MISSISSIPPI POWER & LIGHT COMPANY
Helping Build Mississippi
P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

NUCLEAR PRODUCTION DEPARTMENT

June 11, 1982

U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D.C. 20555

Attention: Mr. Harold R. Denton

Dear Mr. Denton:

SUBJECT: Grand Gulf Nuclear Station
Units 1 and 2
Docket Nos. 50-416 and 50-417
File 0270/5007/M-001.0
Variable Pool Swell Response Spectra
AECM-82/272

At a meeting with the NRC Equipment Qualification Branch on June 2, 1982, Mississippi Power & Light Company (MP&L) presented the methodology employed to develop Acceleration Response Spectra (ARS) to be used for design and qualification of piping, equipment, and components for the effects of pool swell impact loads on the HCU floor. The presentation explained the existing design basis (GESSAR II, App. 3B load definition) and also explained how ARS were developed to account for variable froth impact pulse durations and variable froth impact pressure amplitudes on various targets at the HCU floor elevation.

ARS developed for variable pool swell impact were compared with ARS developed for an envelope of all LOCA hydrodynamic loads (DBA envelope). This comparison showed variable pool swell ARS exceeding DBA ARS at varying frequencies for radial and vertical response. It was explained that the final DBA envelope would encompass all exceedences as well as the initial design basis ARS for pool swell froth impact.

It was also explained that in order to evaluate GLOBAL response of the containment system to HCU floor froth impact loads, a global average peak impact pressure at the HCU floor was calculated. This peak pressure amplitude was then held constant and varying impulse durations were used in the dynamic analyses to develop ARS.

At this meeting, Mr. G. Bagchi requested a comparison of the design basis pool swell impact ARS (15 psi peak impact pressure, 100 msec impulse duration) with the variable pool swell impact ARS (11.5 psi peak average impact pressure, 100 msec impulse duration). These attached response spectra were presented to Mr. Bagchi on June 7, 1982.

B001

Since the global average impact pressure of 11.5 psi is based upon an average of 15.0 psi applied to HCU floor concrete, 17.0 psi to HCU floor steel beams, and 0.0 psi to HCU floor grating, NRC requested that response spectra developed for qualification of the HCU units located on HCU floor concrete be amplified 25% based upon the attached response spectra. This is acceptable methodology for determining local effects at the HCU floor level and thus, MP&L agreed to amplify response spectra generated for HCU unit qualification. However, to qualify equipment, piping, and components elsewhere in the containment, the rigidity of the containment and drywell structures will distribute local effects at the HCU floor into GLOBAL average effects throughout the containment. Therefore, it is appropriate to use ARS based upon HCU floor global average impact pressures for qualification of piping, equipment and components away from the HCU units. This approach was agreed to for final design qualification.

If you have any questions or require further information, please contact this office.

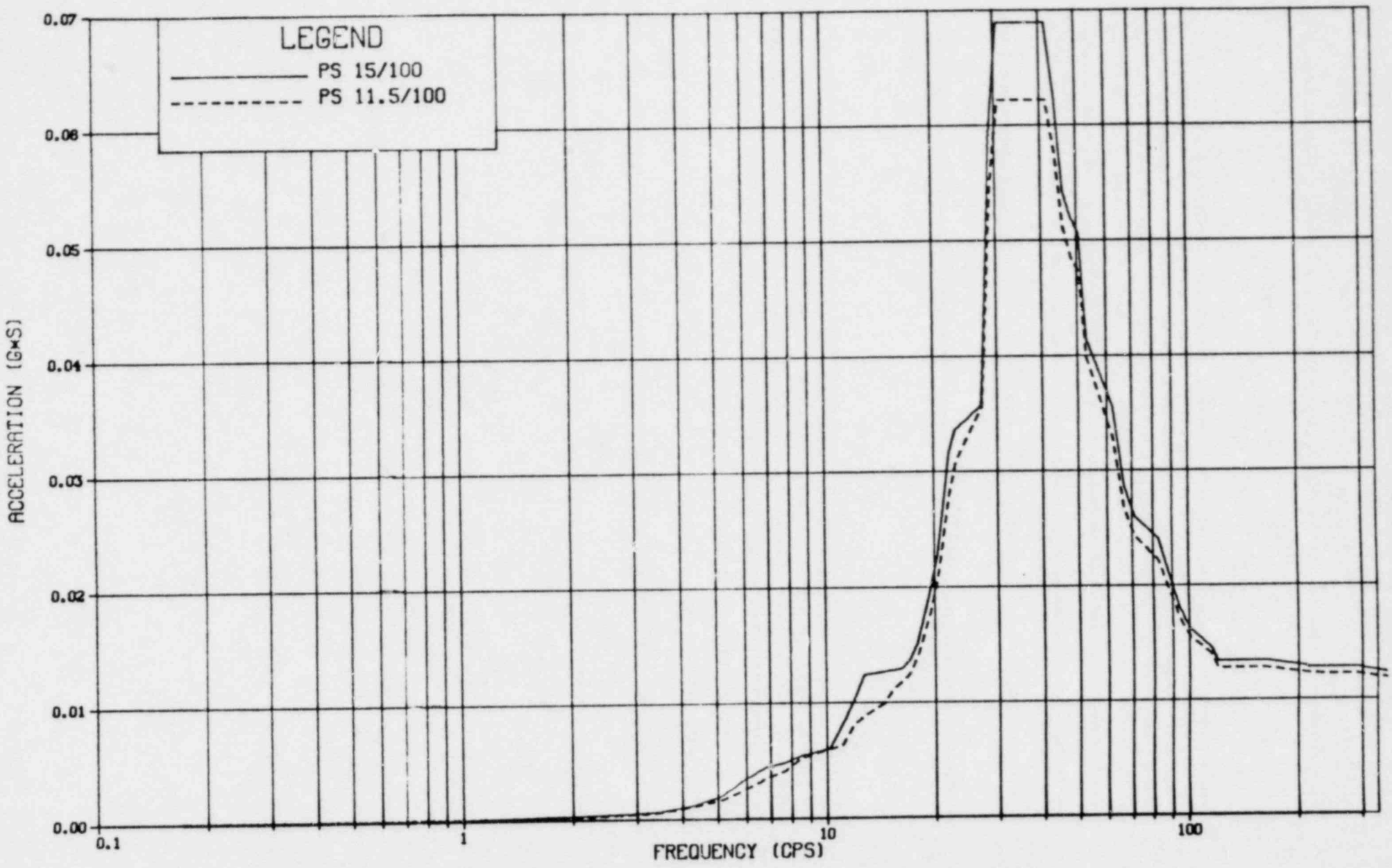
Yours truly,

L. F. Dale
Manager of Nuclear Services

RLB/DWF/JDR/jgt
Attachment: Response Spectra Comparison Curves
cc: Mr. G. B. Taylor
Mr. R. B. McGehee
Mr. T. B. Conner

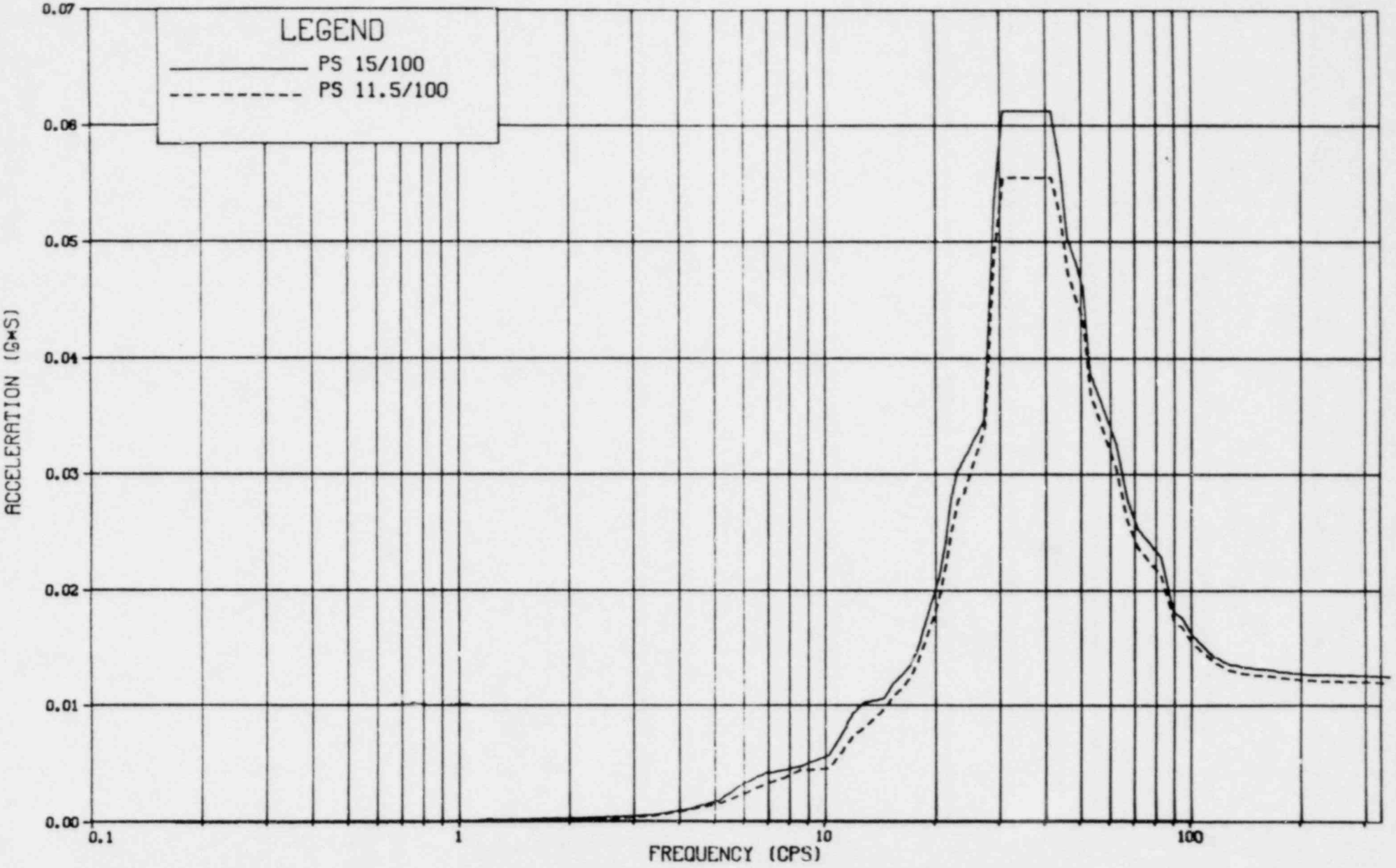
Mr. Richard C. DeYoung, Director
Office of Inspection & Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. J. P. O'Reilly, Regional Administrator
Office of Inspection & Enforcement
U.S. Nuclear Regulatory Commission
Region II
101 Marietta St. N.W., Suite 3100
Atlanta, Georgia 30303



SPECTRA NODE30 DRYWELL EL.147.58 RADIAL
LOCA POOL SWELL DAMPING- 1.000

RESPONSE SPECTRA COMPARISON



SPECTRA NODE30 DRYWELL EL.147.58 RADIAL
LOCA POOL SWELL DAMPING- 2.000

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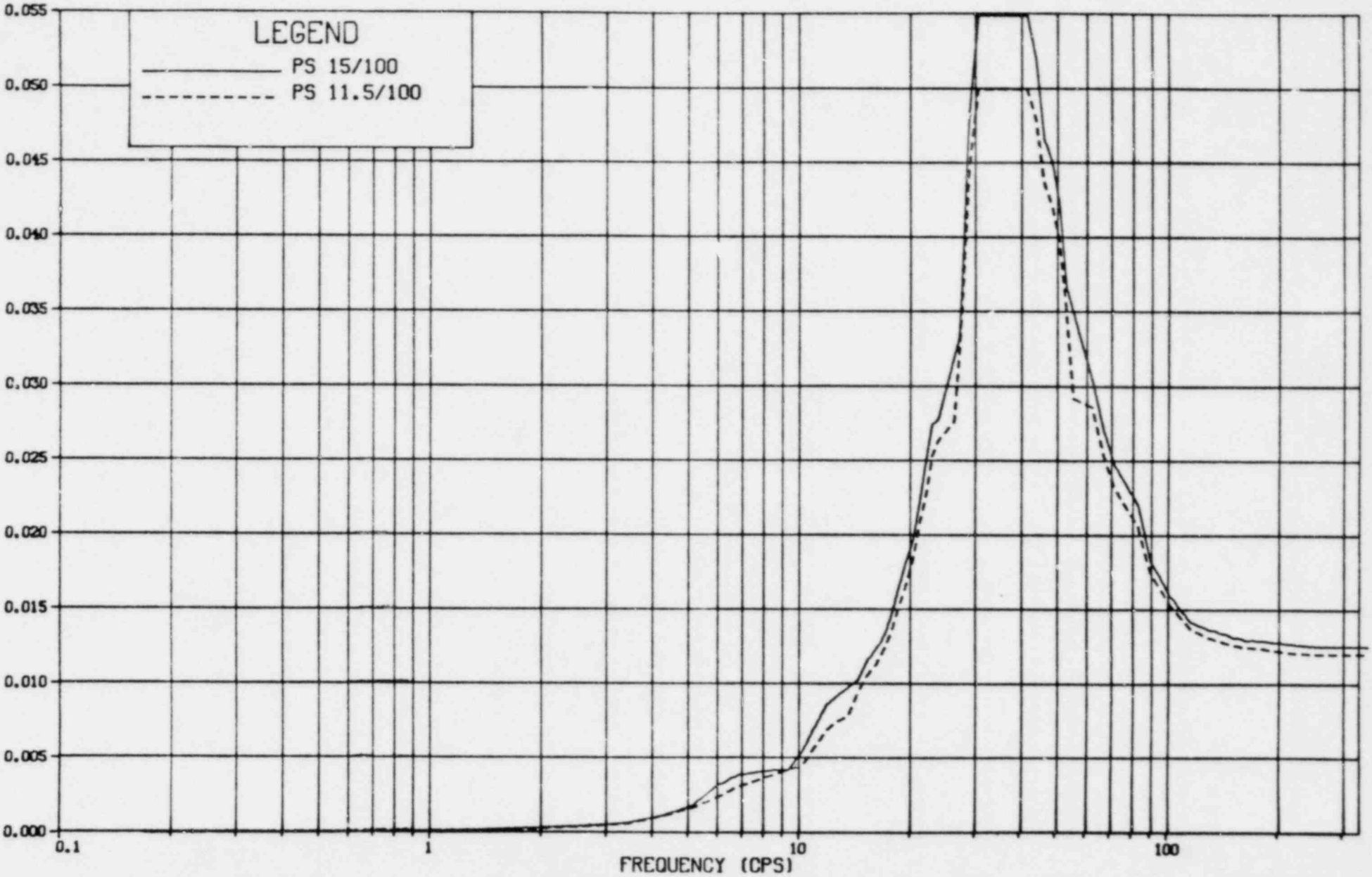

SPECTRA NODE30 DRYWELL EL.147.58 RADIAL
LOCA POOL SWELL DAMPING- 3.000

PLOT 39 20.39.59 THUR 3 JUN, 1982 JOB-ROGDEST , CYBERNET SCOPE3.4 DISSPLA VER 8.2

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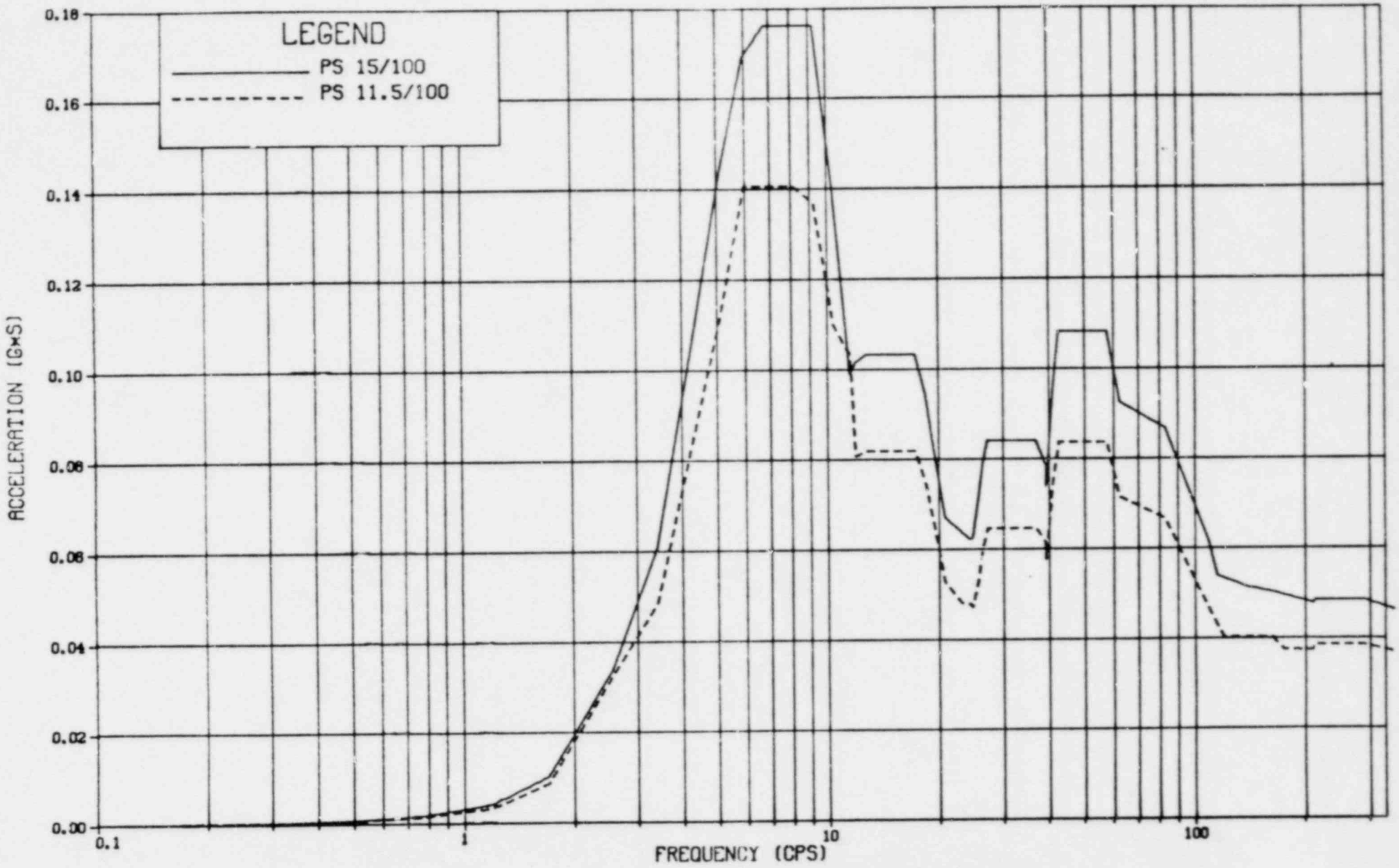
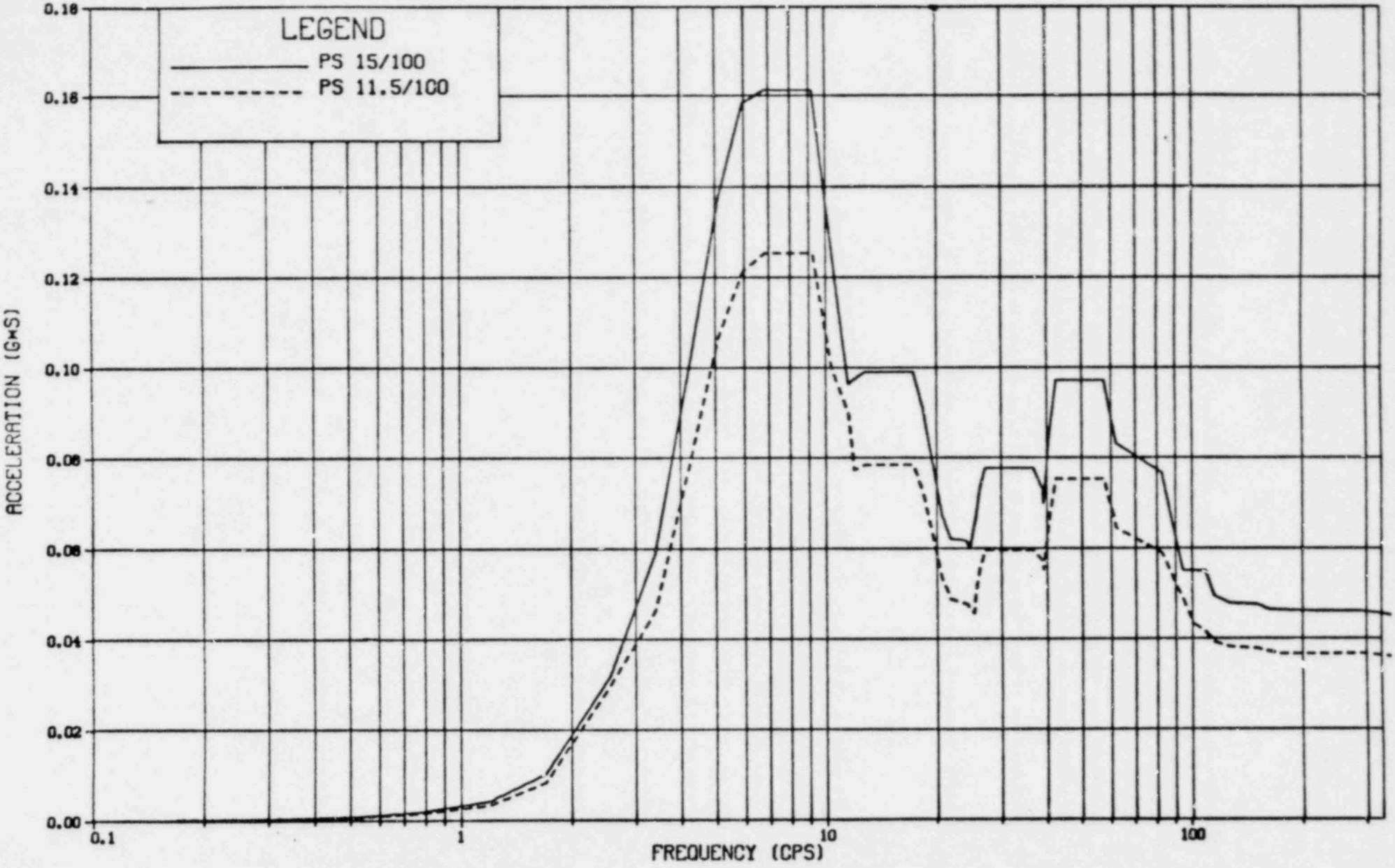


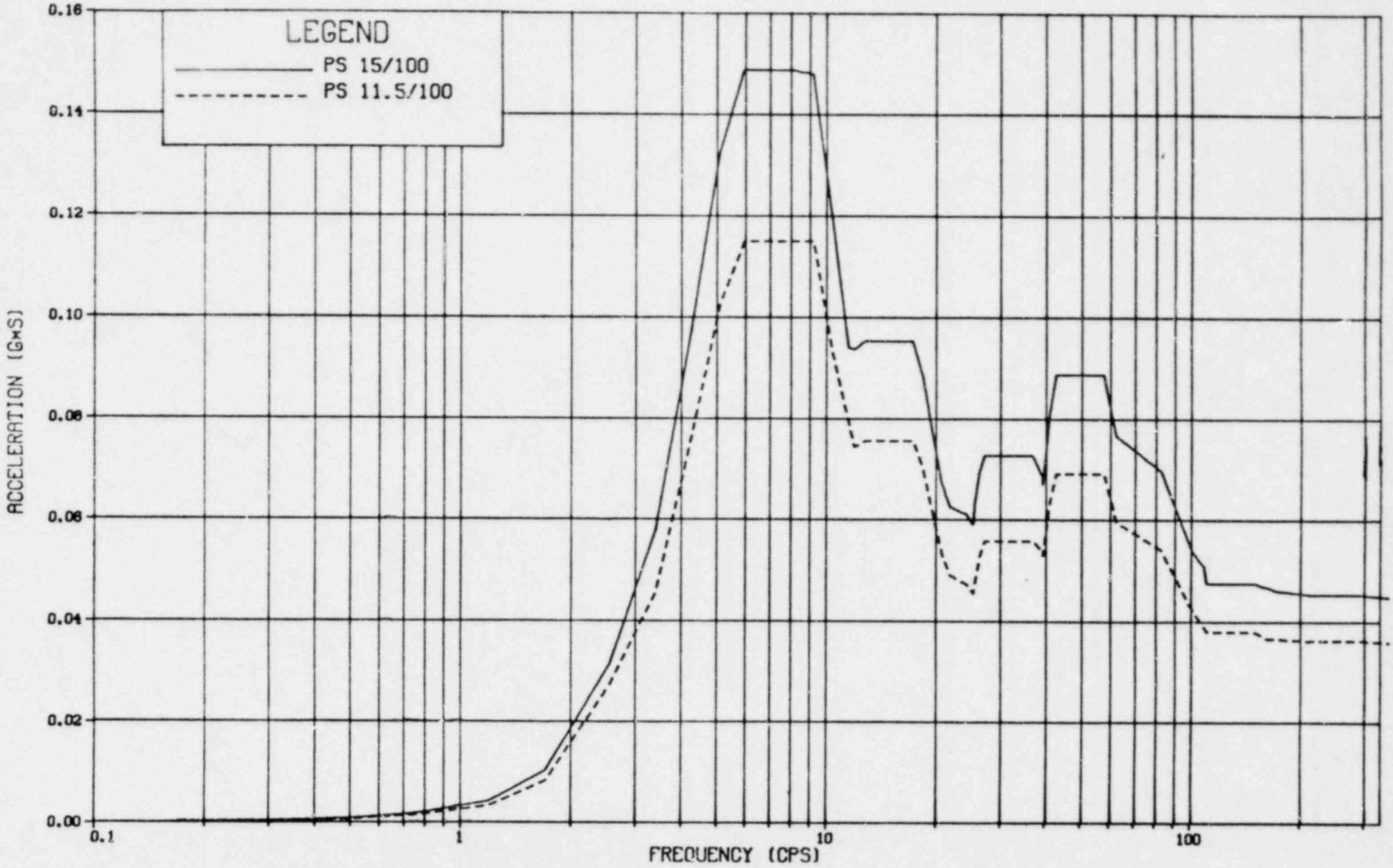
SPECTRA NODE30 DRYWELL EL.147.58 VERTCL
LUCA POOL SWELL DAMPING- 1.000

RESPONSE SPECTRA COMPARISON



SPECTRA NODE30 DRYWELL EL.147.58 VERTCL
LOCA POOL SWELL DAMPING- 2.000

RESPONSE SPECTRA COMPARISON



SPECTRA NODE30 DRYWELL EL.147.58 VERTCL
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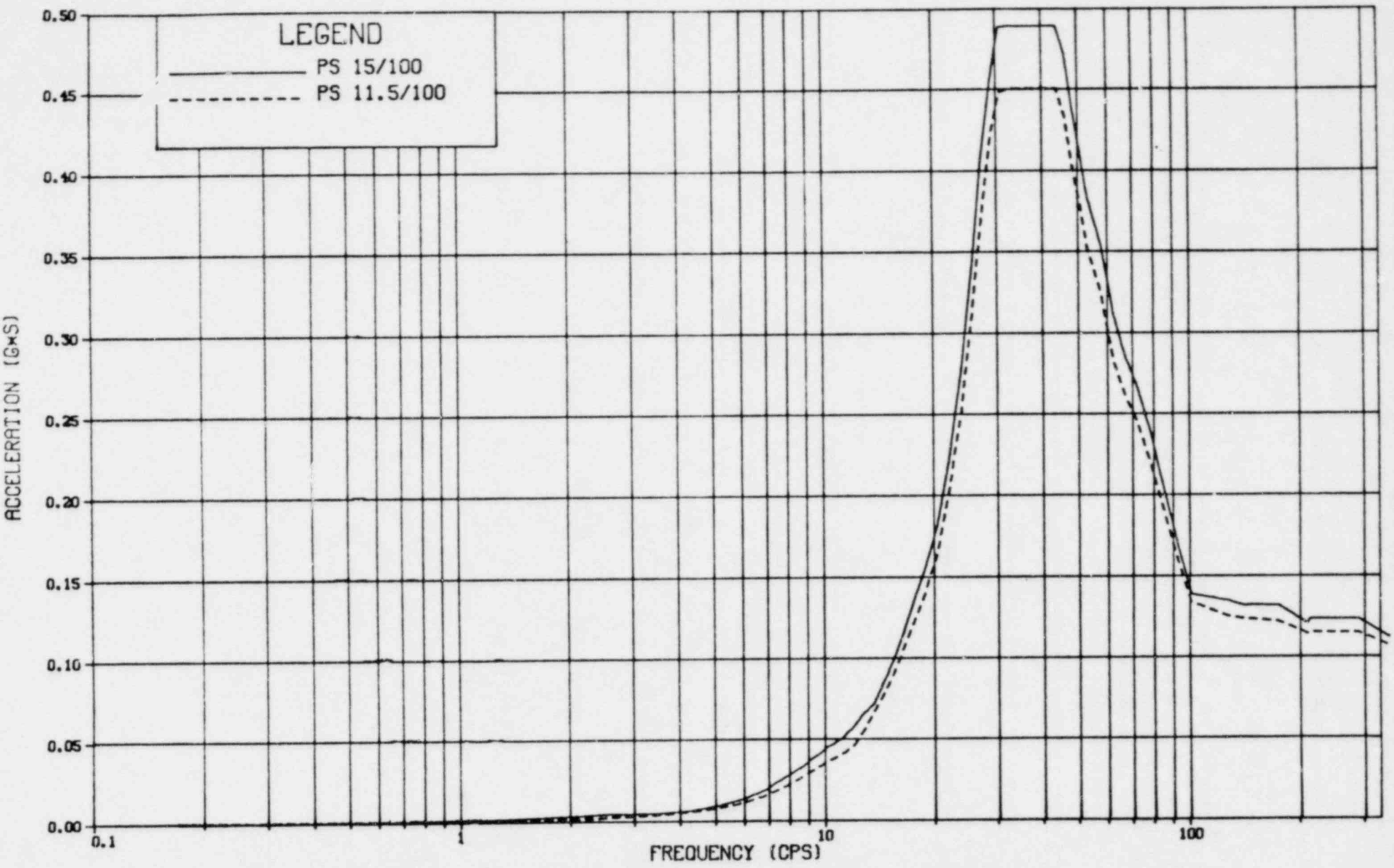
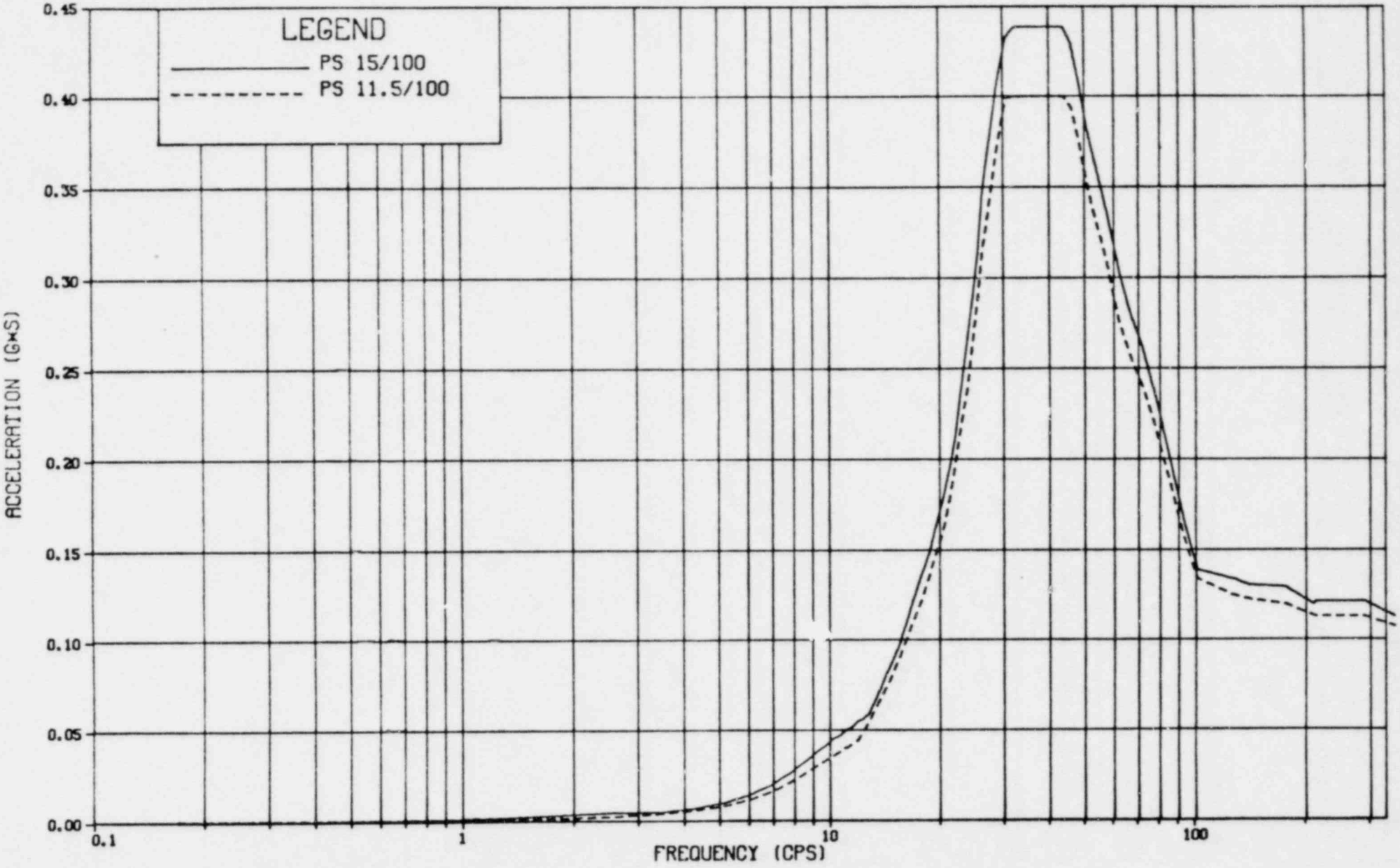
RESPONSE SPECTRA COMPARISON



SPECTRA NODE48 DRYWELL EL.120.83 RADIAL
LOCA POOL SWELL DAMPING- 1.000

RESPONSE SPECTRA COMPARISON



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LOCA POOL SWELL DAMPING- 2.000

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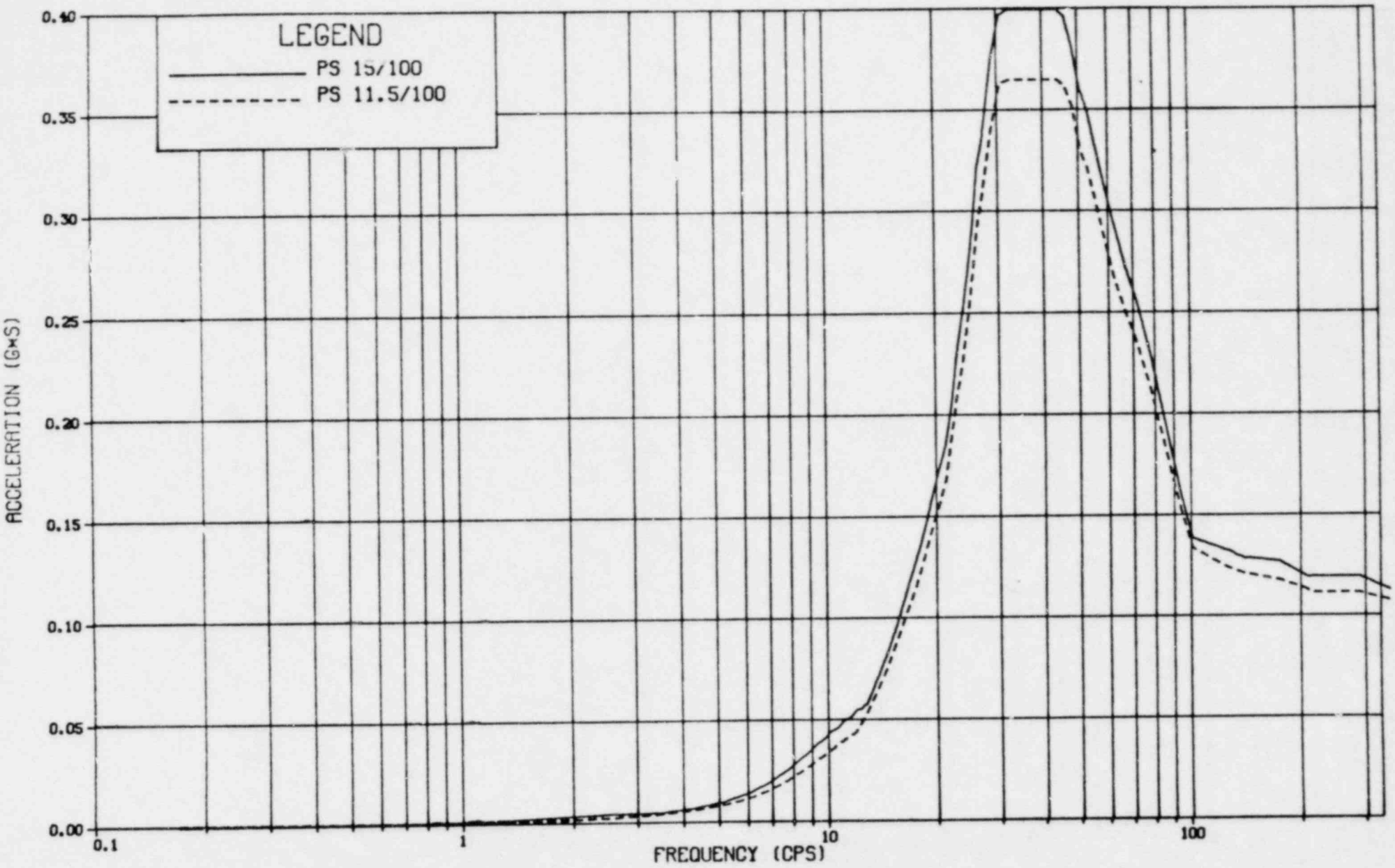
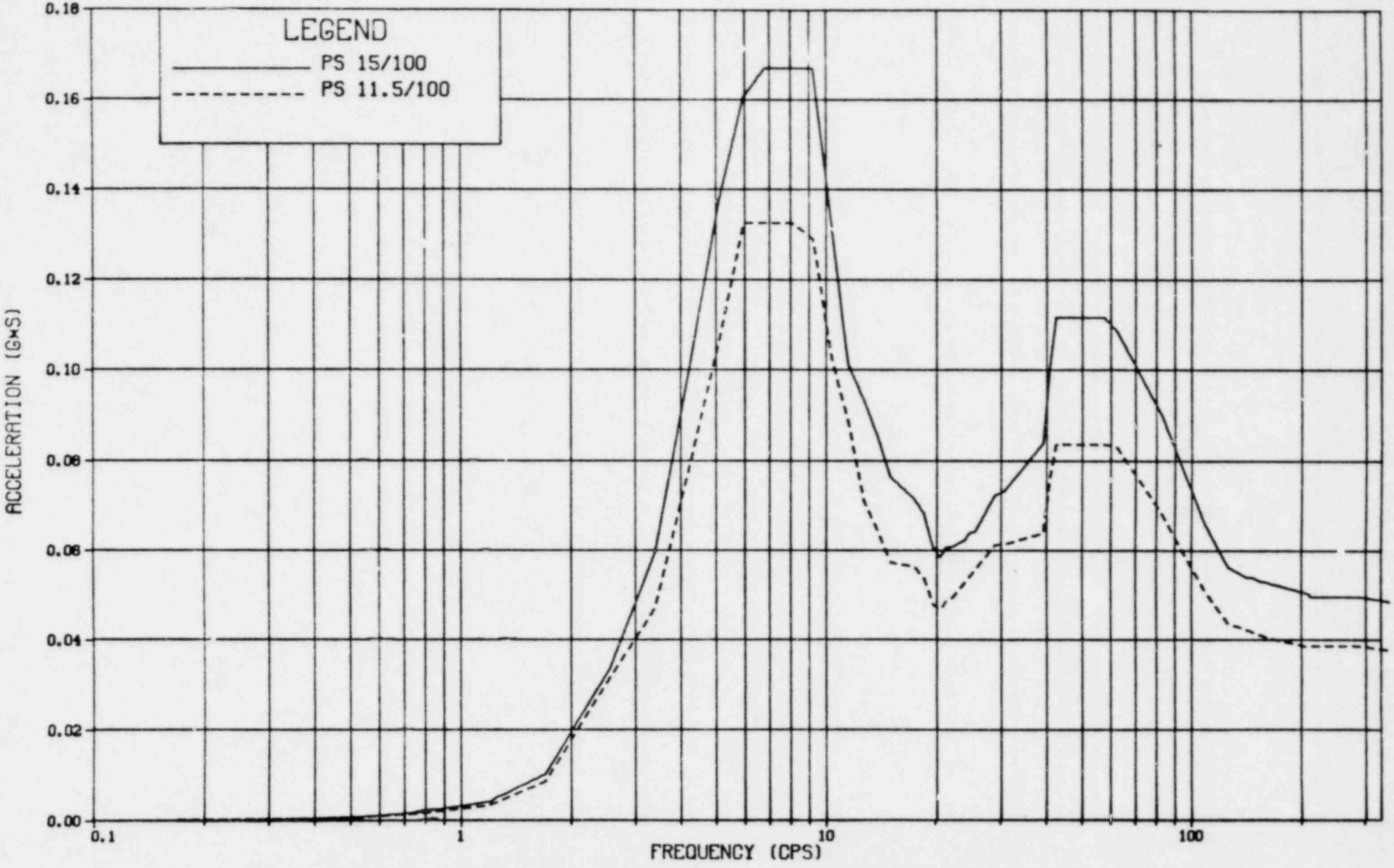


SPECTRA NODE48 DRYWELL EL.120.83 RADIAL
LOCA POOL SWELL DAMPING- 3.000

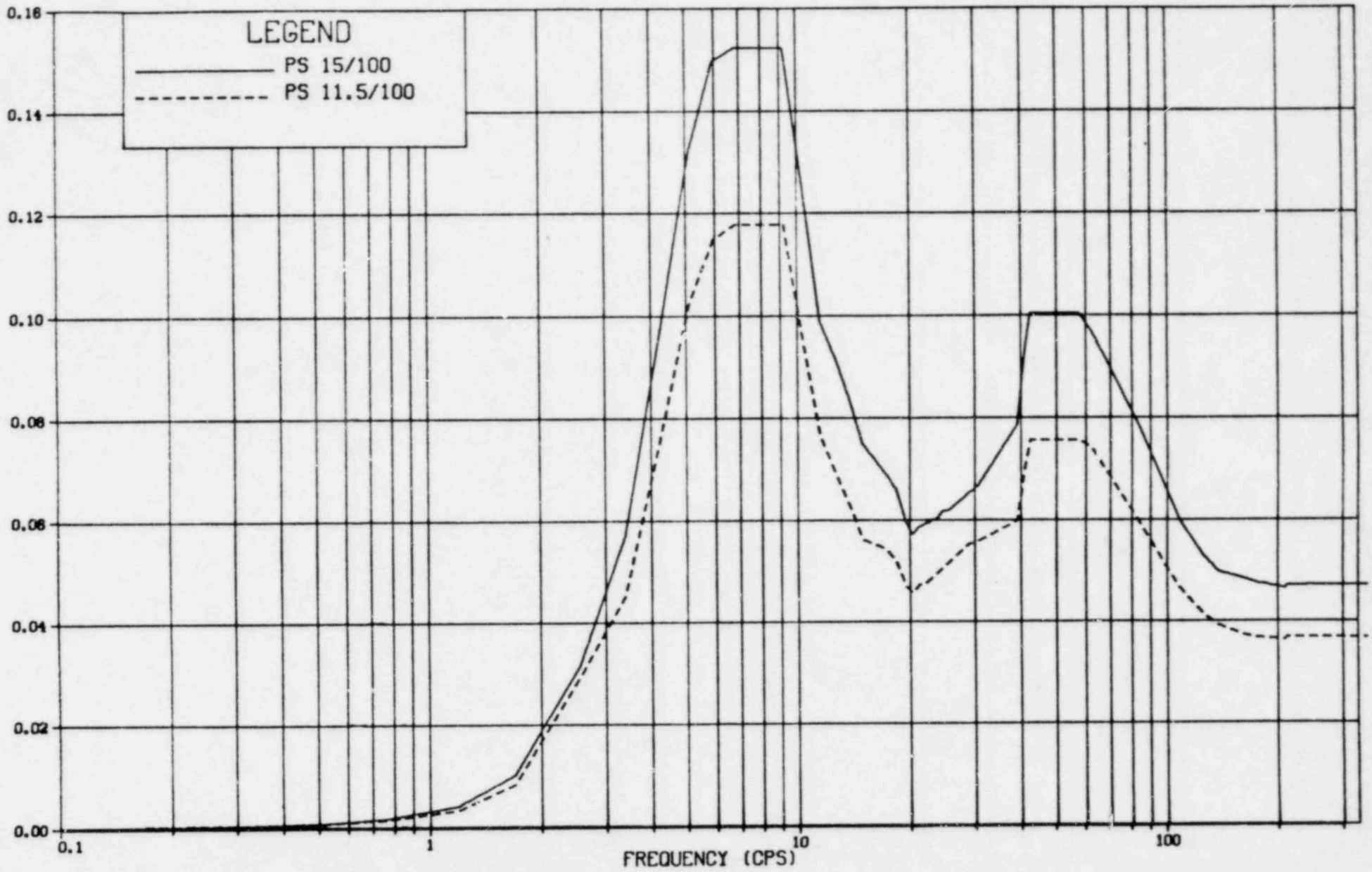
RESPONSE SPECTRA COMPARISON



SPECTRA NODE48 DRYWELL EL.120.83 VERTCL
LOCA POOL SWELL DAMPING- 1.000

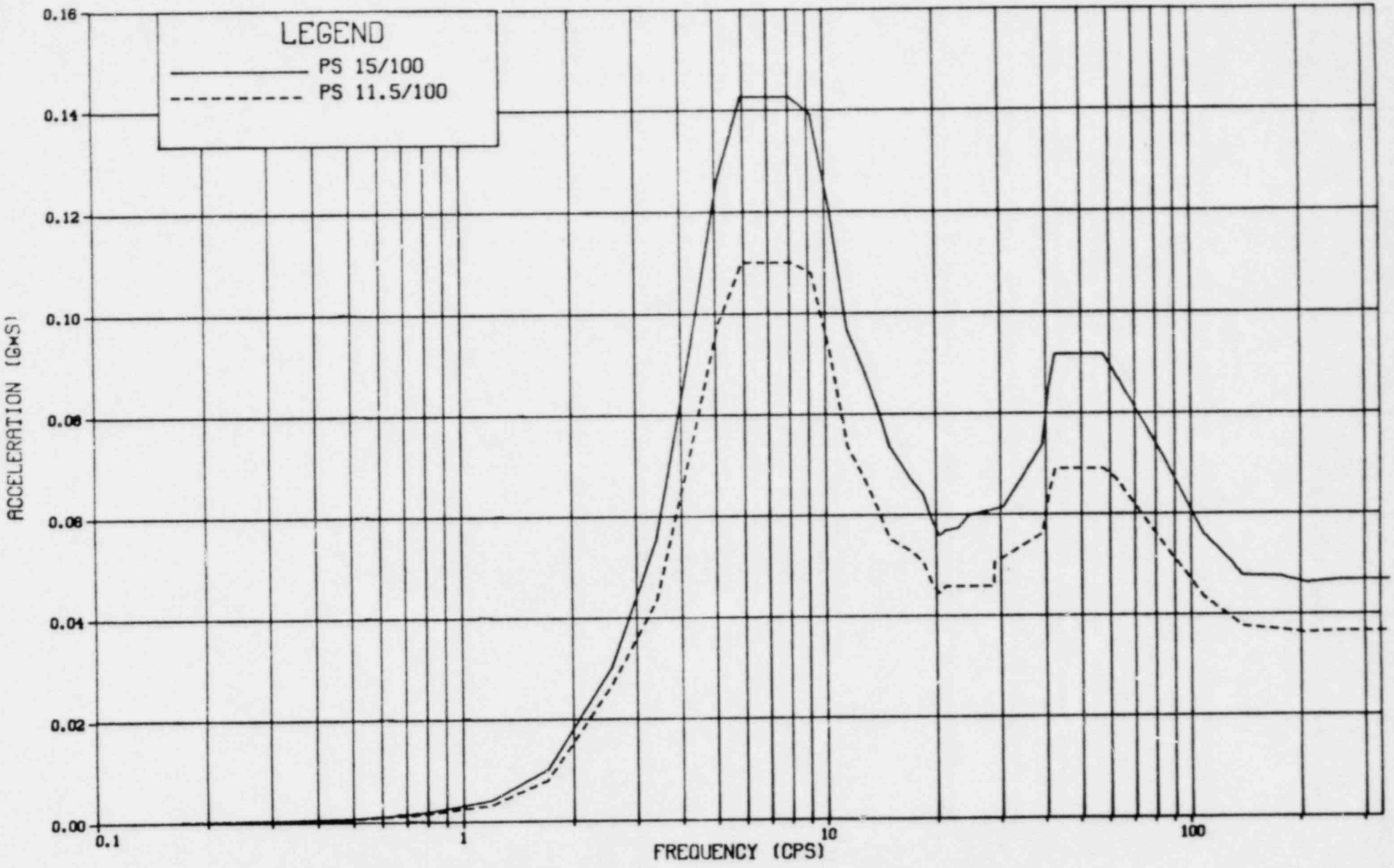
JOT 100 20.44.52 THUR 3 JUN, 1982 JOB-ROOCESY , CYBERNET SOOPE3.4 DISSPLA VER 8.2

RESPONSE SPECTRA COMPARISON



SPECTRA NODE48 DRYWELL EL.120.83 VERTCL
LOCA POOL SWELL DAMPING- 2.000

RESPONSE SPECTRA COMPARISON



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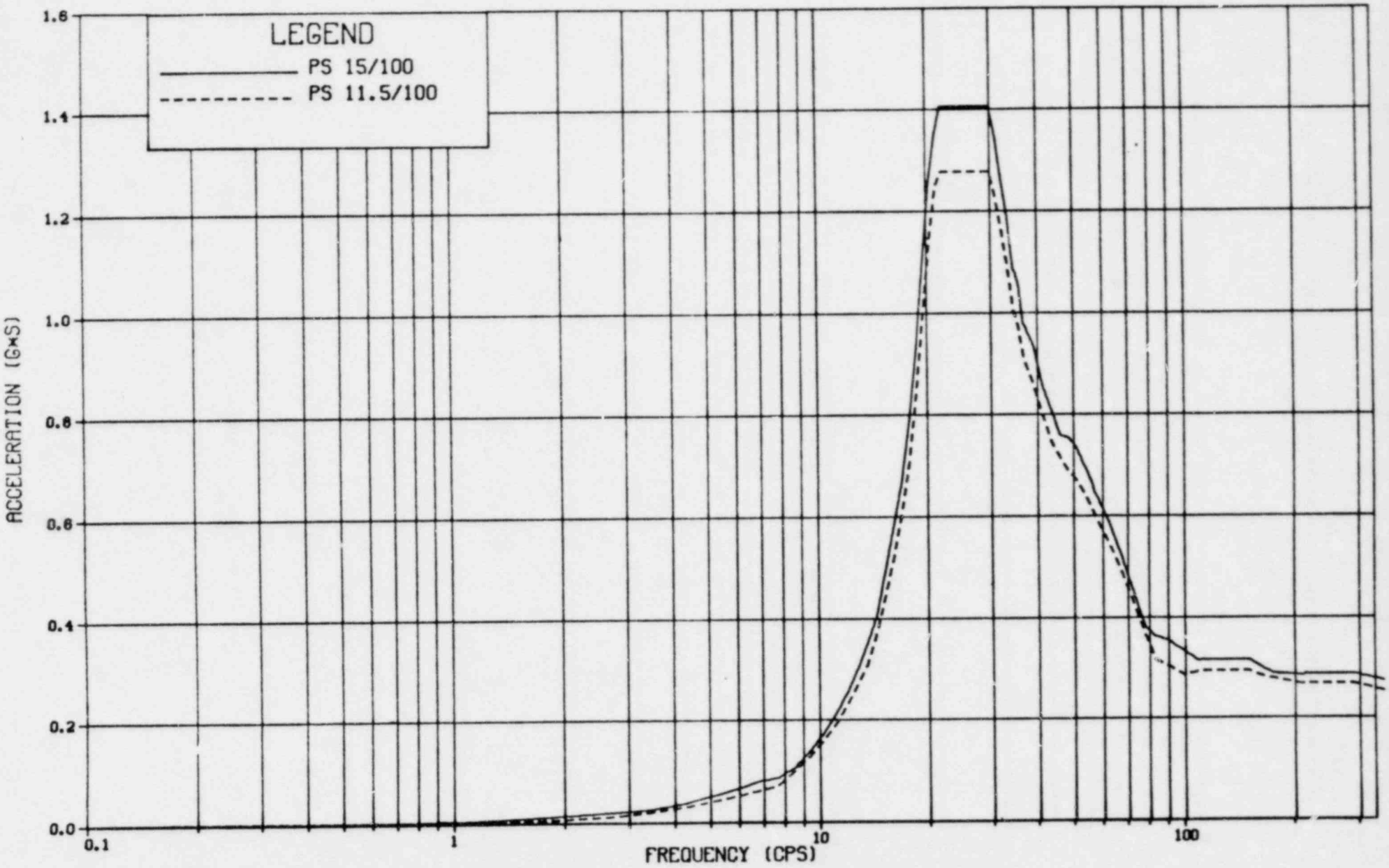
LOCA POOL SWELL DAMPING- 3.000

RESPONSE SPECTRA COMPARISON



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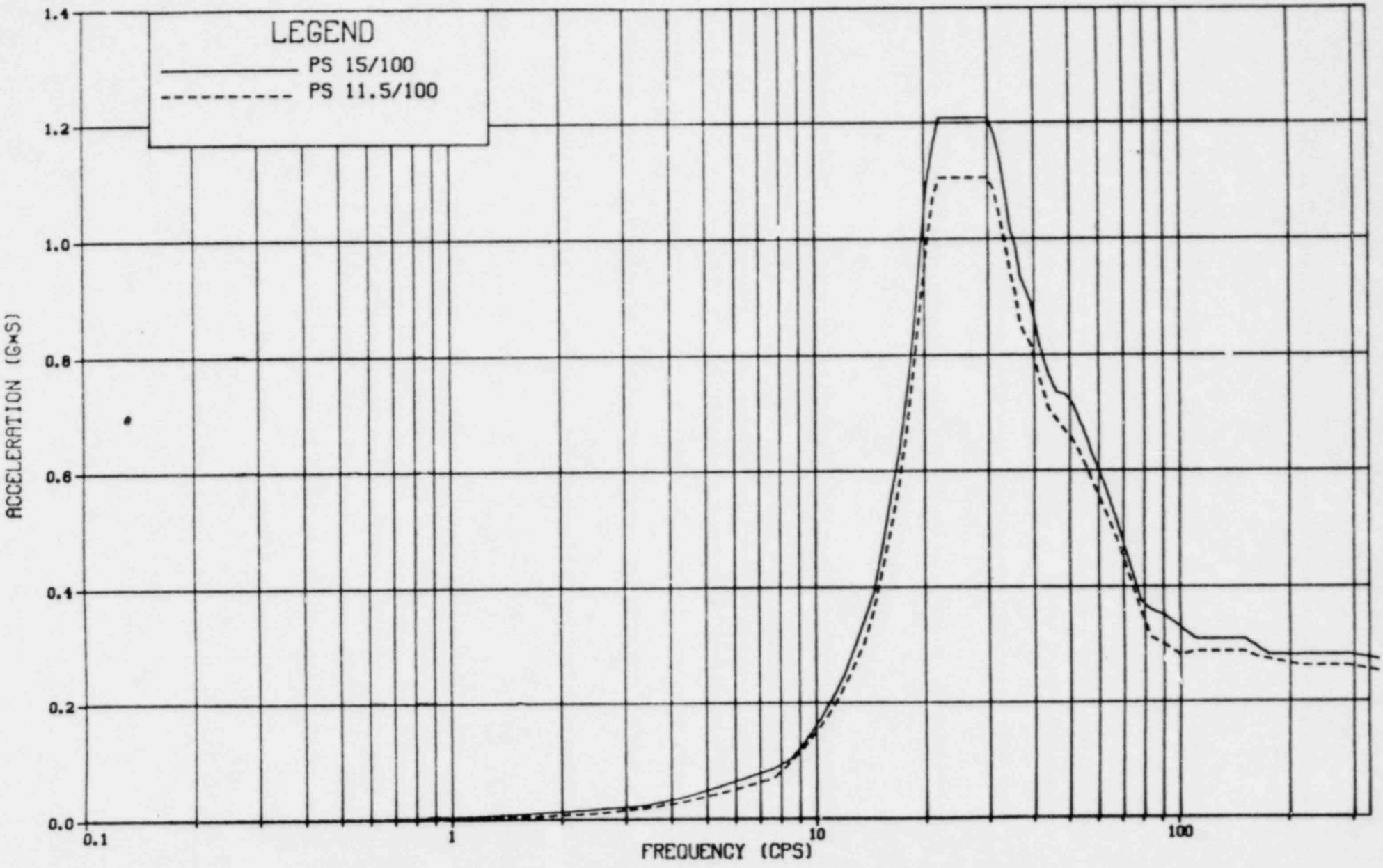
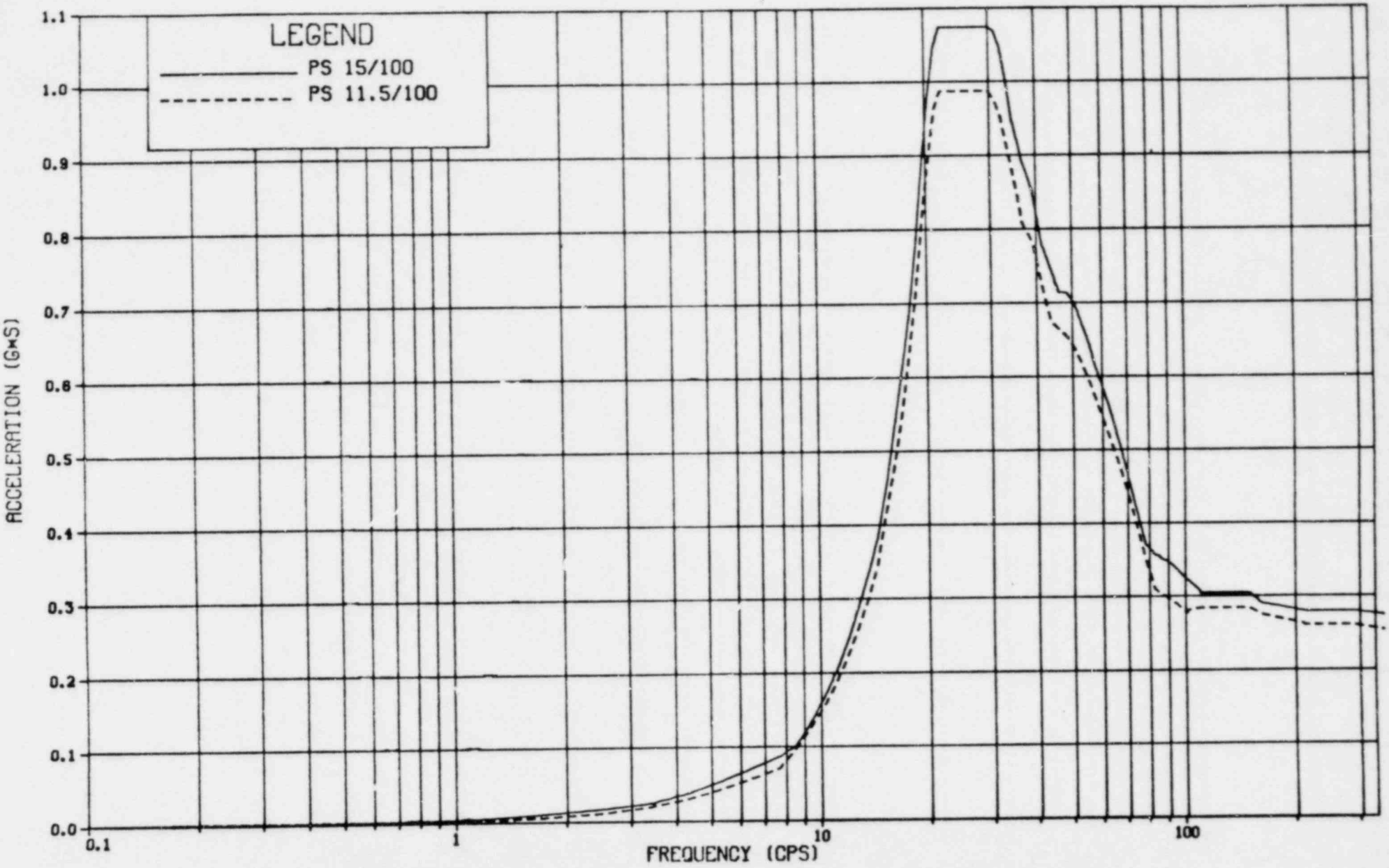
LOCA POOL SWELL DAMPING- 1.000

RESPONSE SPECTRA COMPARISON



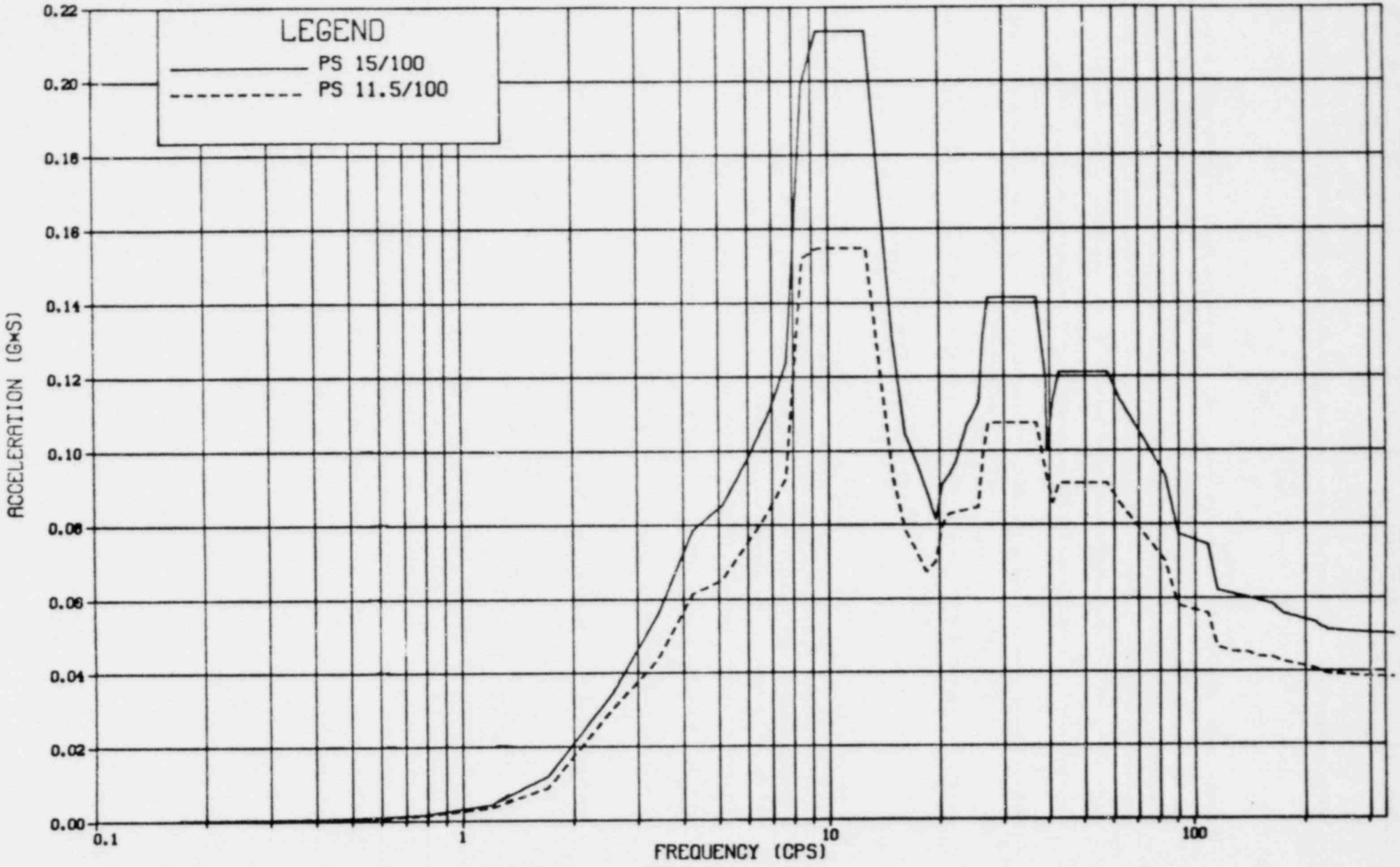
SPECTRA NODE287 CONTMNT EL.120.83 RADIAL
LOCA POOL SWELL DAMPING- 2.000

RESPONSE SPECTRA COMPARISON



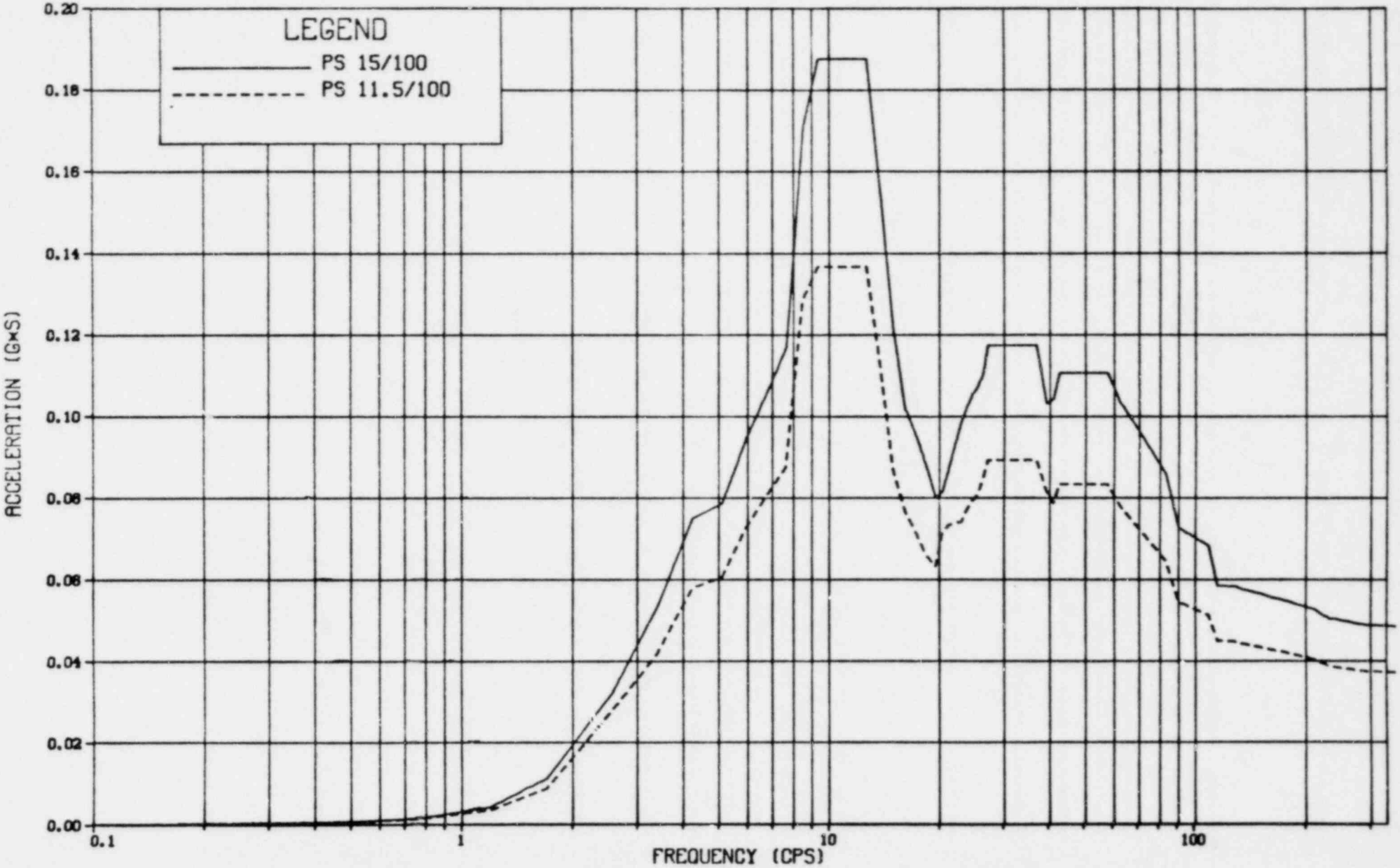
SPECTRA NODE287 CONTMNT EL.120.83 RADIAL
LOCA POOL SWELL DAMPING- 3.000

RESPONSE SPECTRA COMPARISON



SPECTRA NODE287 CONTMNT EL.120.83 VERTCL
LOCA POOL SWELL DAMPING- 1.000

RESPONSE SPECTRA COMPARISON



SPECTRA NODE287 CONTMNT EL.120.83 VERTCL
LOCA POOL SWELL DAMPING- 2.000

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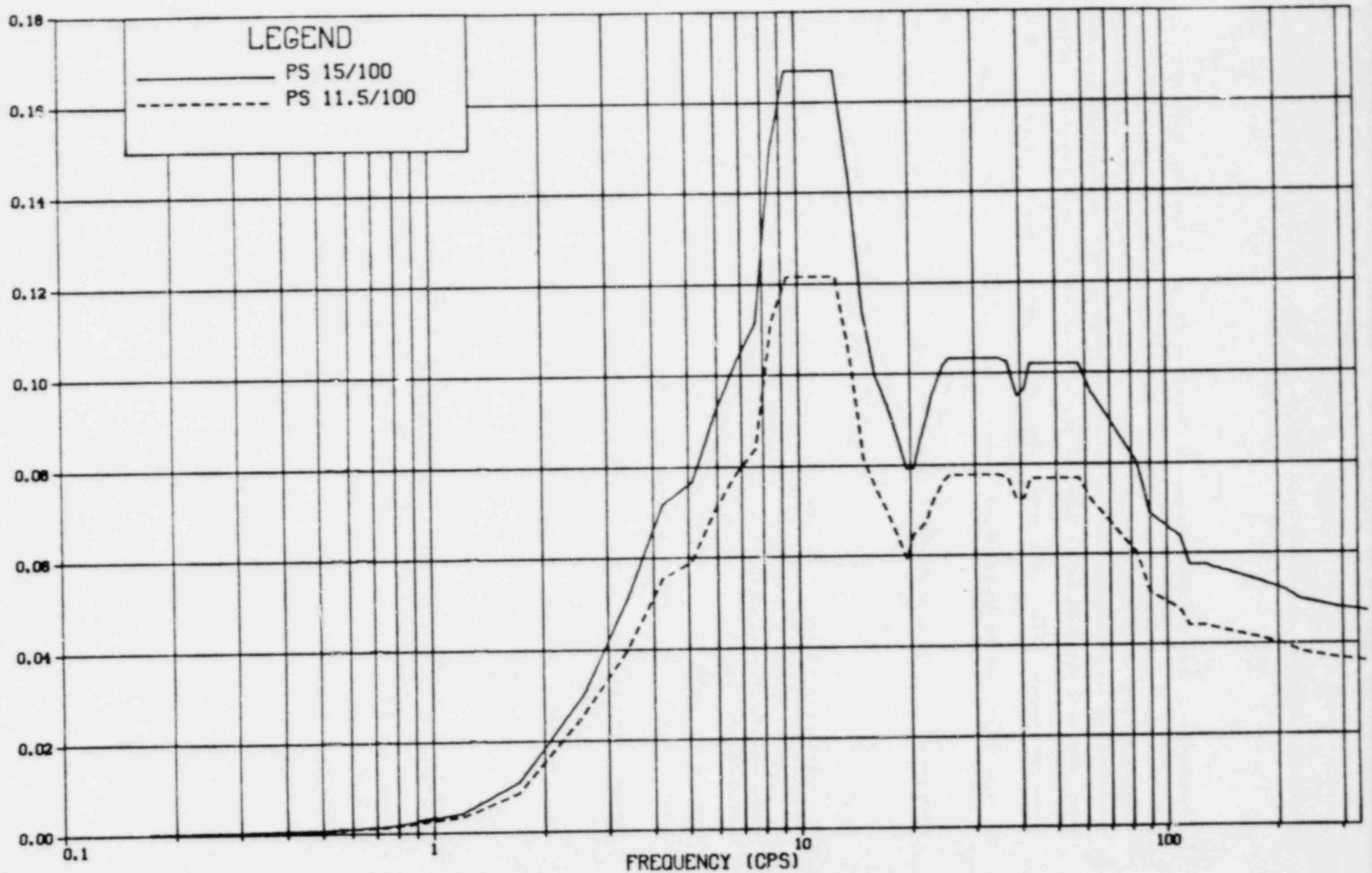

SPECTRA NODE287 CONTMNT EL.120.83 VERTCL
LOCA POOL SWELL DAMPING- 3.000

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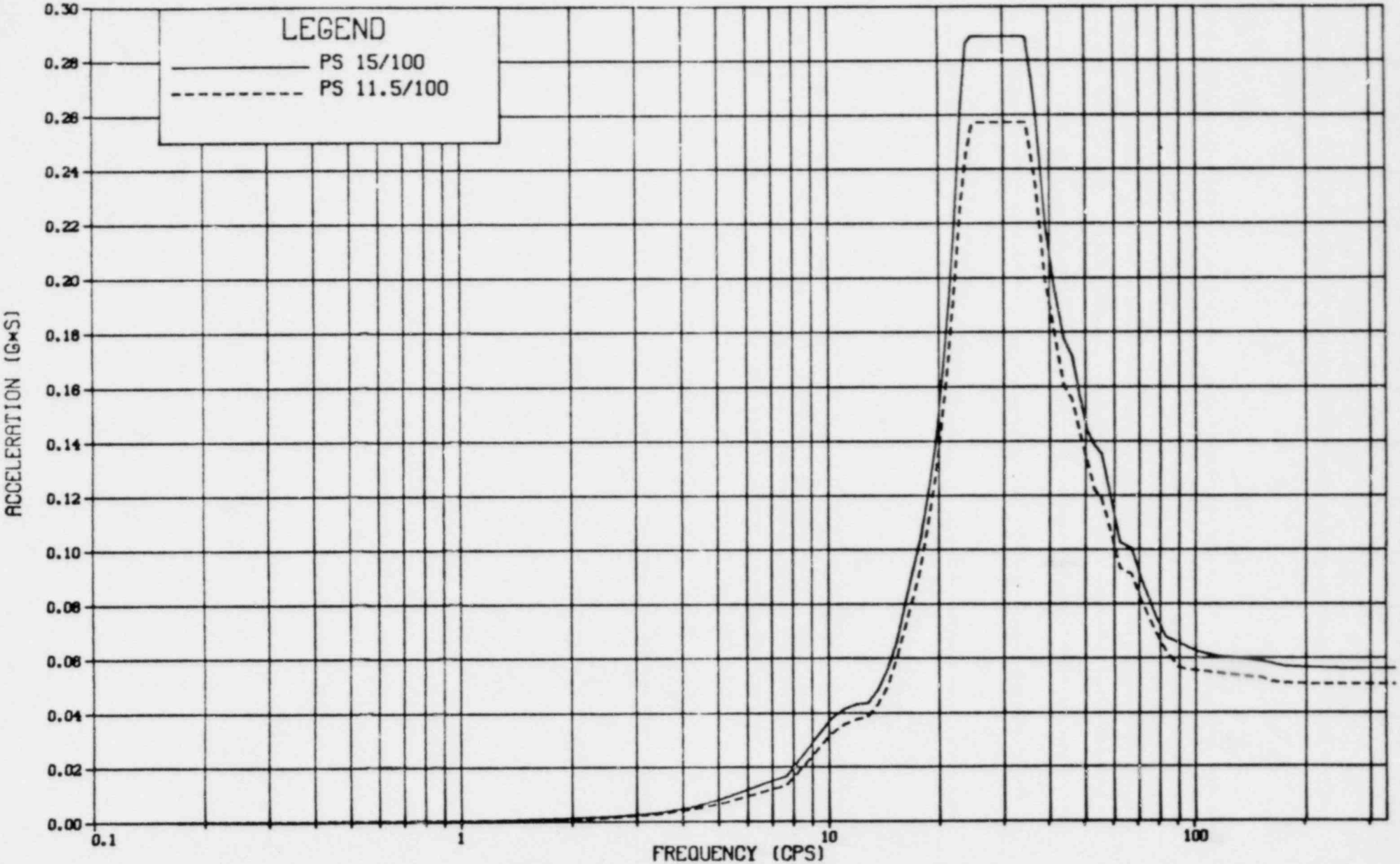
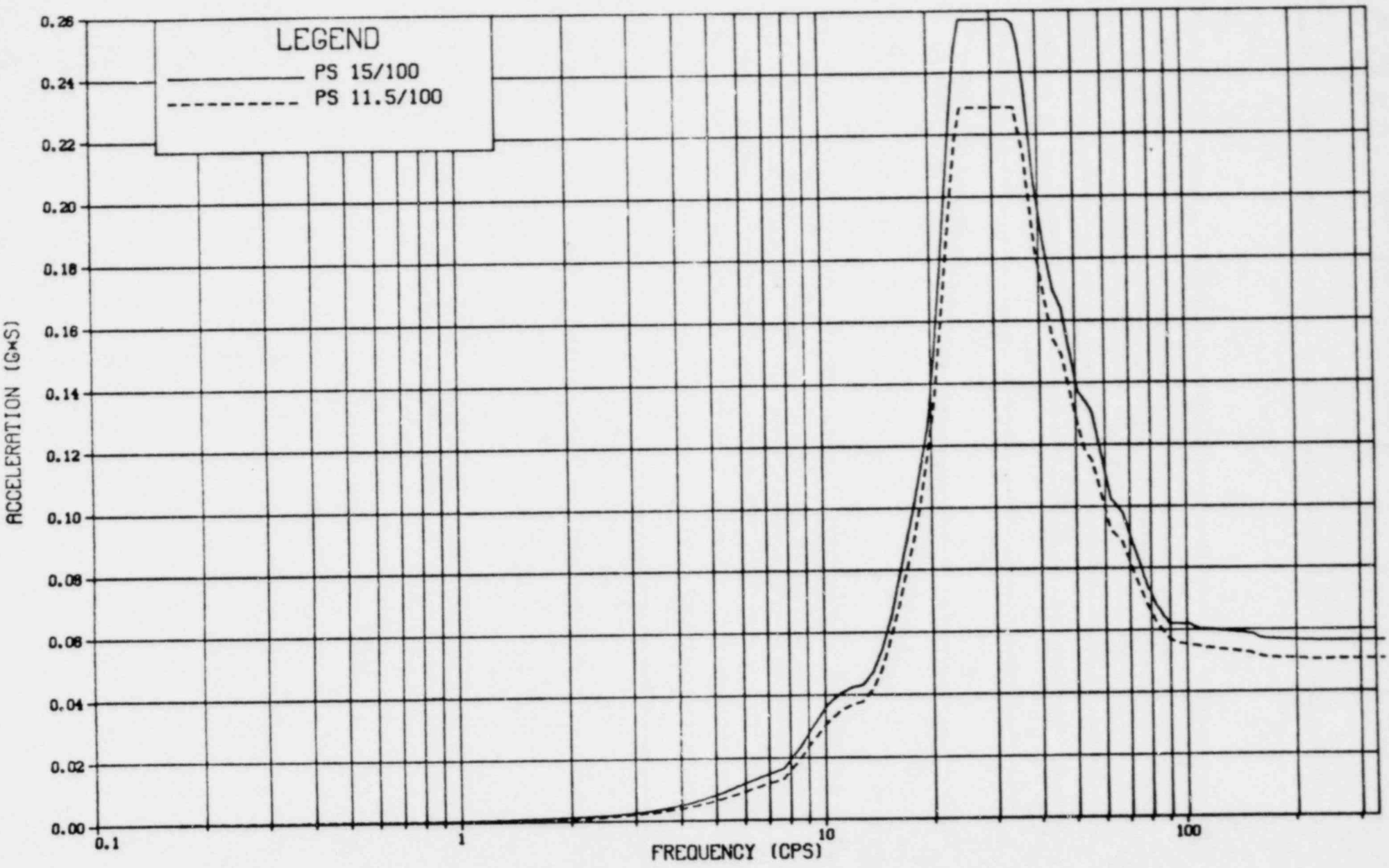


SPECTRA NODE291 CONTMNT EL.147.58 RADIAL
LOCA POOL SWELL DAMPING- 1.000

PLOT 151 20.50.14 THUR 3 JUN, 1982 JOB-RODDESY , CYBERNET SCOPE3.4 DISSPLA VER 8.2

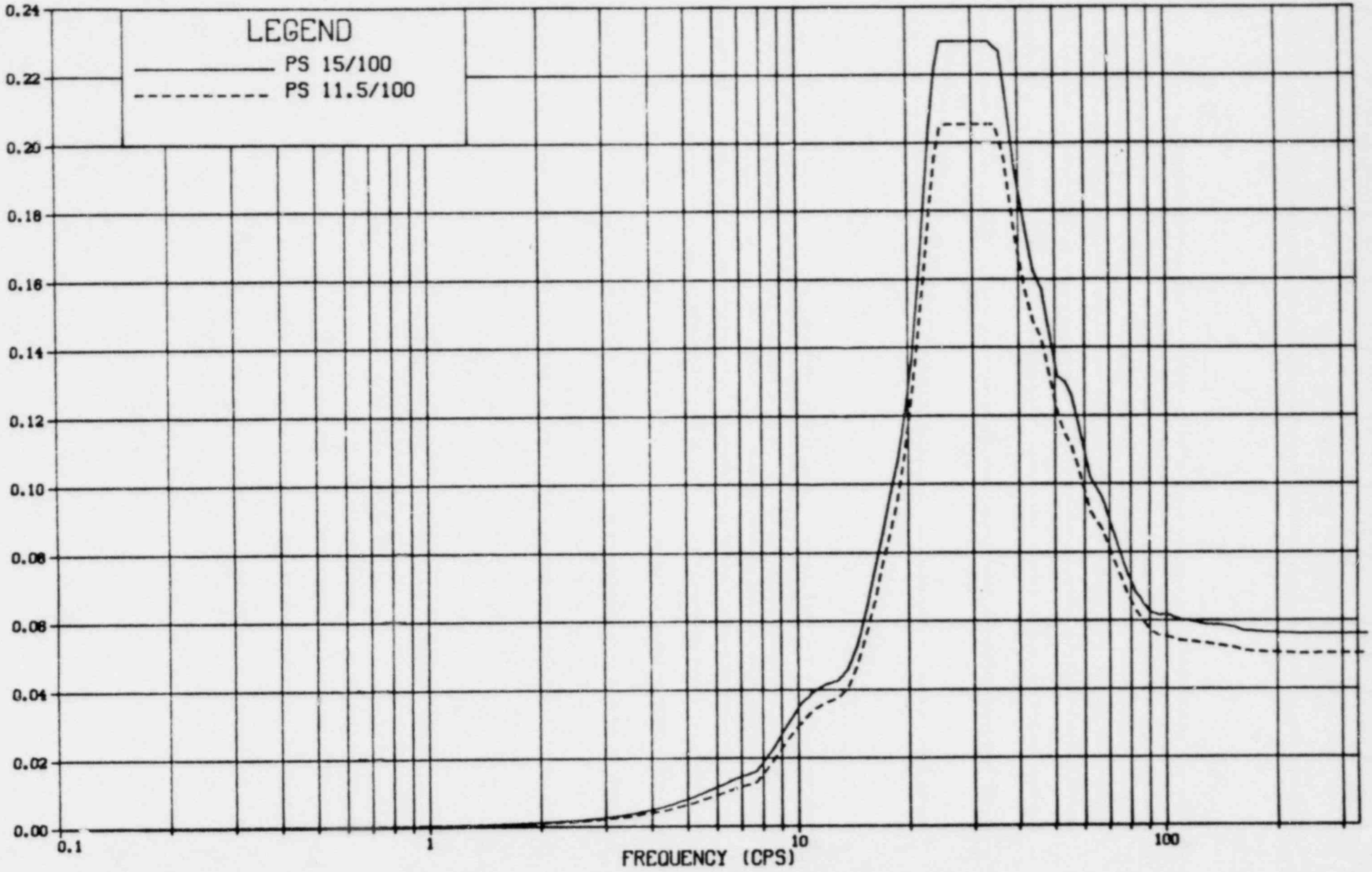
RESPONSE SPECTRA COMPARISON



SPECTRA NODE291 CONTMNT EL.147.58 RADIAL

LOCA POOL SWELL DAMPING- 2.000

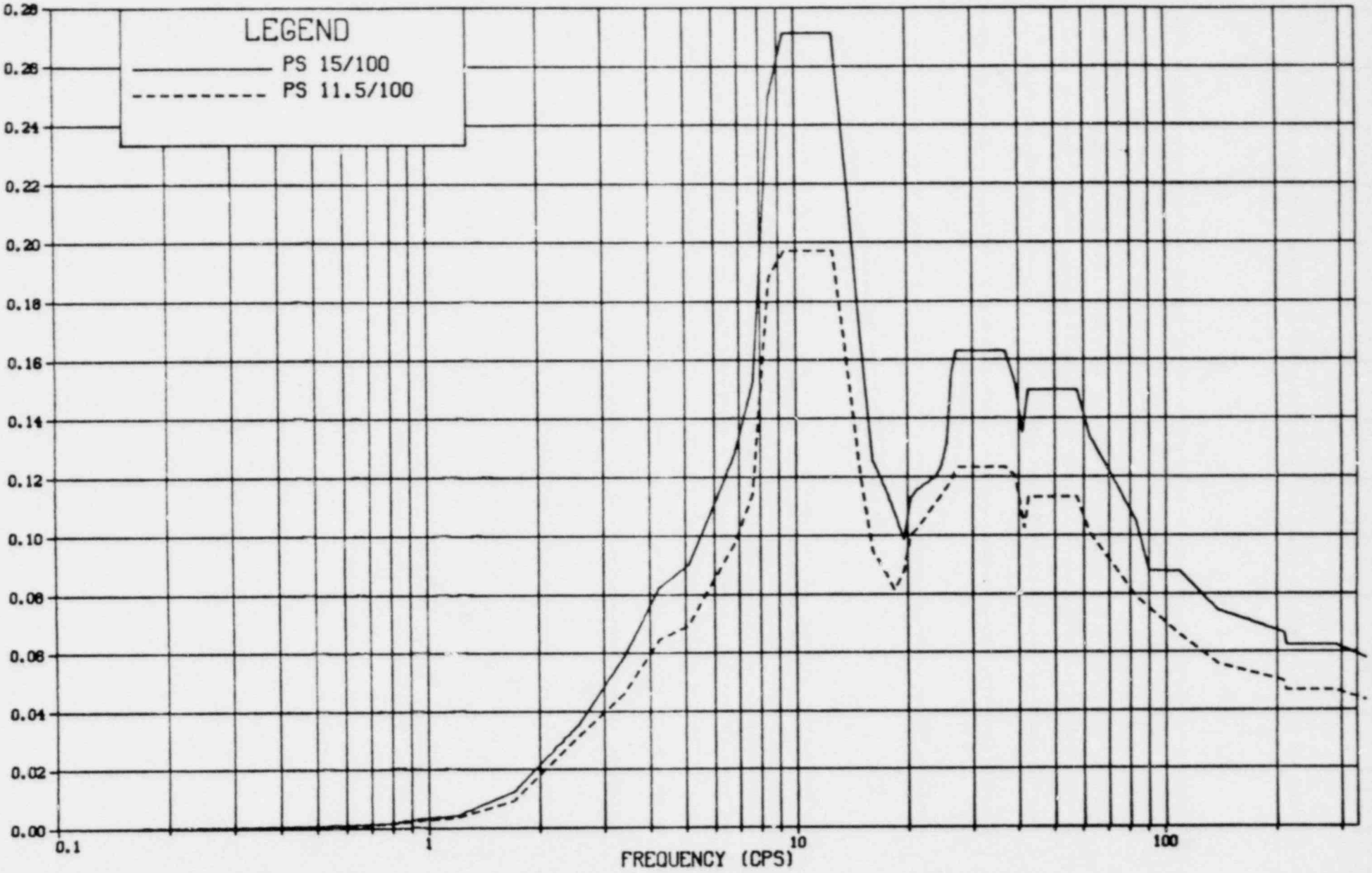
RESPONSE SPECTRA COMPARISON



SPECTRA NODE291 CONTMNT EL.147.58 RADIAL
LOCA POOL SWELL DAMPING- 3.000

PLOT 153 20.50.18 THUR 3 JUN, 1982 JOB-RODDESY , CYBERNET SCOPE3.4 DISSPLA VER 8.2

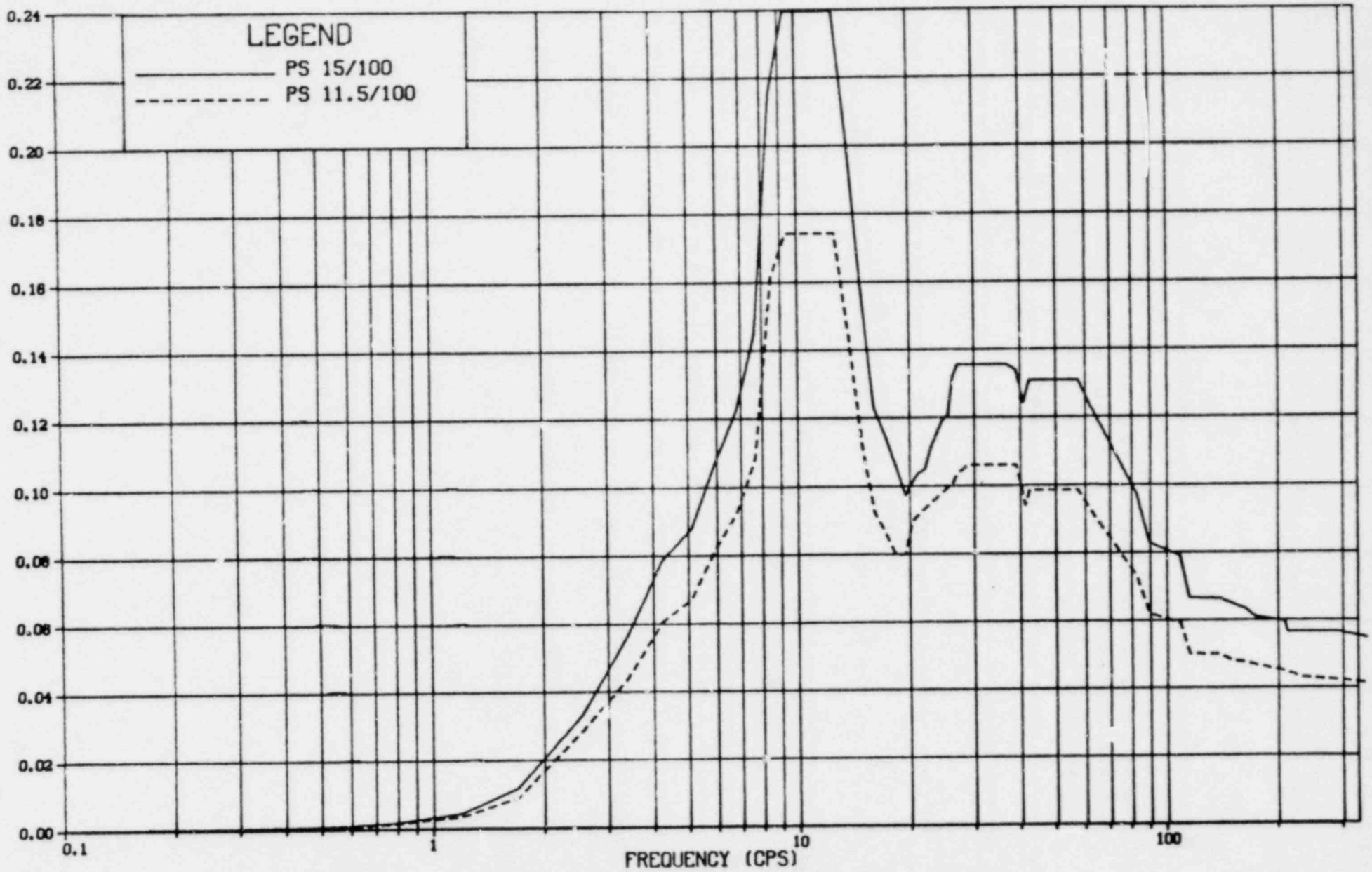
RESPONSE SPECTRA COMPARISON



SPECTRA NODE291 CONTMNT EL.147.58 VERTCL
LOCA POOL SWELL DAMPING- 1.000

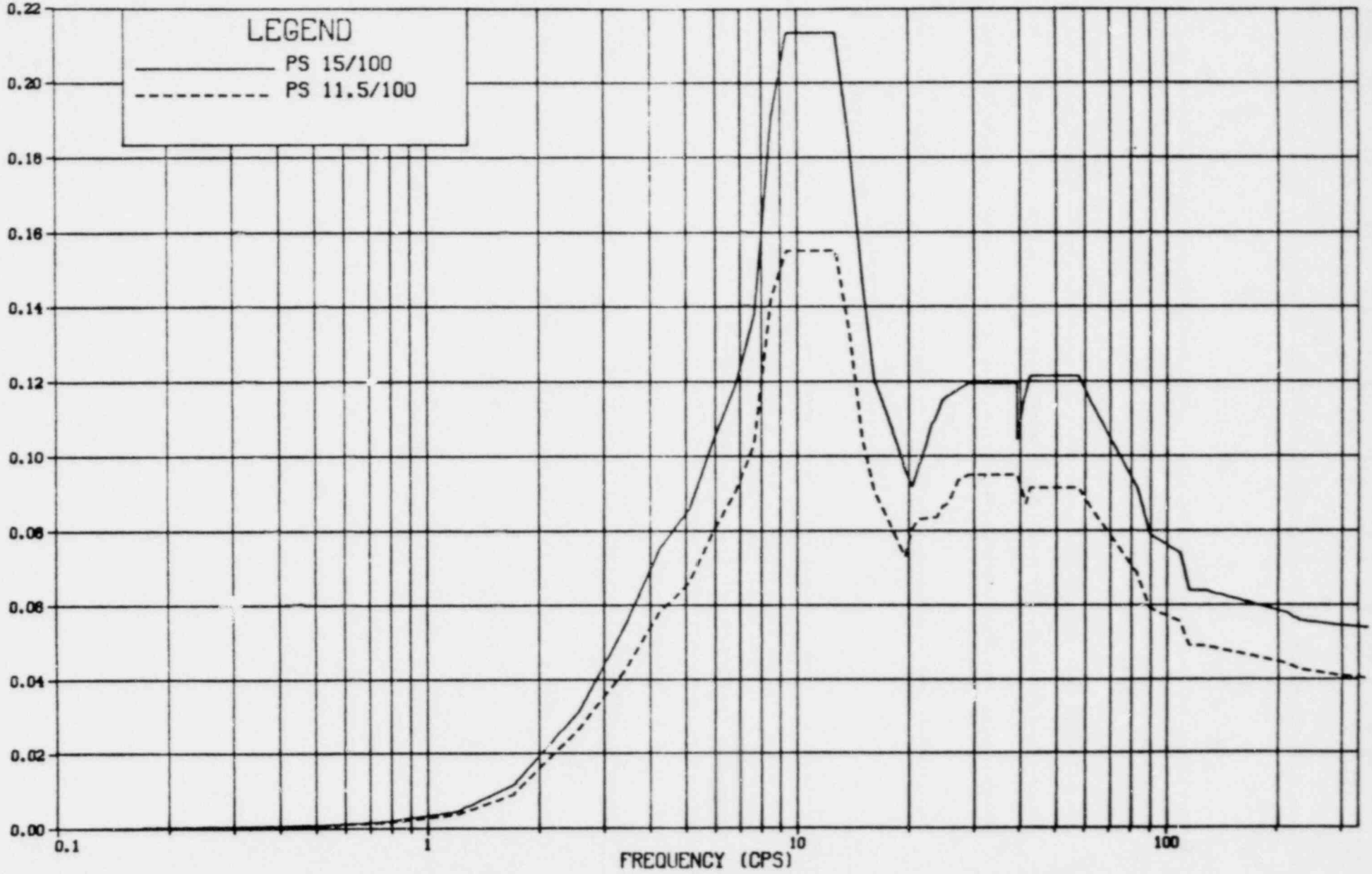
JOT 154 20.51.06 THUR 3 JUN, 1982 JOB-ROCKESY, CYBERNET SCOPE3.4 DISSPLA VER 8.2

RESPONSE SPECTRA COMPARISON



SPECTRA NODE291 CONTMNT EL.147.58 VERTCL
LOCA POOL SWELL DAMPING- 2.000

RESPONSE SPECTRA COMPARISON



SPECTRA NODE291 CONTMNT EL.147.58 VERTCL
LOCA POOL SWELL DAMPING- 3.000