



# United States Department of the Interior

GEOLOGICAL SURVEY

OFFICE OF EARTHQUAKES, VOLCANOES, AND ENGINEERING  
BRANCH OF ENGINEERING SEISMOLOGY AND GEOLOGY  
345 Middlefield Road, MS 77  
Menlo Park, CA 94025

April 12, 1983

Dr. Jerry King  
U. S. Nuclear Regulatory Commission  
Mail Stop P-514  
Washington, D. C. 20555

Dear Jerry:

We have found the error in the computer program we wrote for evaluating Equation 58 of the enclosed paper. We have now evaluated the factor  $R$  of Equation (37) of the enclosed paper, and this is shown in the enclosed Figure 1. If this Figure 1 is compared with Figure 13 of Appendix A for the X direction, it is seen that they are reasonably close except for the region of the hut. The transfer function shown in Figure 14 for the Y direction is a bit different. This difference is, of course, not shown by this theory, which makes them equal. Equation (58) for calculating the free-field was evaluated using the seismogram measured on the pad for the 090 direction of the 16 October 1979 event. Figure 2 enclosed shows this seismogram, and Figure 3 shows our calculated free-field. If this enclosed Figure 3 is compared with Figure 15d of Appendix A, it is seen that they are fairly close, especially for the maximum positive and negative peaks. There are some differences in detail which are probably caused by neglecting the effect of the hut.

As the completely analytical approach used here is entirely different from the modal approach but gives similar results, I feel that the results of the modal approach are justified.

Sincerely,

Noel Bycroft  
Physical Scientist

Copy to:  
T. Algermissen

Fig.1 Transfer Function

STEADY STATE

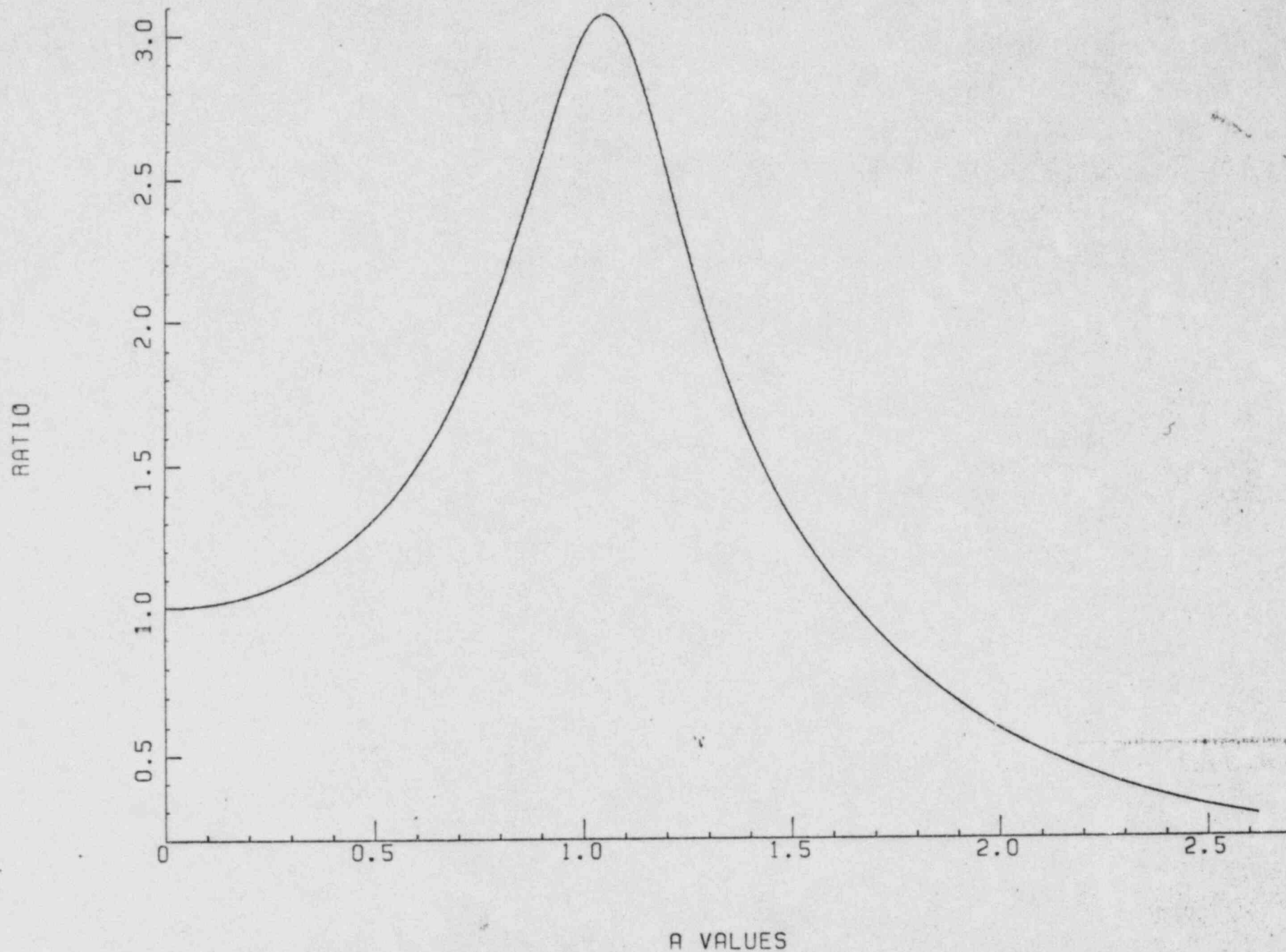
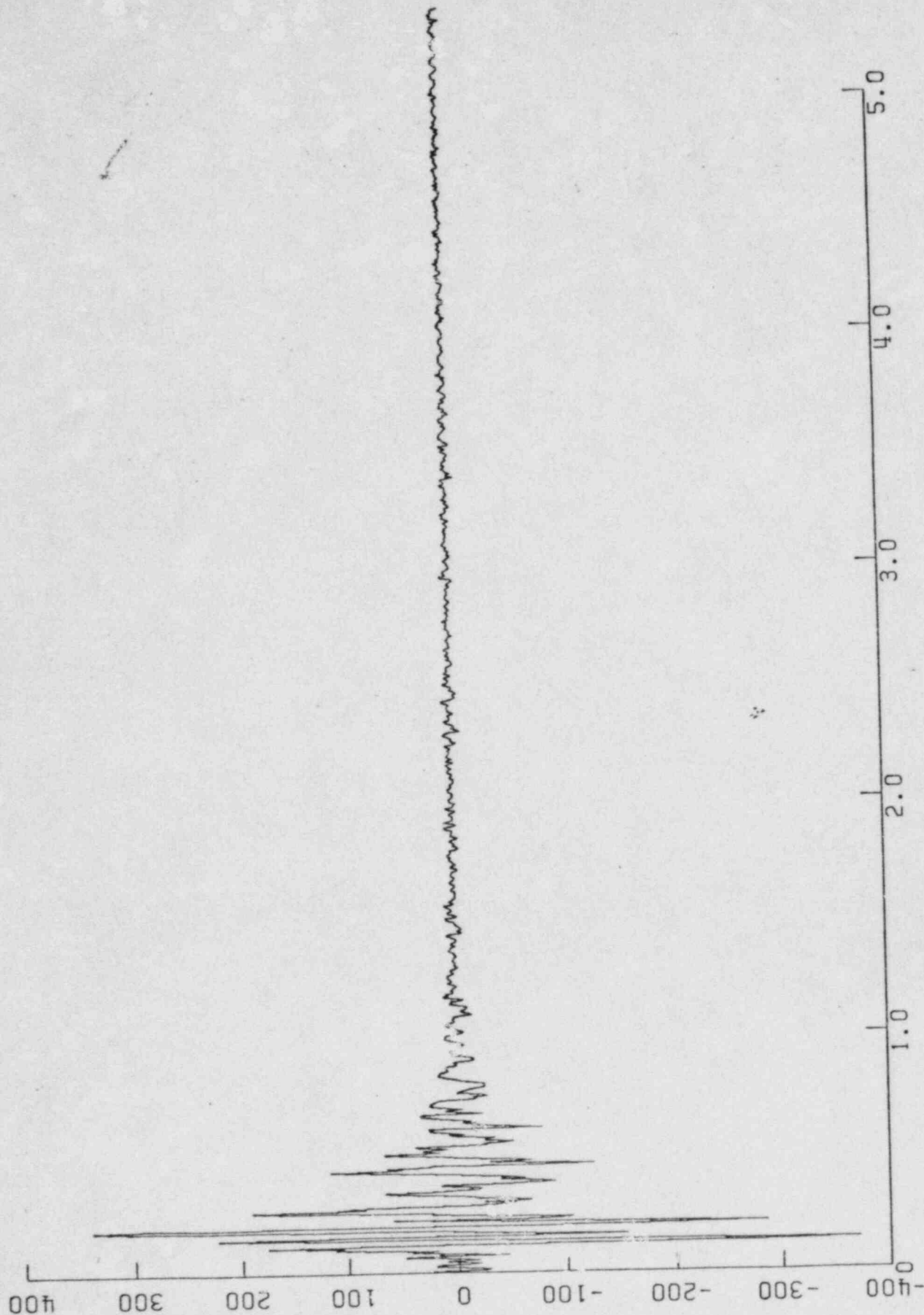


Fig 2. Seismogram 16 Oct 1979 SNA Measurement

INPUT ACCELERATION



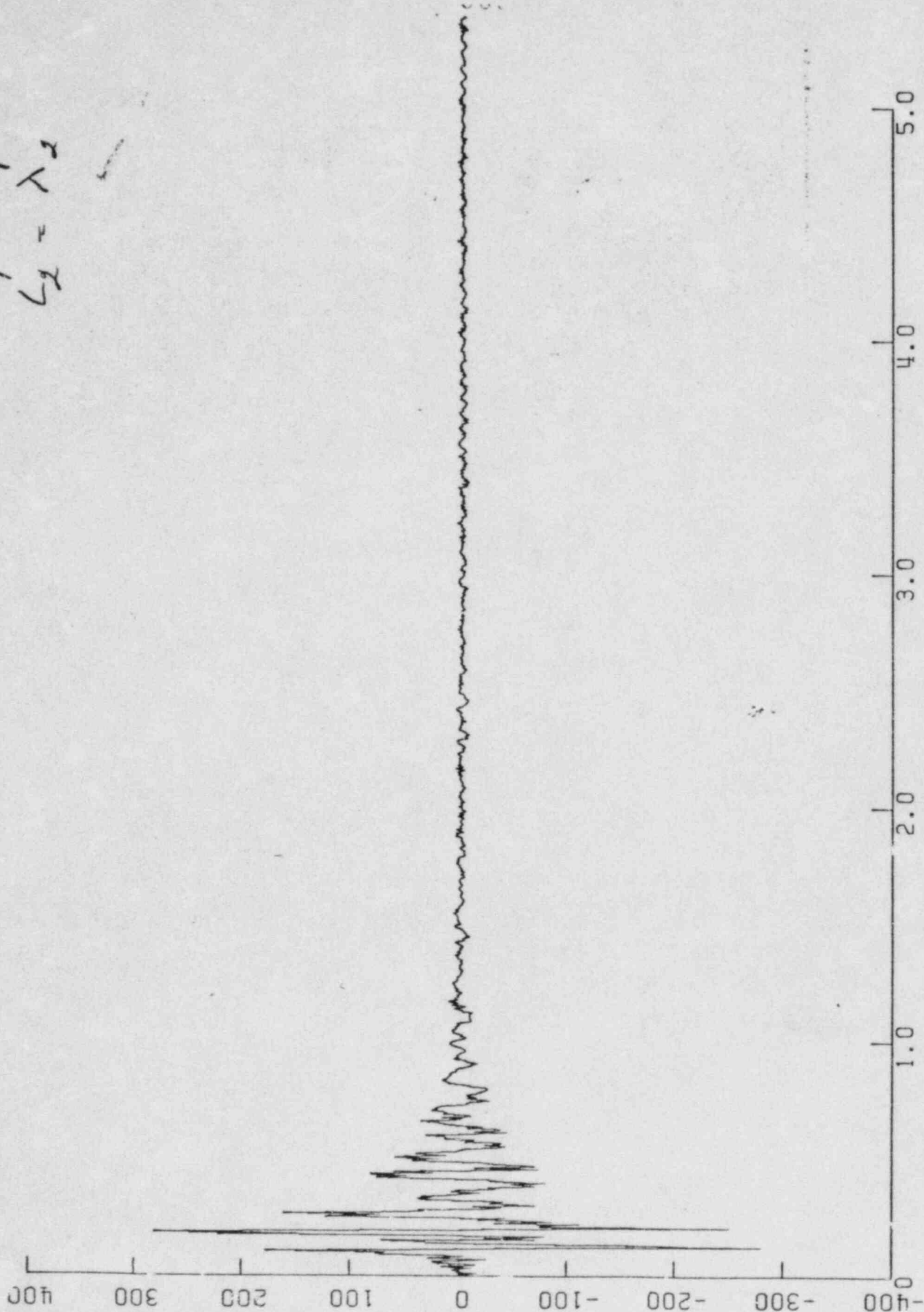
ACCEL

TIME

Fig 3 Free Field Calcuted From Eqn 58

HORIZ. CASE: B1=3.0, B2=1.0, L1=.45, L2=1.2, K=240

$$L_1 = \lambda_1$$
$$L_2 = \lambda_2$$



ACCEL

TIME