent, Subcommittee Chairman, summarized the objectives of the meeting. The meeting was adjourned at approximately 6:45 p.m. on this day, and was conducted entirely in open session.

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NRC Staff Presentations

The use of the tau effect in the Diablo Canyon seismic analysis was discussed. The methodology was developed by Dr. N. Newmark to account for reductions in the free field response spectra which might be expected to occur as the results of interactions of a large rigid building foundation with the seismic waves. The reductions, as used in the Diablo Canyon seismic analysis, were applied only to the horizontal response spectrum, with 2/3 of the free field horizontal response spectrum being used for the vertical response spectrum. The reduction used for the turbine building response spectrum accelerations were the largest and were as large as 33%. Some examples are shown on pages 1-8 of Attachment D.

The NRC Staff indicated that it was their belief that, if credit would be taken in the analysis for what they considered to be reasonable amounts of ductility, then all structures could be qualified to the Hosgri design basis earthquake without the use of the tau effect reductions. The reactor primary system components in general have large seismic design margins and can be qualified without the use of the tau effect.

The NRC Staff indicated that they believed, with considerable confidence, that safe shutdown would be achieved for the Hosgri design basis earthquake. The intake structure is believed to be the most vulnerable. The tau effect is viewed by the NRC Staff as a simple engineering approximation that is used as a mathematical convenience to account for a variety of physical phenomena that reduce the foundation response to a level below that of the free field. The



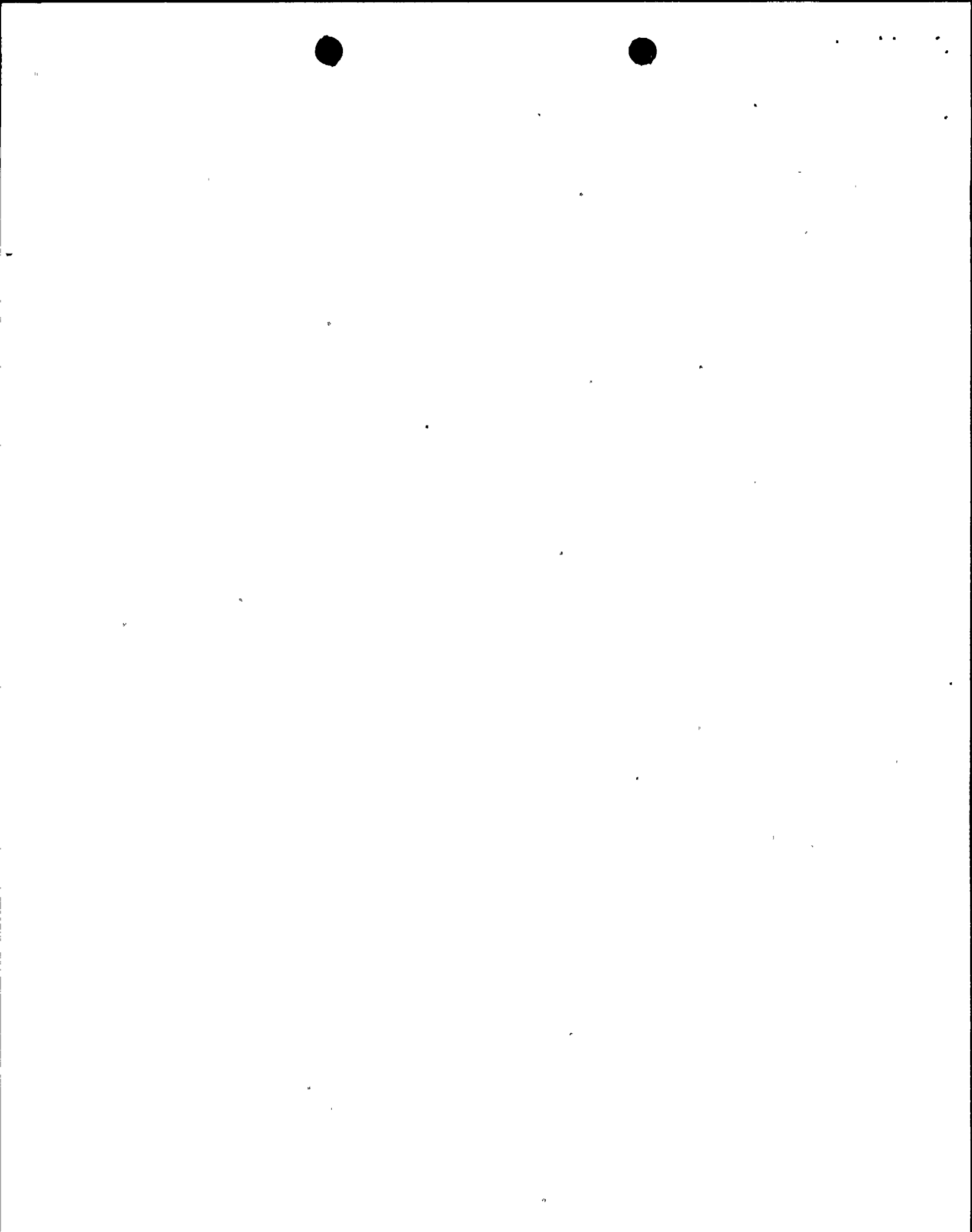
NRC application of the tau effect was unique to the Diablo Canyon analysis. This approach has not, to the NRC Staff's knowledge, been used in the design or analysis of any foreign plants. The NRC Staff stated that physical effects included in the tau effect methodology may have been accounted for by some other means in some applications. The NRC Staff stated that they have not, since the time of the ACRS 1978 letter on Diablo Canyon, developed any information which would significantly effect the ACRS conclusions. The NRC Staff also stated that information had become available which would tend to confirm the ACRS conclusions.

The NRC Staff discussed a number of estimates that had been made for the recurrence interval of earthquakes of the size of the Diablo Canyon SSE in the vicinity of the site. Work by Bloom, Anderson and Trifunac, the USGS, Selger et al, and Thenhaus et al was discussed. A summary is included page 9 of Attachment D. The estimates for a PGA of 0.5g being exceeded ranged from $10^{-2}/\text{yr}$ to $10^{-4}/\text{yr}$.

Mr. Hock (PG&E) indicated that the PG&E was currently analyzing the Diablo Canyon instrument data for actual earthquakes (for relatively small accelerations) to determine if tau effect type reductions from free field response spectrum exist. It appears from the preliminary analysis that reductions do exist. It is expected that this work will continue, and will be transmitted to the NRC at such time as the analysis is completed.

General Discussion

There was some discussion among the Subcommittee Members and the Consultants as to whether the tau effect could be derived from basic engineering or



scientific principles. It was concluded that it could not but rather was based on experience and engineering judgement. There was, in addition, a general agreement as to adequacy of the seismic design basis for Diablo Canyon. The agreement, however, did not extend to the manner in which the tau effect reductions were used in the seismic analysis. There appeared to be considerable uncertainty as to how this phenomena could be described quantitatively.

NOTE: ADDITIONAL MEETING DETAILS CAN BE OBTAINED FROM A TRANSCRIPT OF THIS MEETING AVAILABLE IN THE NRC PUBLIC DOCUMENT ROOM, 1717 H STREET, N.W., WASHINGTON, D.C., OR CAN BE PURCHASED FROM TAYLOE ASSOCIATES, 1625 I STREET, N.W., SUITE 1004, WASHINGTON, D.C. 20006, (202) 293-3950.



of the meeting when a transcript is being kept, and questions may be asked only by members of the Subcommittee, their consultants, and Staff. Persons desiring to make oral statements should notify the Designated Federal Employee as far in advance as practicable so that appropriate arrangements can be made to allow the necessary time during the meeting for such statements.

The entire meeting will be open to public attendance.

The agenda for subject meeting shall be as follows:

Wednesday, October 12, 1983—8:30 a.m. until the conclusion of business.

The Subcommittee will review: (1)

The NRC position in generic recommendations for steam generator tube integrity and (2) single and multiple tube ruptures in one and multiple steam generators.

During the initial portion of the meeting, the Subcommittee, along with any of their consultants who may be present, may exchange preliminary views regarding matters to be considered during the balance of the meeting.

The Subcommittee will then hear presentations by and hold discussions with representatives of the NRC Staff, its consultants, and other interested persons regarding this review.

Further information regarding topics to be discussed, whether the meeting has been cancelled or rescheduled, the Chairman's ruling on requests for the opportunity to present oral statements and the time allotted therefor can be obtained by a prepaid telephone call to the cognizant Designated Federal Employee, Mr. Elpidio Igne (telephone 202/634-1414) or Mr. Anthony Cappucci (202/634-3267) between 8:15 a.m. and 5:00 p.m., e.d.t.

Dated: September 20, 1983.

John C. Hoyle,

Advisory Committee Management Officer.

(FR Doc. 83-26145 Filed 9-20-83; 8:45 am)

BILLING CODE 7590-01-M

Advisory Committee on Reactor Safeguards; Subcommittee on Class-9 Accidents; Meeting

The ACRS Subcommittee on Class-9 Accidents will hold a meeting on October 12, 1983, Room 1167 at 1717 H Street, NW., Washington, DC.

In accordance with the procedures outlined in the Federal Register on October 1, 1982 (47 FR 43474), oral or written statements may be presented by members of the public; recordings will be permitted only during those portions of the meeting when a transcript is being kept, and questions may be asked only

by members of the Subcommittee, its consultants, and Staff. Persons desiring to make oral statements should notify the Designated Federal Employee as far in advance as practicable so that appropriate arrangements can be made to allow the necessary time during the meeting for such statements.

The entire meeting will be open to public attendance.

The agenda for subject meeting shall be as follows:

Wednesday, October 12, 1983—8:30 a.m. until the conclusion of business.

The Subcommittee will review a revision of the August 5, 1983 draft, Severe Accident Research Program Decision paper. This revision will include a more detailed description of the technical issues and subissues and the status of the correlation of these issues to the regulatory questions.

During the initial portion of the meeting, the Subcommittee, along with any of its consultants who may be present, will exchange preliminary views regarding matters to be considered during the balance of the meeting.

The Subcommittee will then hear presentations by and hold discussions with representatives of the NRC Staff, its consultants, and other interested persons regarding this review.

Further information regarding topics to be discussed, whether the meeting has been cancelled or rescheduled, the Chairman's ruling on requests for the opportunity to present oral statements and the time allotted therefor can be obtained by a prepaid telephone call to the cognizant Designated Federal Employee, Mr. Gary Quittschreiber or Staff Engineer, Mr. Alan B. Wang (Telephone 202/634-3267) between 8:15 a.m. and 5:00 p.m., e.d.t.

Dated: September 20, 1983.

John C. Hoyle,

Advisory Committee Management Officer.

(FR Doc. 83-26145 Filed 9-20-83; 8:45 am)

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Advisory Committee on Reactor Safeguards; Subcommittee on Extreme External Phenomena; Meeting

The ACRS Subcommittee on Extreme External Phenomena will hold a meeting on October 12, 1983, Room 1167, 1717 H Street, NW., Washington, DC.

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by members of the Subcommittee, its consultants, and Staff. Persons desiring to make oral statements should notify the Designated Federal Employee as far in advance as practicable so that appropriate arrangements can be made to allow the necessary time during the meeting for such statements.

The entire meeting will be open to public attendance.

The agenda for subject meeting shall be as follows:

Wednesday, October 12, 1983—3:00 p.m. until the conclusion of business.

The Subcommittee will discuss the use of the "tau-effect" in evaluating seismic design margins and the seismic design basis for nuclear power plants with emphasis on its use for the Diablo Canyon site.

During the initial portion of the meeting, the Subcommittee, along with any of its consultants who may be present, may exchange preliminary views regarding matters to be considered during the balance of the meeting.

The Subcommittee will then hear presentations by and hold discussions with representatives of the NRC Staff, their consultants, and other interested persons regarding this review.

Further information regarding topics to be discussed, whether the meeting has been cancelled or rescheduled, the Chairman's ruling on requests for the opportunity to present oral statements and the time allotted therefor can be obtained by a prepaid telephone call to the cognizant Designated Federal Employee, Dr. Richard Savio (telephone 202/634-3267) between 8:15 a.m. and 5:00 p.m., e.d.t.

Dated: September 20, 1983.

John C. Hoyle,

Advisory Committee Management Officer.

(FR Doc. 83-26145 Filed 9-20-83; 8:45 am)

BILLING CODE 7590-01-M

SECURITIES AND EXCHANGE COMMISSION

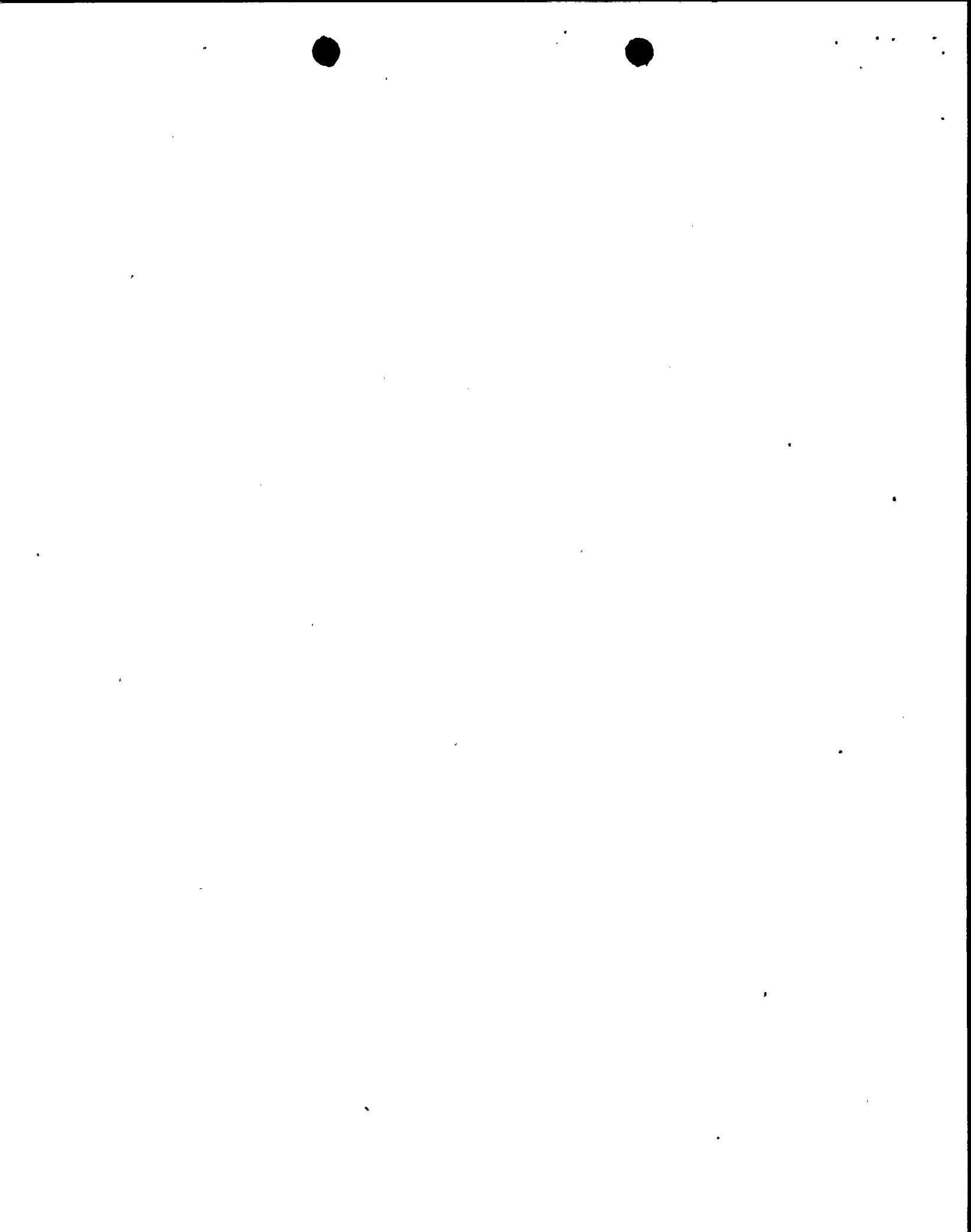
[Release No. 2020; File No. SR-Amex-83-18]

American Stock Exchange, Inc.; Order Approving Proposed Rule Change

September 20, 1983.

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934, 15 U.S.C. 78s(b)(1), (the "Act"), and Rule 19b-4 thereunder, the American Stock Exchange, Inc. ("Amex"), 86 Trinity Place, New York, New York 10008, submitted on August 9, 1983 a proposed rule change to amend Amex' Rule 903C

Attorney General H



TIME 3:00 pm

MEETING ROOM ~~1167~~ 1046

DATE 10-11-83

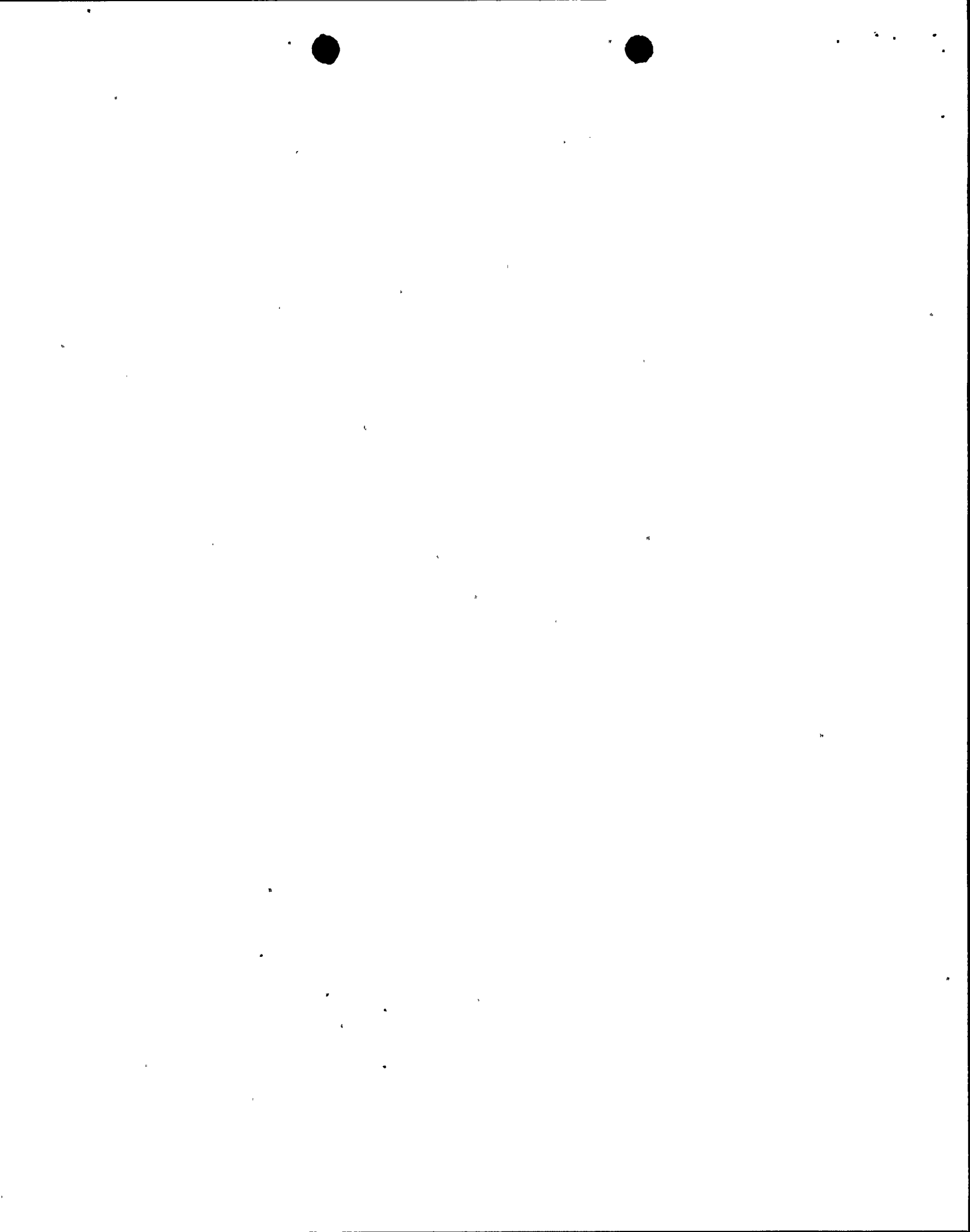
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
MEETING

Extreme External Phenomena

ATTENDEES PLEASE SIGN BELOW

| (PLEASE PRINT) NAME | BADGE NO. | AFFILIATION |
|-----------------------------|---------------|--------------------------------------|
| 1 <u>George A. Tomiyama</u> | <u>0179</u> | <u>ACRS Consultant</u> |
| 2 <u>W. P. Rabe</u> | <u>E-0132</u> | <u>ACRS Consultant</u> |
| 3 MALCOLM SOMERVILLE | <u>E-0437</u> | <u>URS/BLUME</u> |
| 4 R. J. Scavuzzo | <u>E-0216</u> | <u>ACRS Consultant</u> |
| 5 H. P. T. F. F. F. F. | <u>E-0215</u> | <u>ACRS Consultant</u> |
| 6 J. ENRIQUE LUCO | <u>E-0223</u> | <u>ACRS CONSULTANT</u> |
| 7 John B. Hoch | <u>E-0192</u> | <u>Pacific Gas & Electric Co</u> |
| 8 <u>Shirley Ann</u> | <u>E-0111</u> | <u>Writing Center</u> |
| 9 <u>ASU</u> | <u>E-0219</u> | <u>PG&E</u> |
| 10 | | |
| 11 <u>Whitlock</u> | <u>E-0348</u> | <u>PG&E</u> |
| 12 <u>M. W. ...</u> | <u>5110</u> | <u>U. of ...</u> |
| 13 <u>D. F. ...</u> | <u>2164</u> | <u>CLIP</u> |
| 14 <u>H. ...</u> | <u>202</u> | <u>TECA</u> |
| 15 H. LEVIN | <u>185</u> | <u>TECA</u> |
| 16 <u>M. ...</u> | <u>0174</u> | <u>PG&E</u> |
| 17 <u>W. X. Hall</u> | <u>0126</u> | <u>U. of Illinois</u> |
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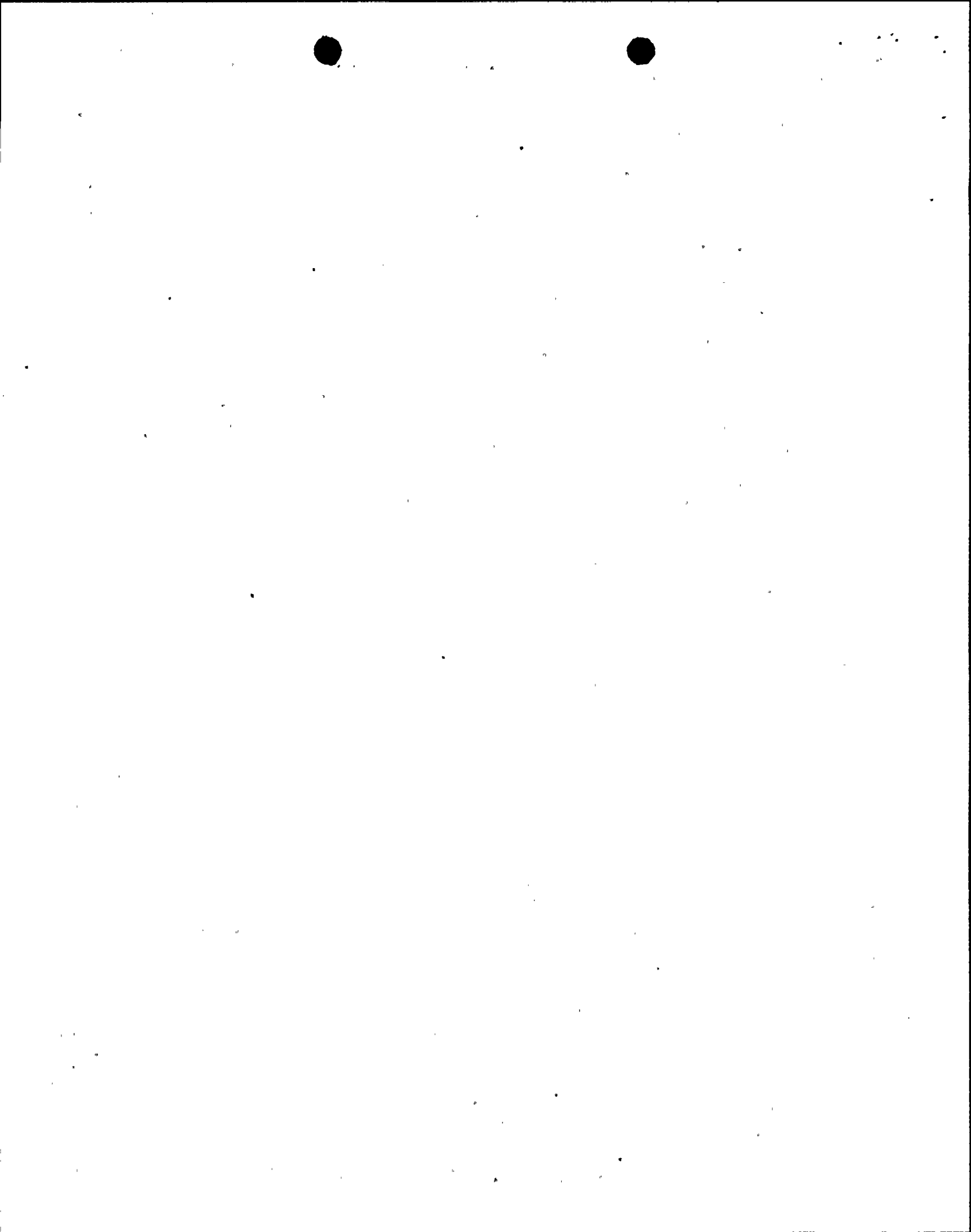


9/23/83

AGENDA FOR THE OCTOBER 12, 1983
MEETING OF THE ACRS SUBCOMMITTEE ON
EXTREME EXTERNAL PHENOMENA

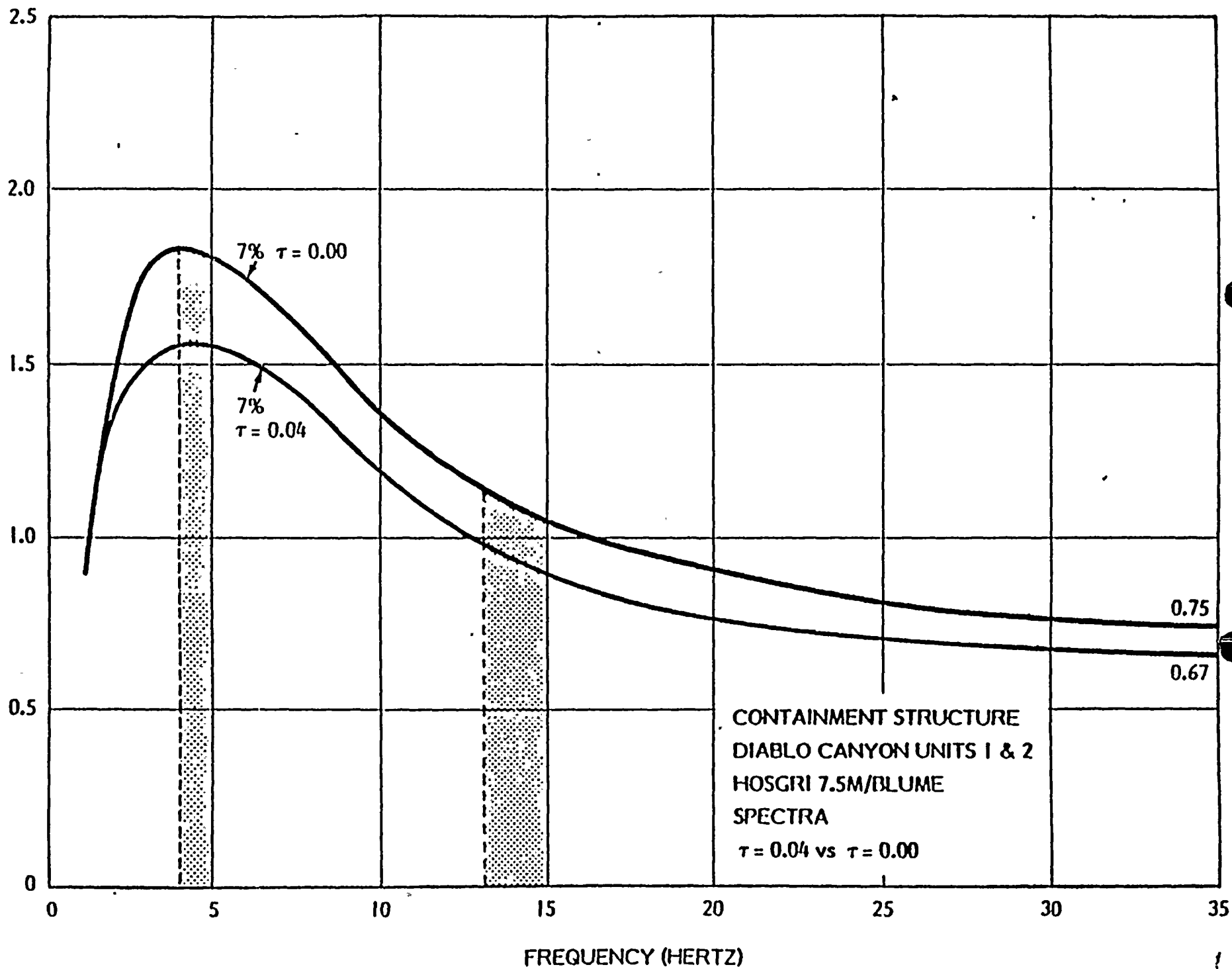
1. Executive Session - D. Okrent/C. P. Siess 3:00 - 4:45 pm
- History of the ACRS review of the Diablo Canyon seismic issues and the "tau effect" and the discussion of the Subcommittee's objectives
2. Presentations by the NRC Staff to Address the Questions in Attachment A 3:45 - 4:45 pm
3. General Discussion 4:45 - 6:45 pm
4. Comments, Summary, and Conclusions 6:45 - 7:30 pm

Attended 

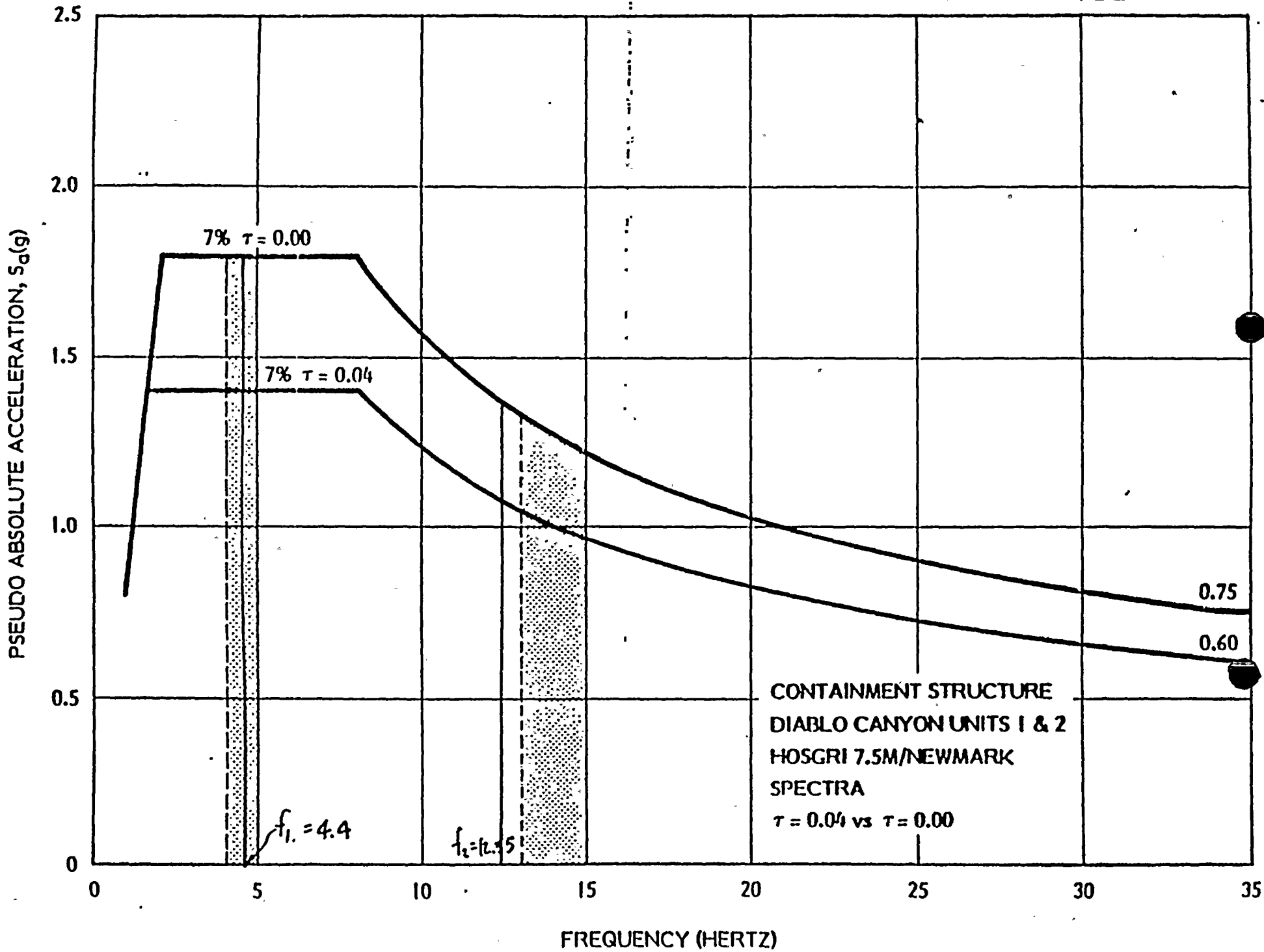


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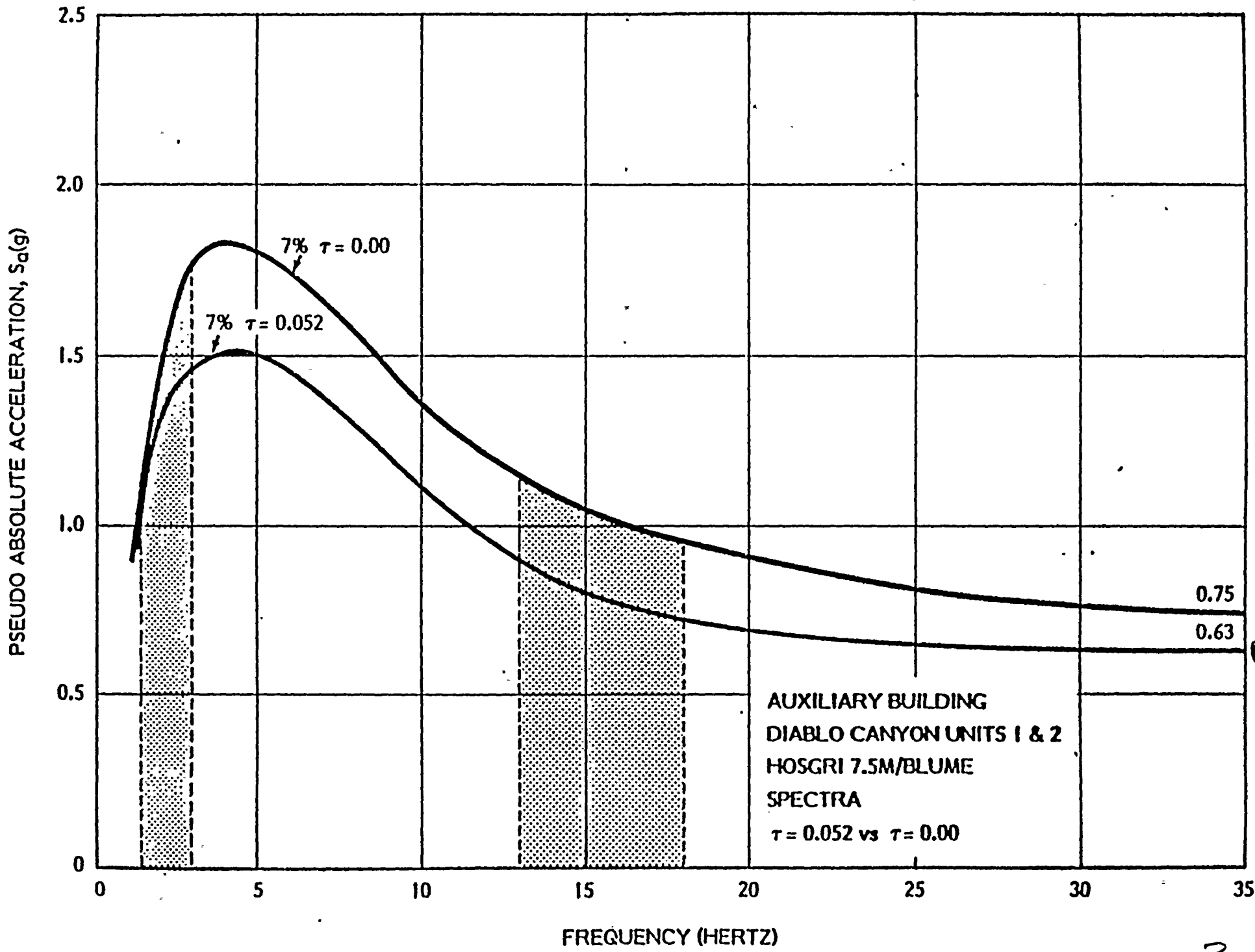
Attachment D



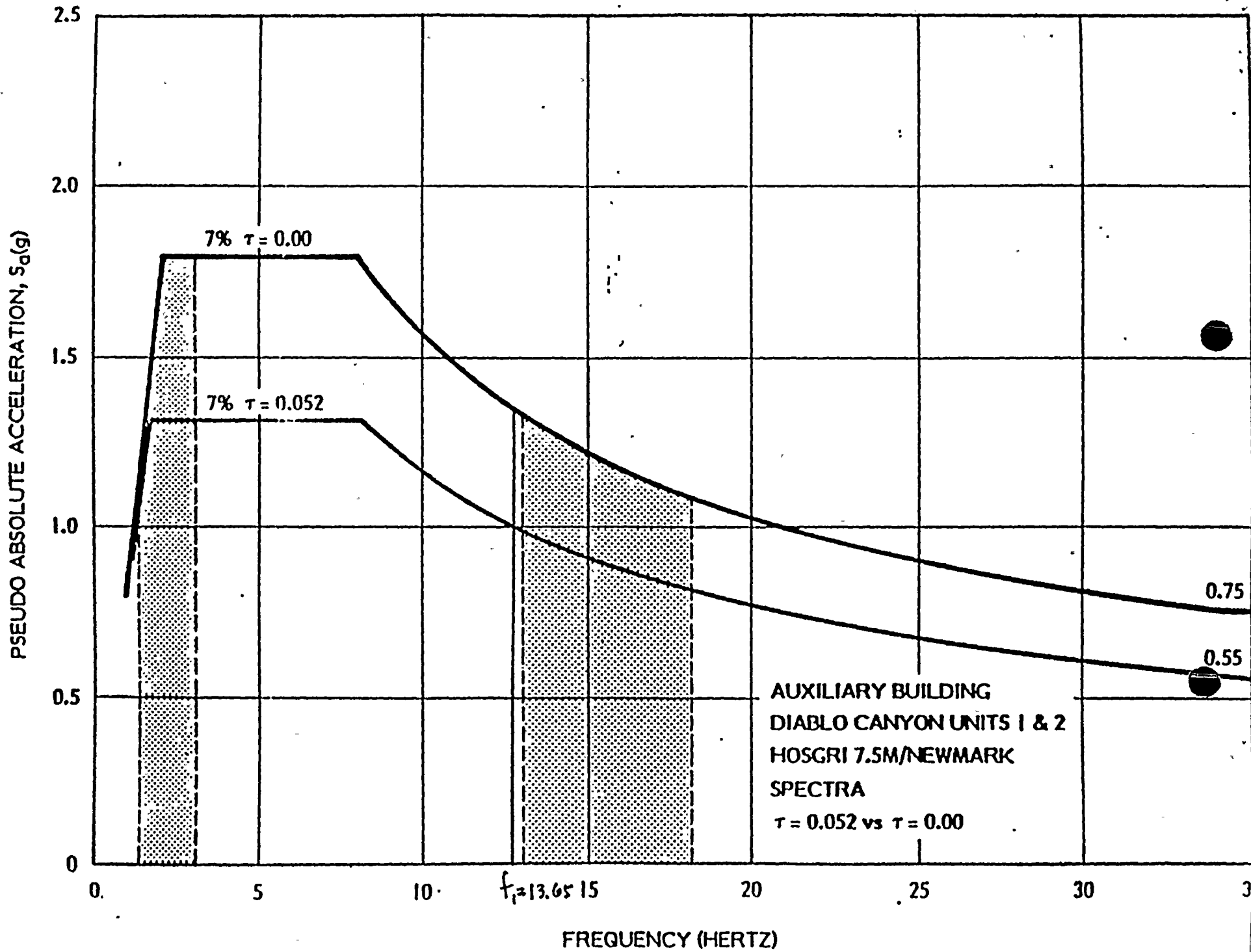


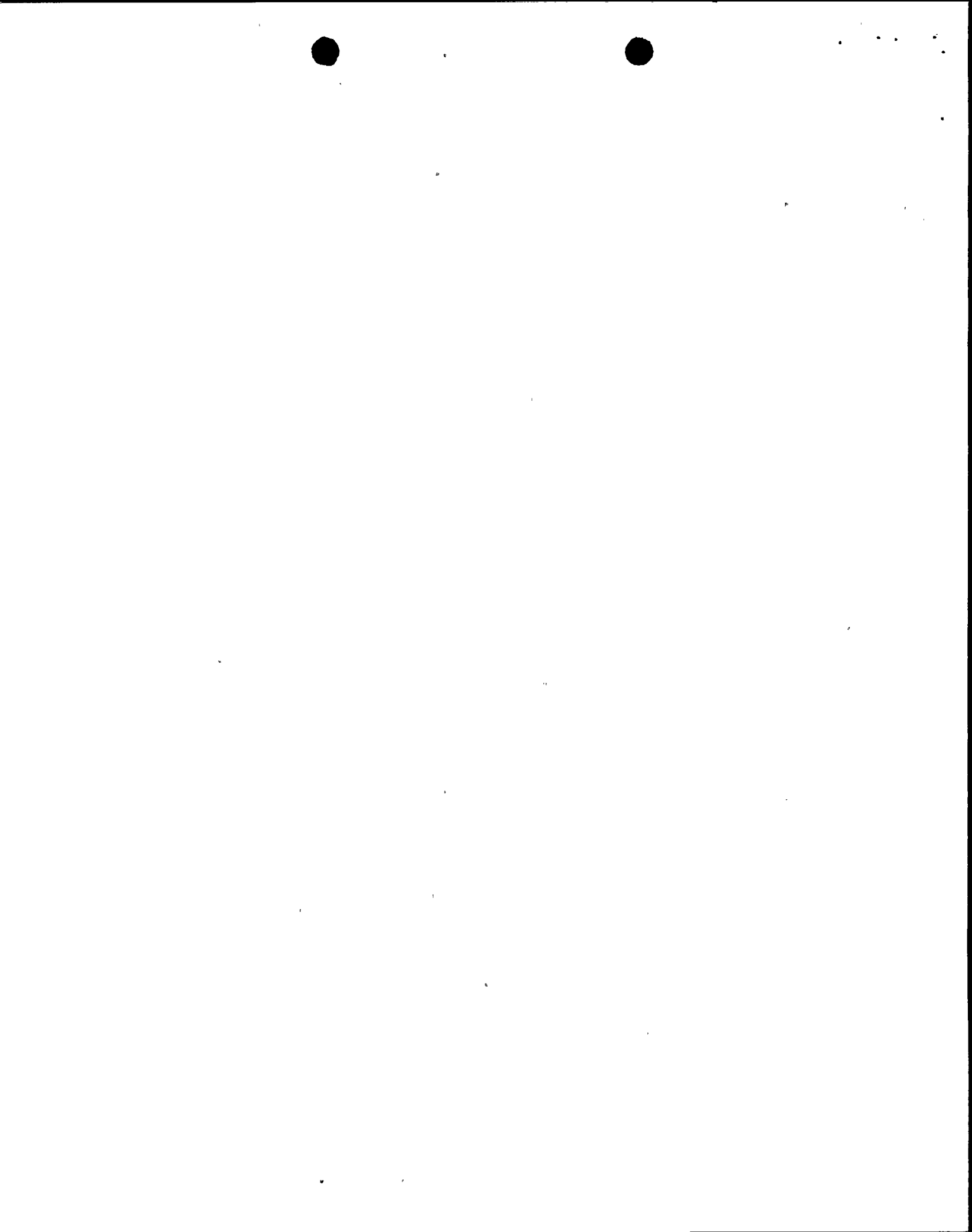


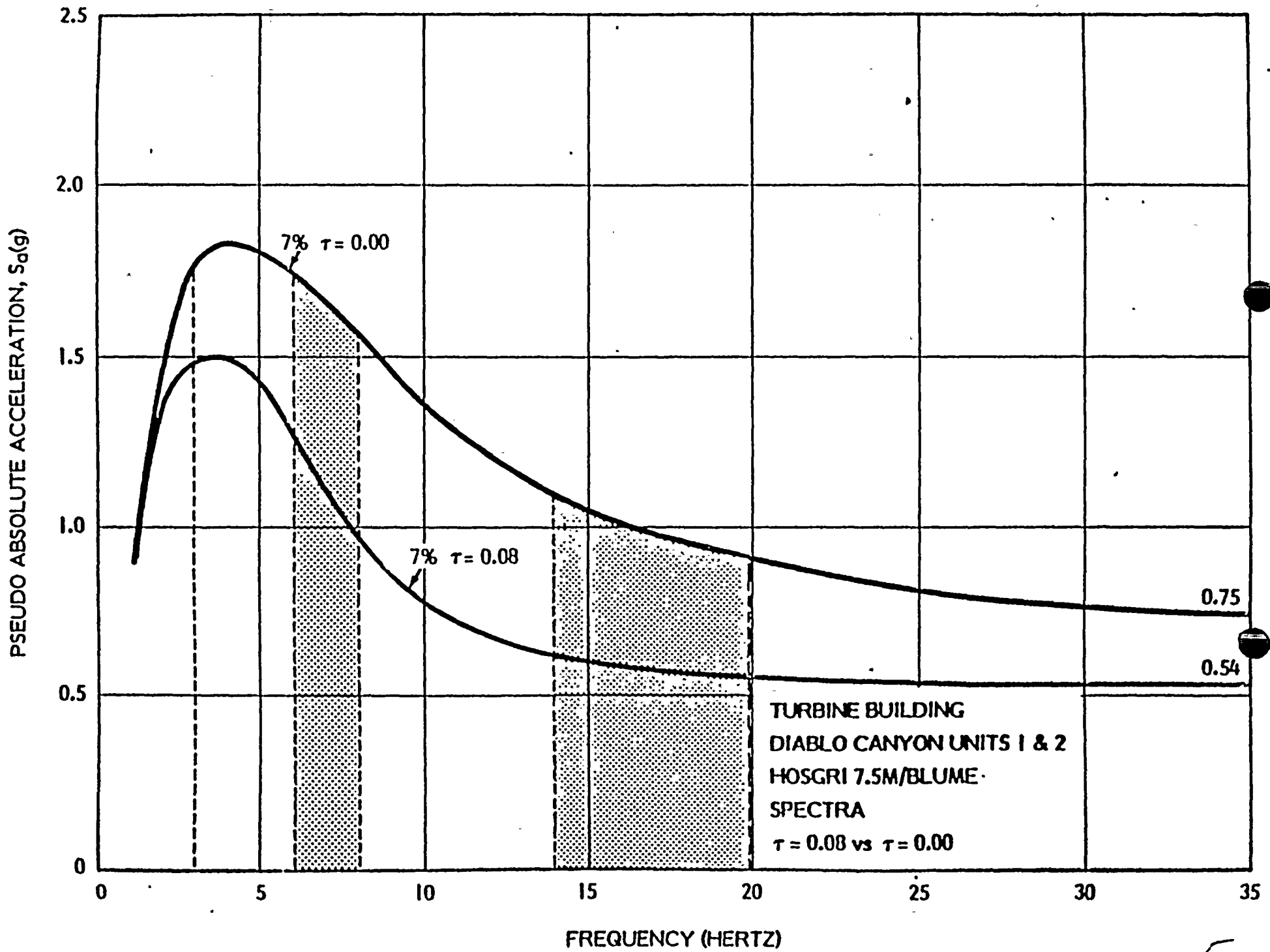




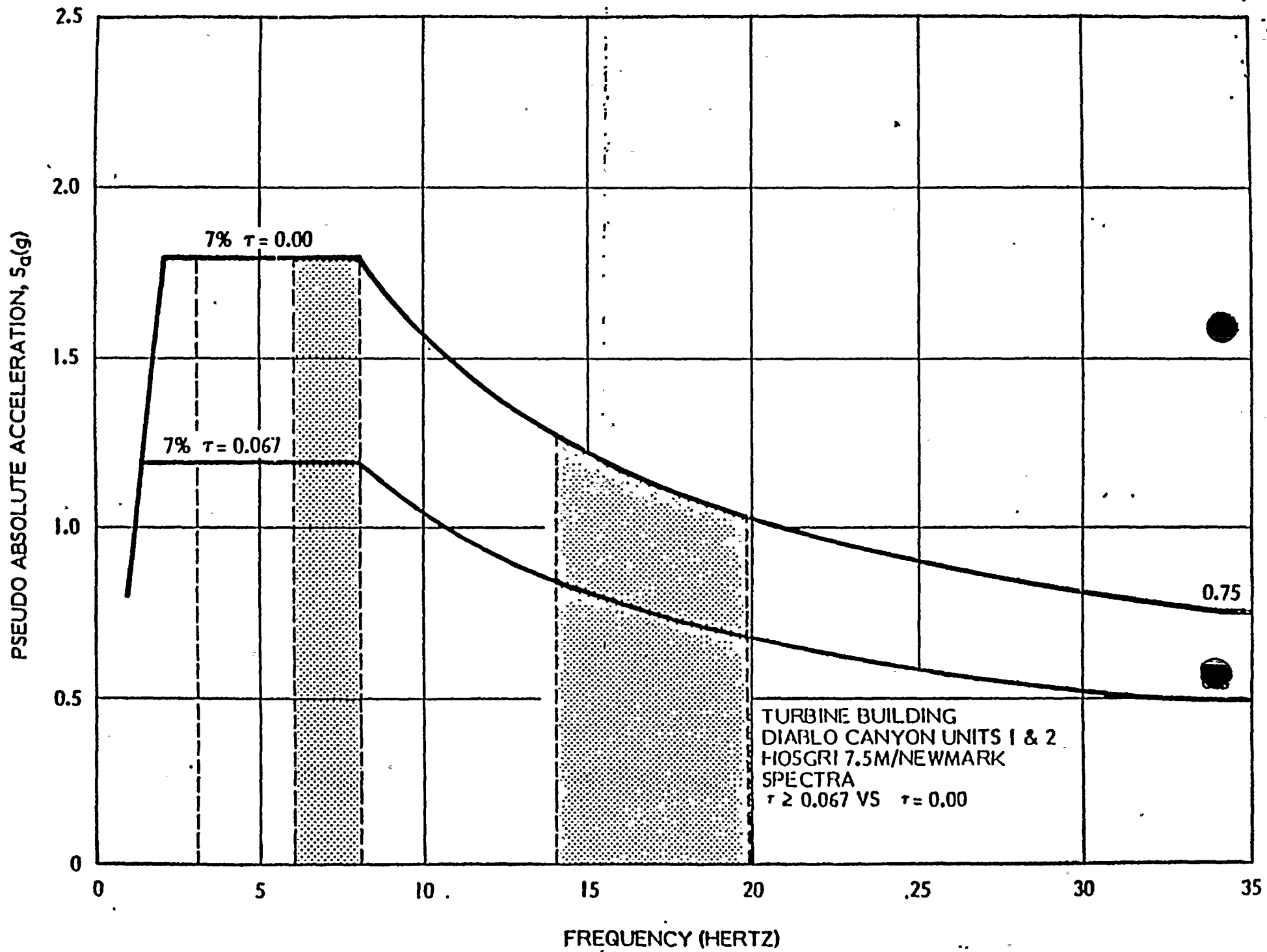


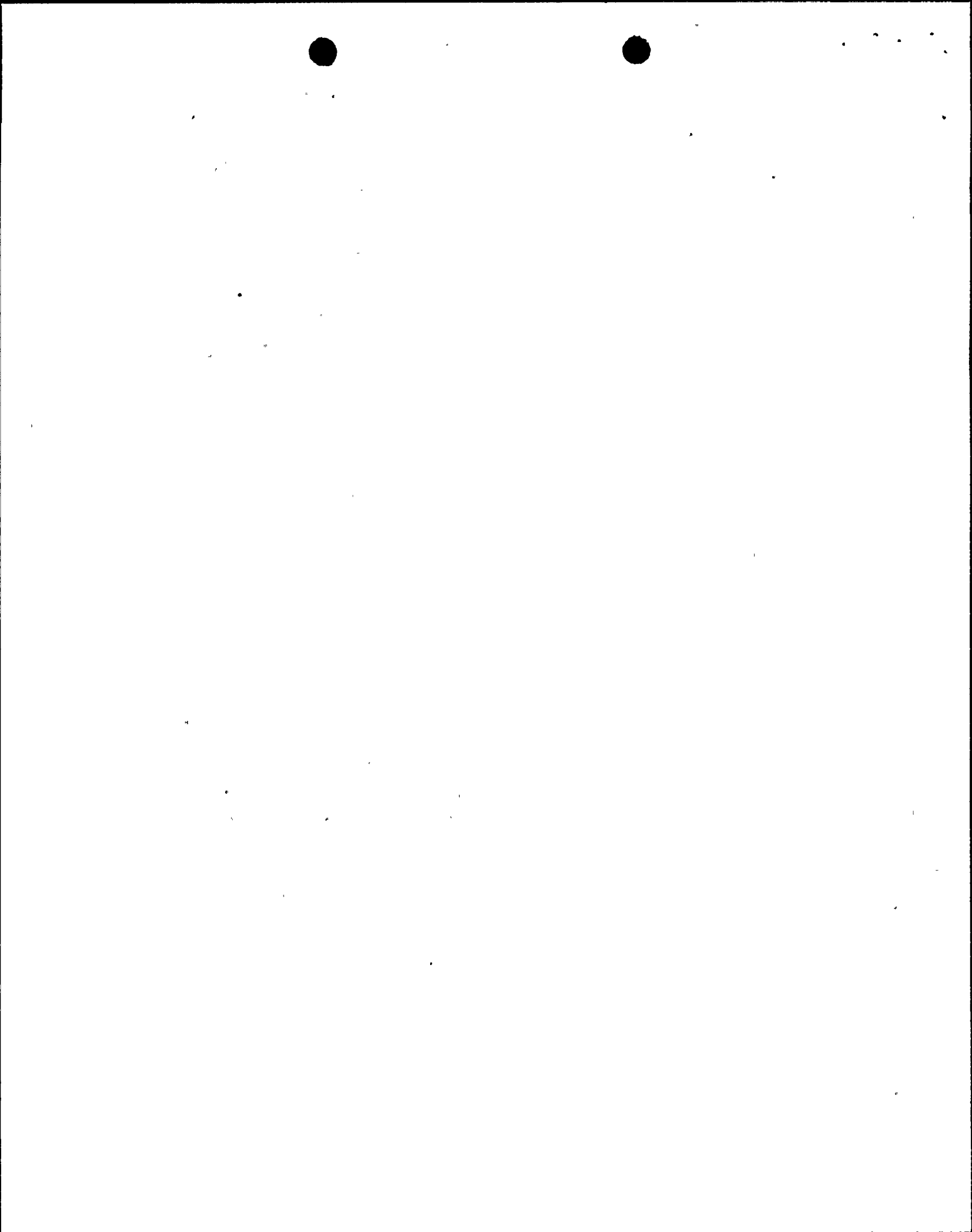


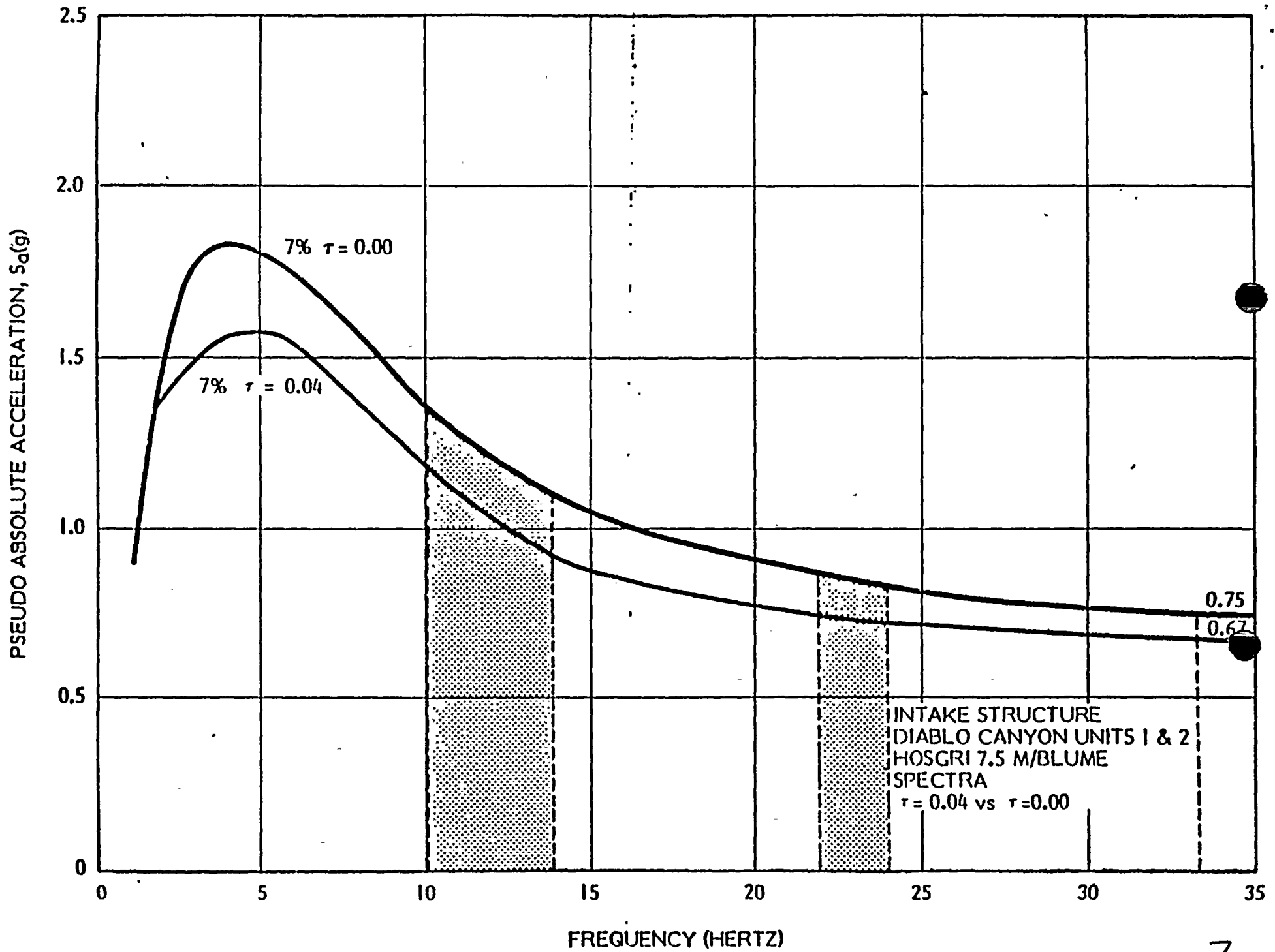


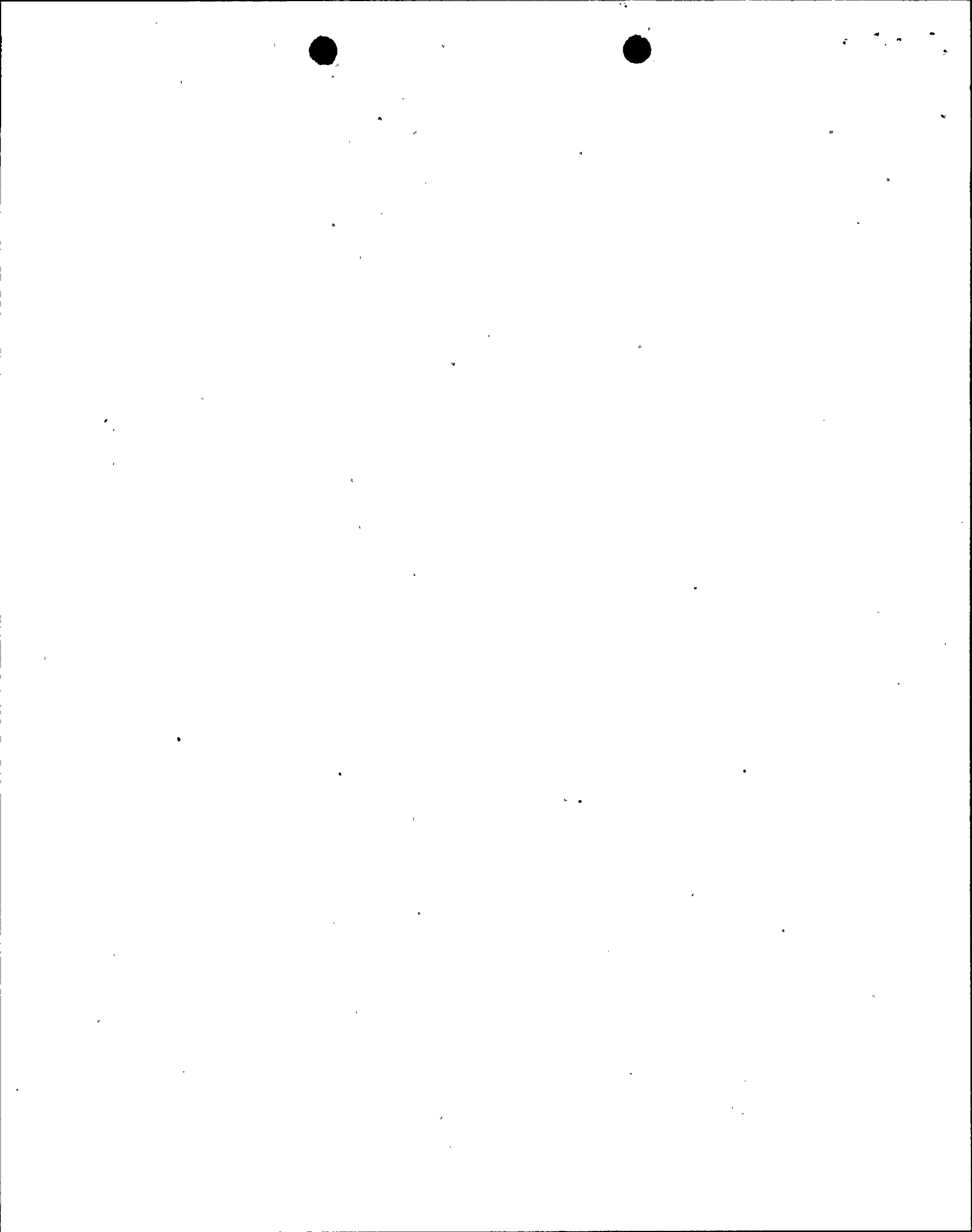


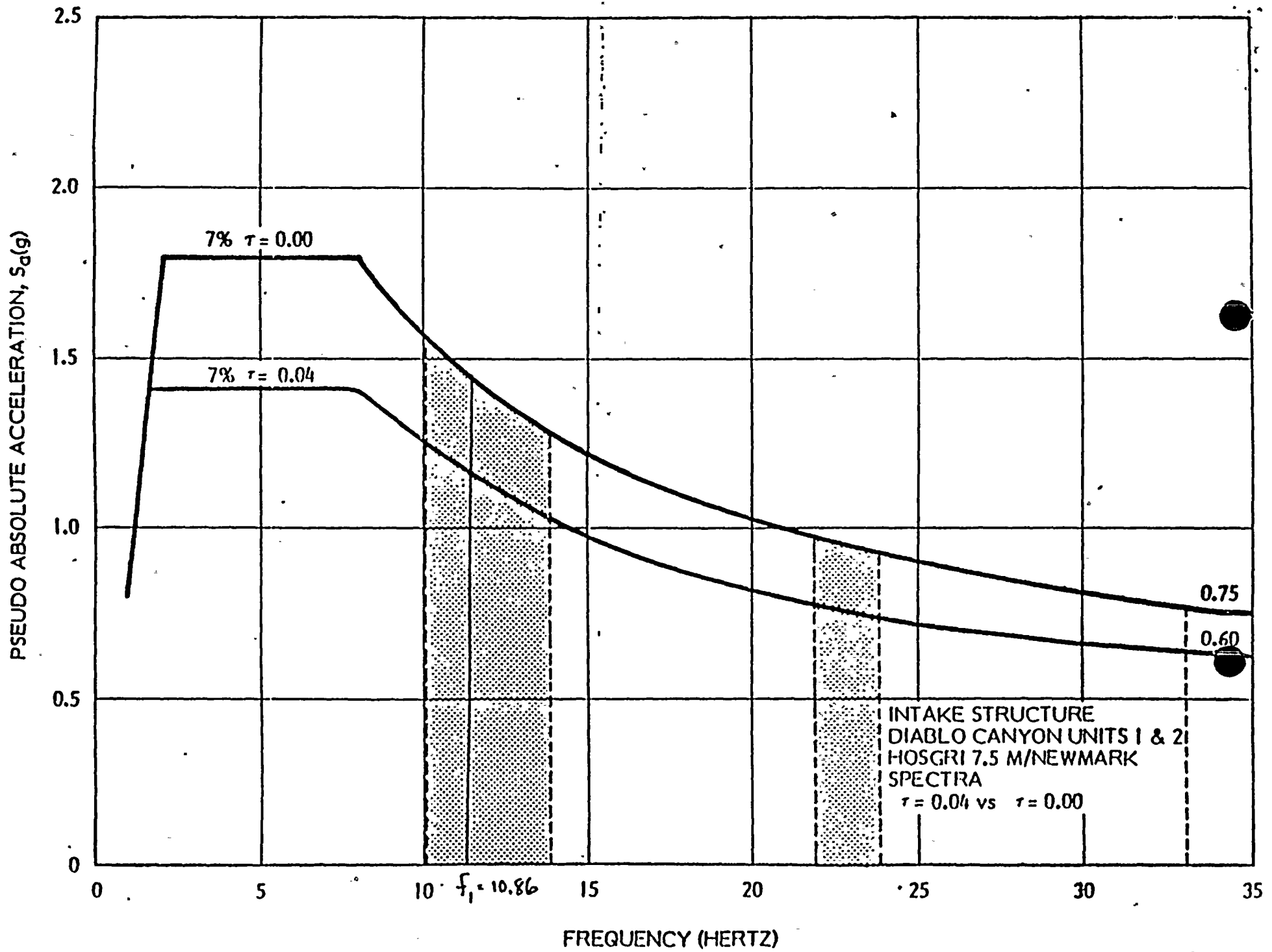












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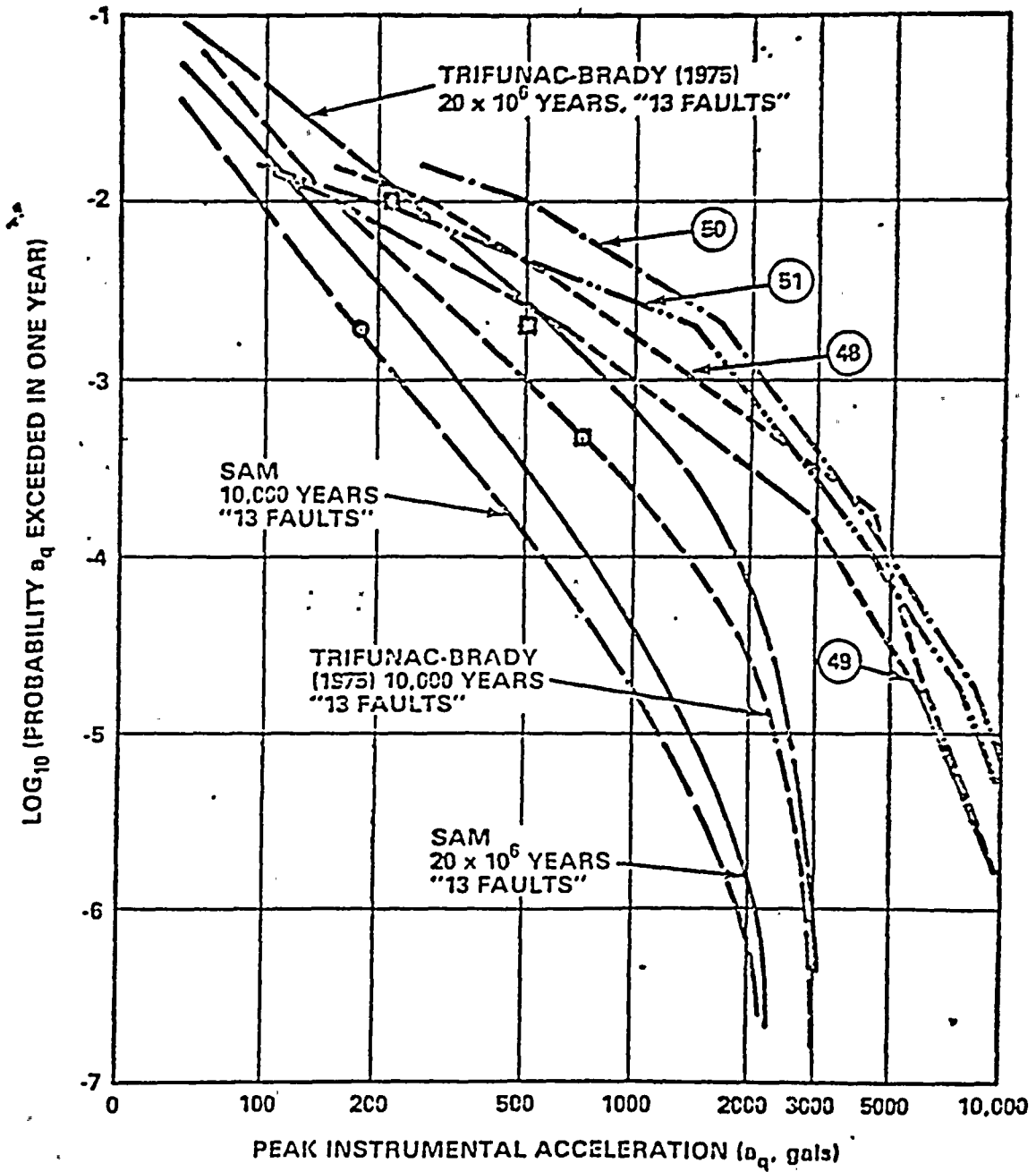


Figure 2
 COMPARISON OF ANDERSON-TRIFUNAC AND BLUME RESULTS FOR
 DIABLO CANYON (AFTER BLUME, 1978)

• SELZER AND OTHERS (1978)

□ THENHAUS AND OTHERS (1980)

