

ILLINOIS POWER COMPANY



U-600342
L30-85(12-04)-L
1A.120

CLINTON POWER STATION, P.O. BOX 678, CLINTON, ILLINOIS 61727

December 4, 1985

Docket No. 50-461

Director of Nuclear Reactor Regulation
Attn: Mr. W. R. Butler, Chief
Licensing Branch No. 2
Division of Licensing
U. S. Regulatory Commission
Washington, DC 20555

Subject: Clinton Power Station
Effects of Valve Flexibility in Dynamic
Piping Analysis

Dear Mr. Butler:

In response to an NRC request to evaluate the most flexible valve listed in Table 1 of the Illinois Power letter dated August 26, 1985 to the NRC, valves 1C11F010 and 1C11F011 (both having a natural frequency of 10.6 Hz) were investigated. These valves are in the Control Rod Drive (CRD) system; 1C11F010 is a one inch valve in the CRD scram vent line, and 1C11F011 is a two inch valve in the CRD scram drain line. The piping analyses for these lines were performed by Reactor Controls, Inc. (RCI) and included rigid modelling for each of these valves. The design of the vent line subsystem included a seismic restraint attached directly to valve 1C11F010, effectively increasing its natural frequency. Therefore, valve 1C11F011 was chosen for evaluation.

Sargent & Lundy evaluated the effects of the flexibility of valve 1C11F011 on the piping stress analysis by performing a dynamic response spectrum analysis on the drain line subsystem with both rigid and flexible valve models. The enclosed exhibits 1 through 3 document a comparison of the flexible and rigid valve analysis results. The results of this comparison are consistent with the conclusion documented in Illinois Power's August 26, 1985 letter referenced above i. e., the flexible valve modelling has no significant impact on the overall subsystem behavior when compared to the rigid valve analysis. Differences in pipe stresses and support loads are minor and are similar to variations which would be expected due to changes in other system modelling parameters.

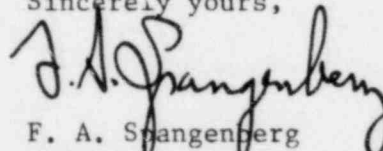
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Please contact us should you have any questions regarding this matter.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "F. A. Spangenberg", written over the typed name.

F. A. Spangenberg
Manager-Licensing
and Safety

DWW/bjq

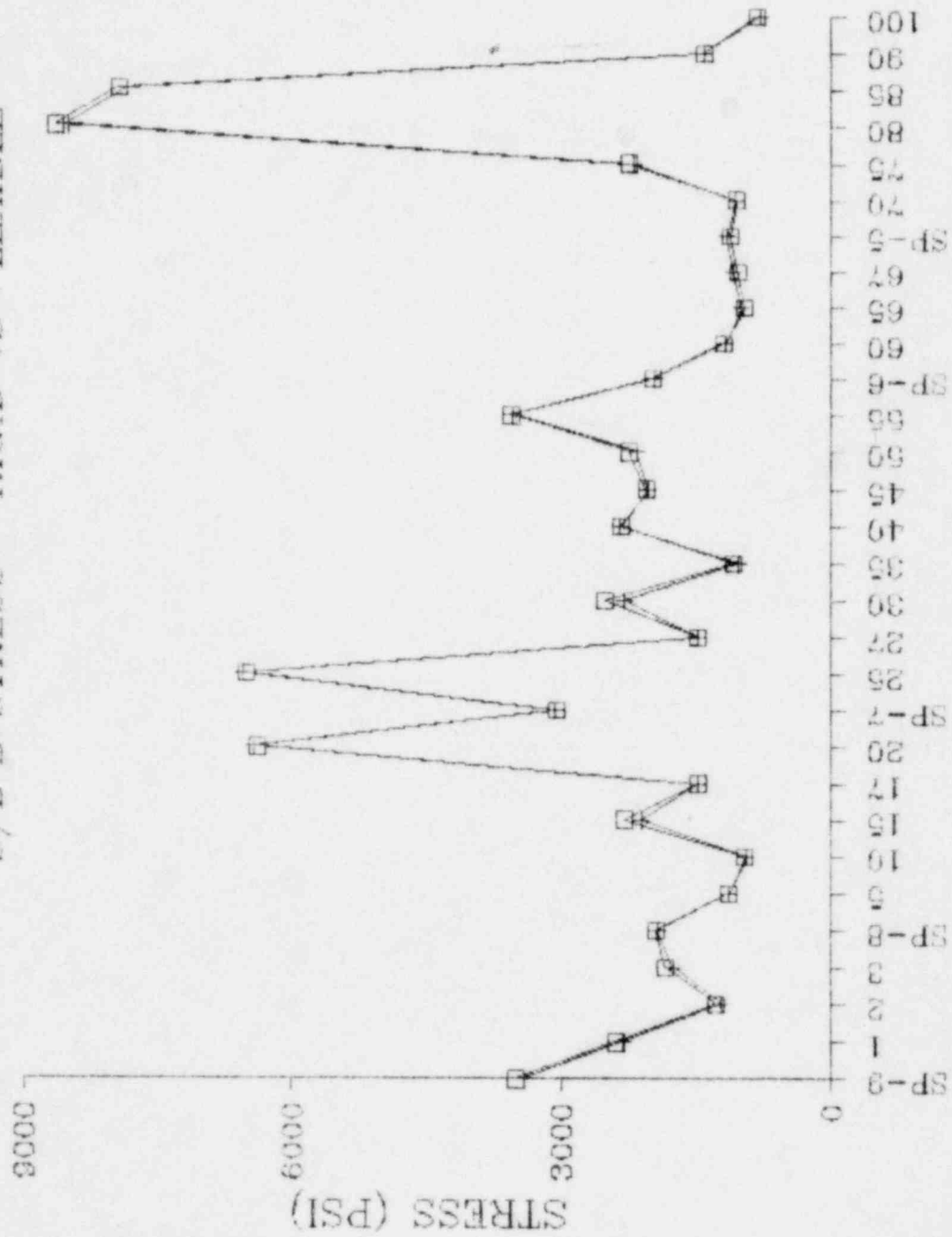
Enclosure

cc: B. L. Siegel, NRC Clinton Licensing Project Manager
NRC Resident Office
Regional Administrator, Region III, USNRC
Illinois Department of Nuclear Safety

EXHIBIT 1 S/L B*STRESS RIGID VS FLEXIBLE

—+— RIGID

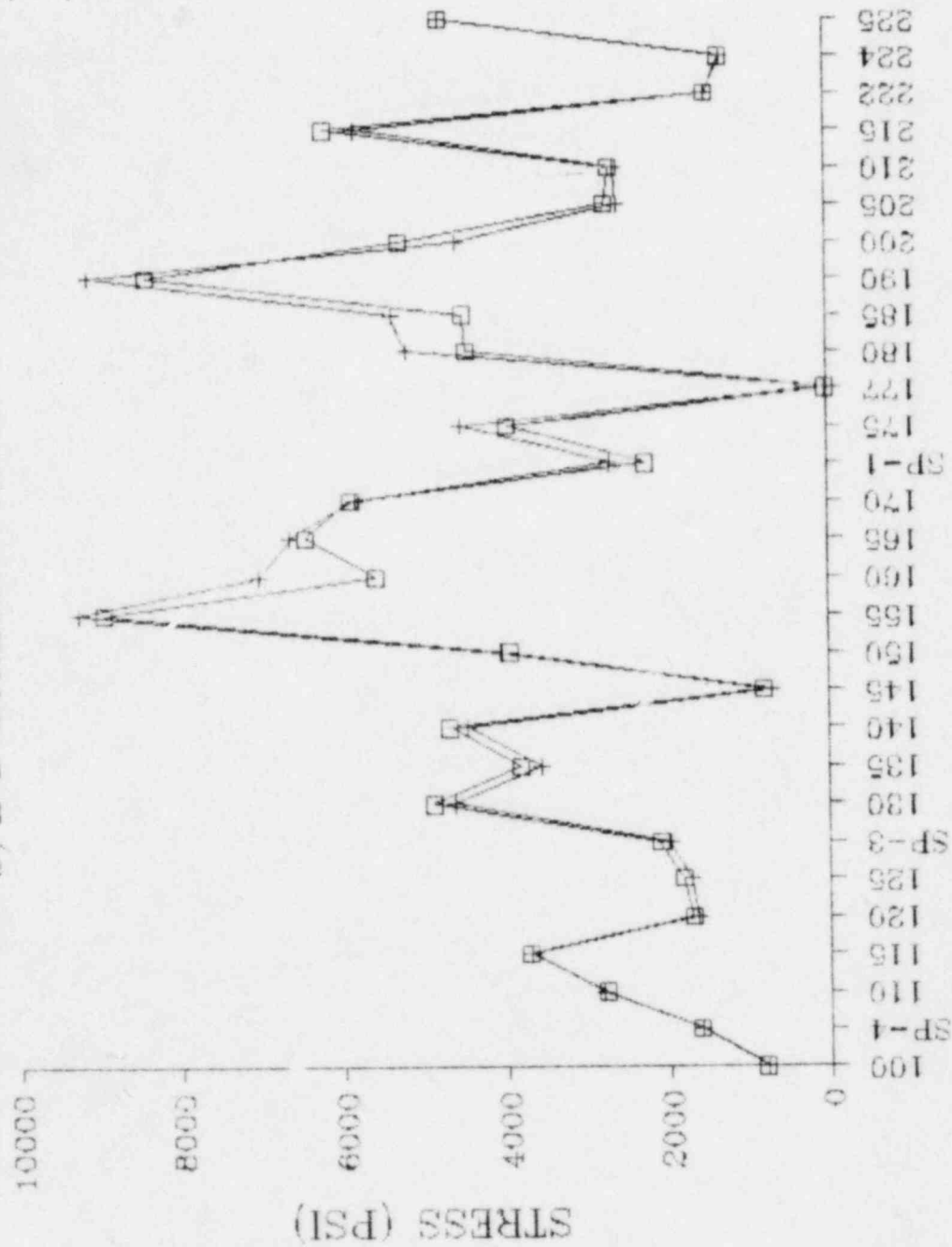
—□— FLEXIBLE



NODE POINTS

EXHIBIT 1 (cont'd) S/L B*STRESS RIGID VS FLEXIBLE

—+— RIGID
—□— FLEXIBLE

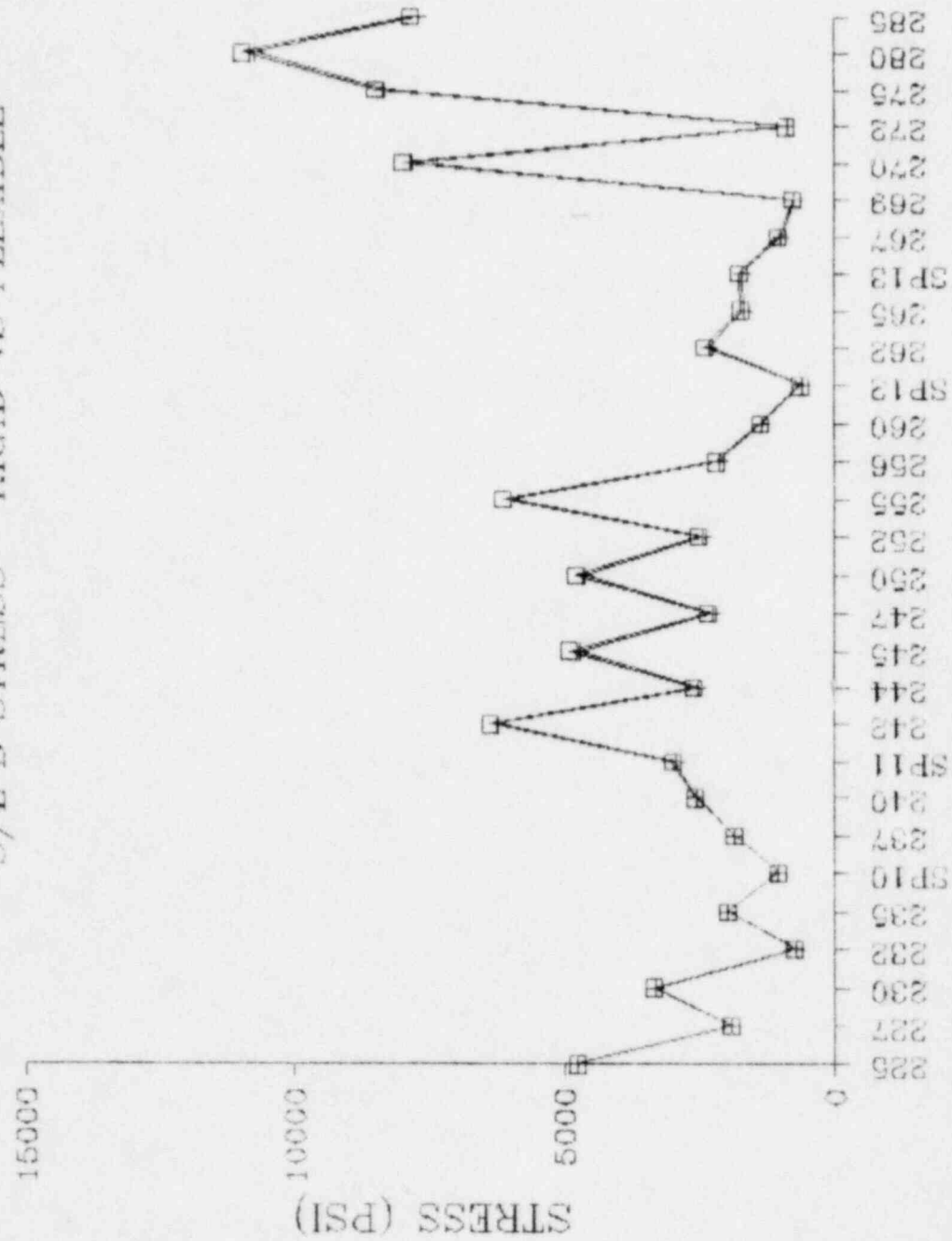


NODE POINTS

EXHIBIT 1 (cont'd) S/L B*STRESS RIGID VS FLEXIBLE

—+— RIGID

—□— FLEXIBLE



NODE POINTS

EXHIBIT 2

S/L B*STRESS PERCENT CHANGE

(Flex Model vs. Rigid Model)

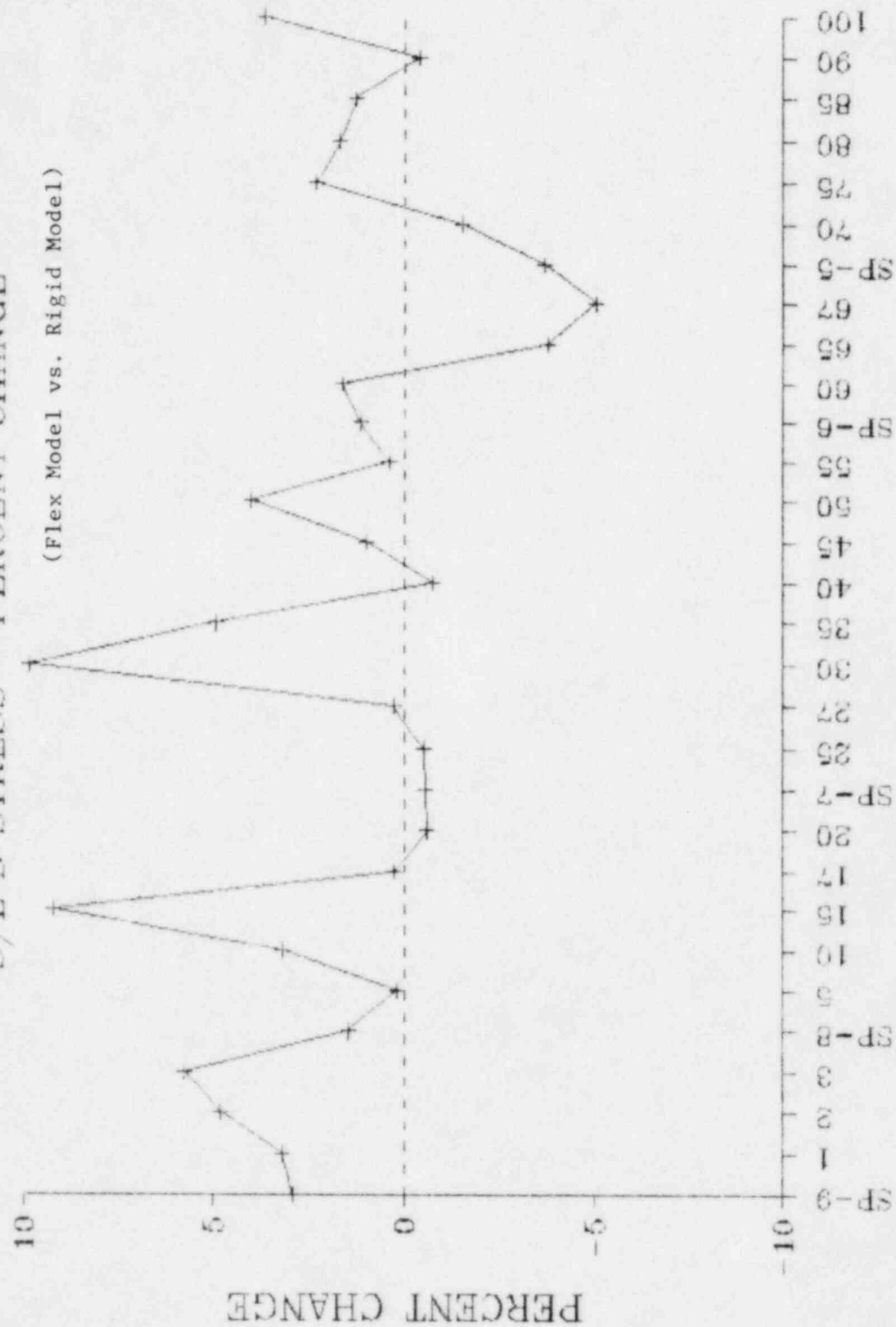


EXHIBIT 2 (cont'd)

S/L B*STRESS PERCENT CHANGE

(Flex Model vs. Rigid Model)

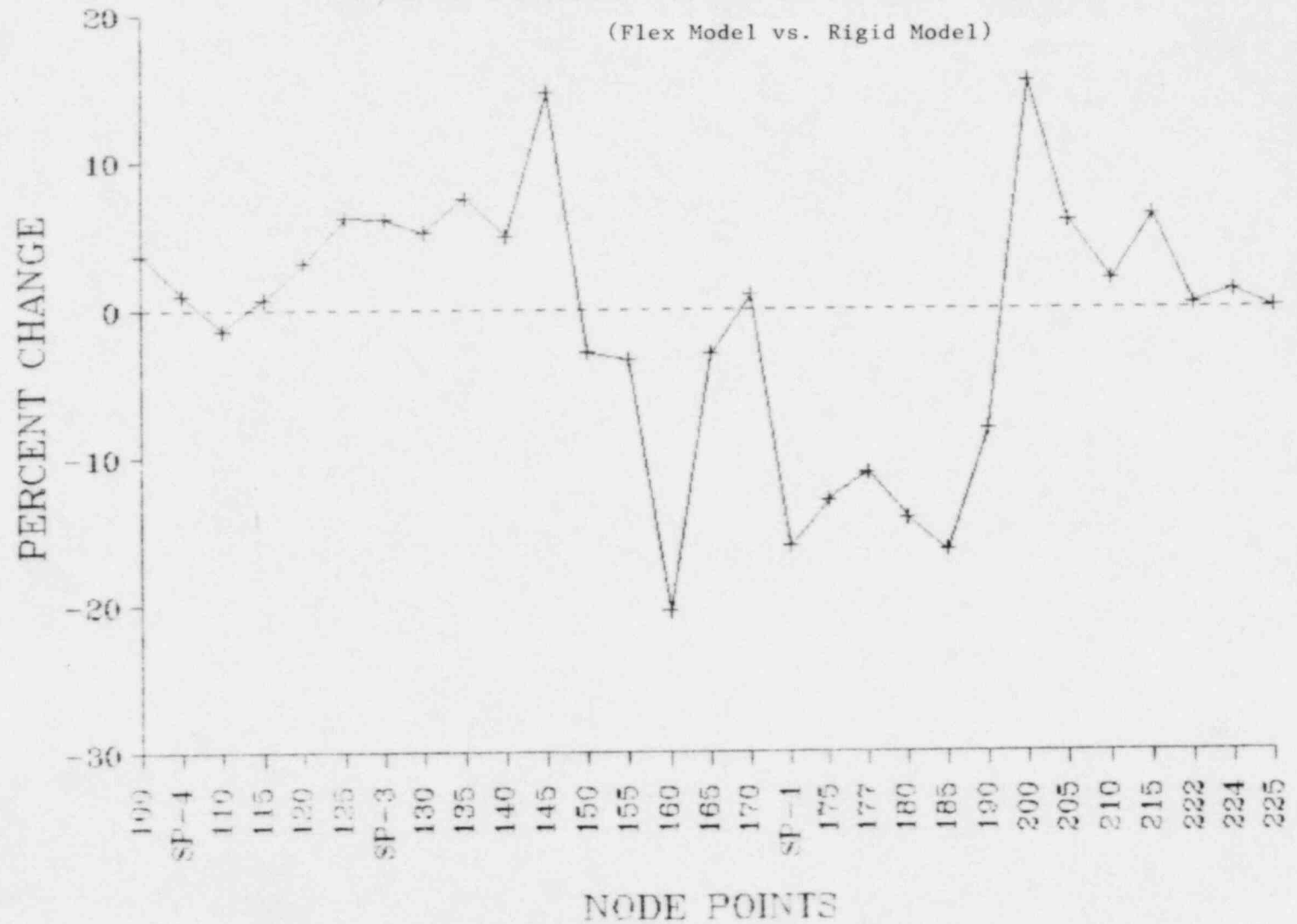


EXHIBIT 2 (cont'd) S/L B*STRESS PERCENT CHANGE

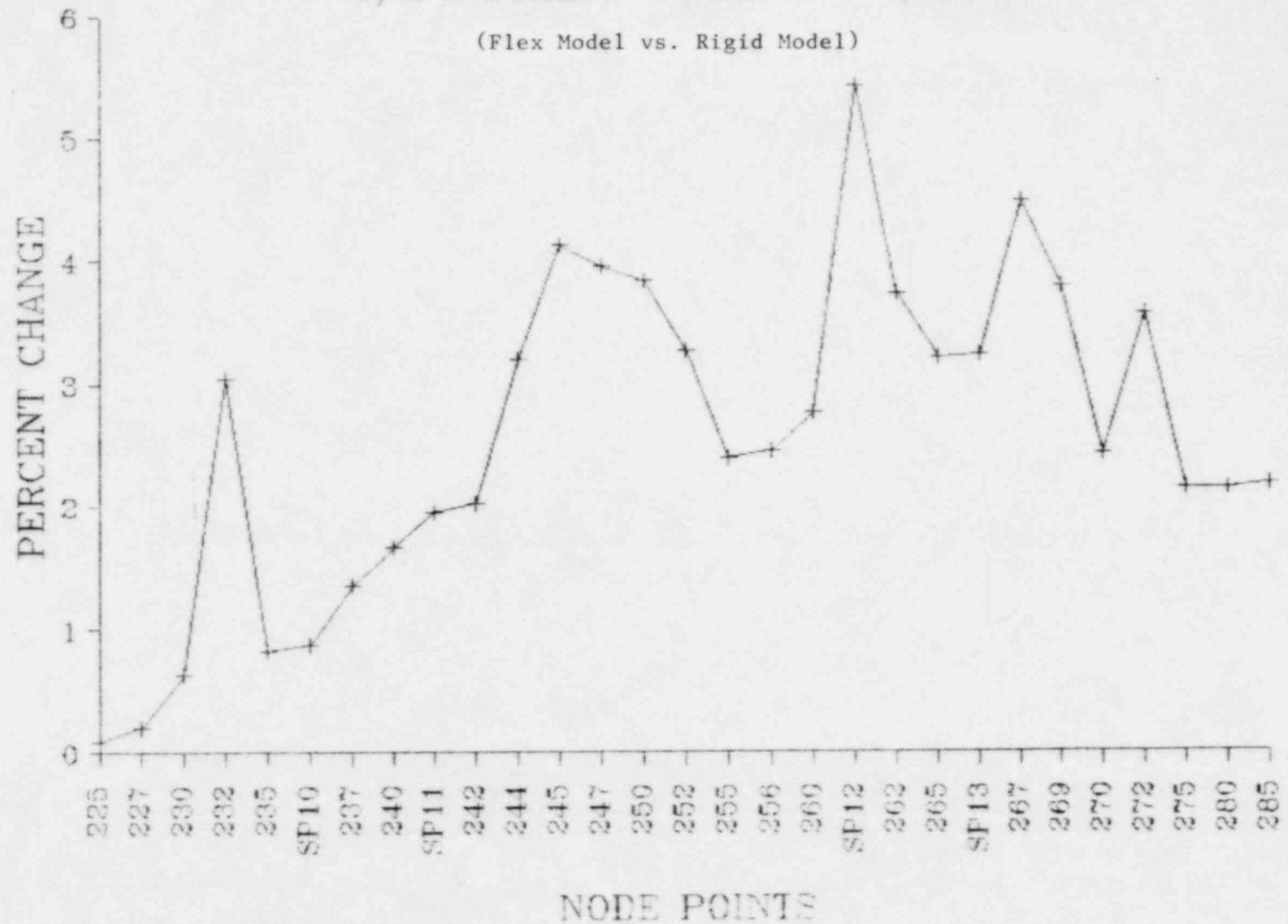
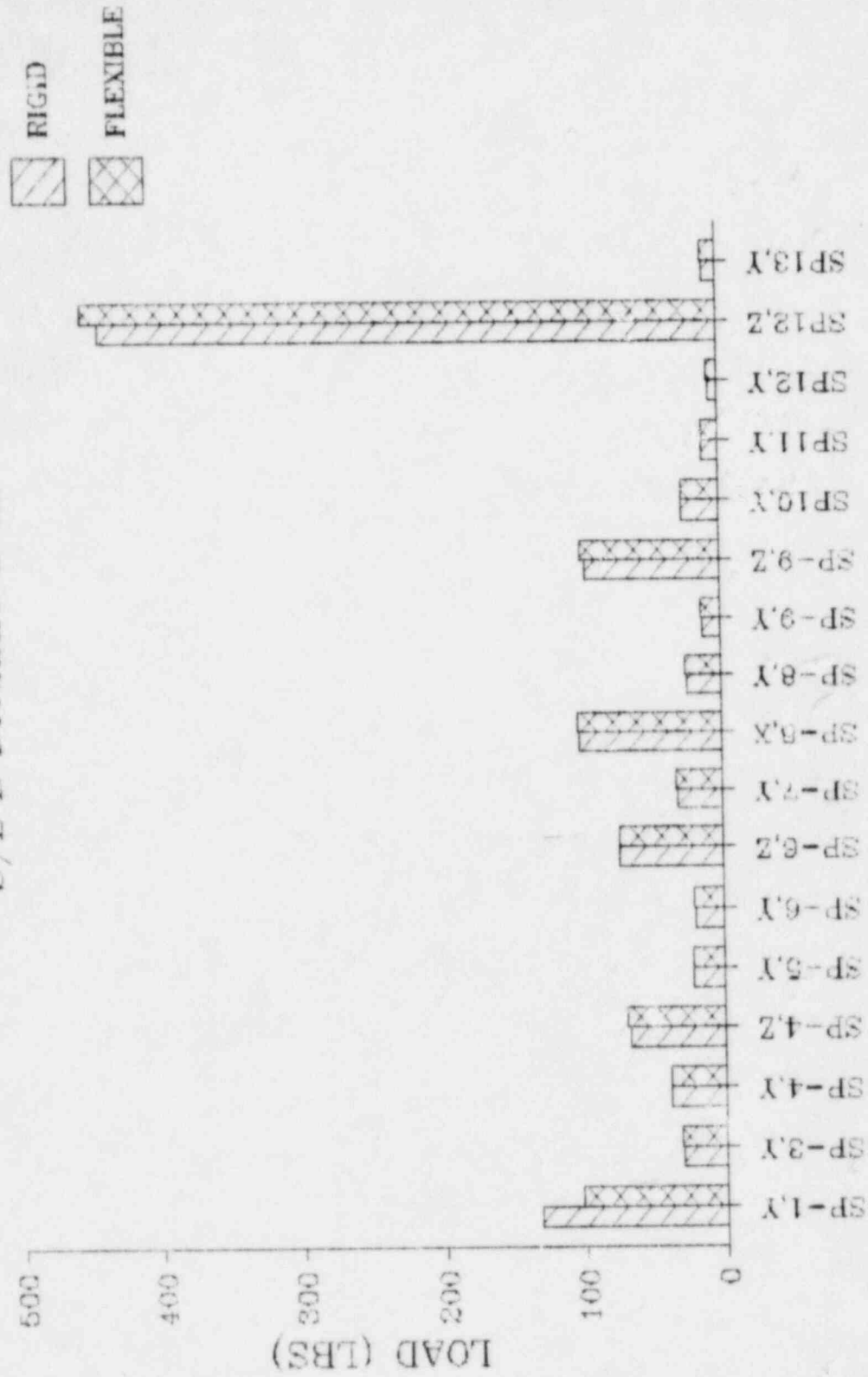


EXHIBIT 3 S/L B* DYNAMIC LOAD



NODE POINTS