NORSAR

ROYAL NORWEGIAN COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH

Scientific Report No. 1-79/80

SEMIANNUAL TECHNICAL SUMMARY 1 April—30 September 1979

By
H. Gjøystdal (ed.)

Kjeller, 15 November 1979

VI.5 NORSAR Short Period Recording of Explosions during the 'Fennoscandia Long Range Profile 1979' ('Fennolora') Seismic Experiment

During the Fennolora experiment in August 1979 charges ranging from 700 to 8000 kg of TNT were fired at the locations indicated in Fig. VI.5.1. This figure also shows the main profile line for deployment of mobile seismic stations. Information on shotpoint coordinates, charge sizes and actual shottimes has been provided by the Fennolora operations group. NORSAR records including all short period data for a 20 min interval following the communicated origin time for each shot are available on separate stack tapes.

A screening of the records shows that shots at points b, c, d, e, f and i in Scandinavia, PU1 in Poland and PU3 in the USSR are well recorded at NORSAR. Shots at position h (up to 1800 kg) are marginal, while even a 3-ton shot at g is nondetectable at NORSAR. No signal is found from shots at W (700 kg), BW (700 kg), S (800 kg), PU2 (2500 kg) and PU4 (4000 kg).

Fig. VI.5.2 shows the NORSAR records for a 2-ton shot at location c. The individual seismograms are arranged according to the actual shotpoint-sensor distance, so that nearby seismograms do not necessarily represent records at nearby stations. Still, a reasonable station-to-station correlation seems to be maintained for two distinct phases. Altogether, the NORSAR records cover the distance intervals 315-375 km (shotpoint d), 360-420 km (shotpoint e), 415-485 km (shotpoint c), 585-650 km (shotpoint b), 630-695 km (shotpoint f), 855-930 km (shotpoint PU1), 1335-1395 km (shotpoint i) and 1415-1490 km (shotpoint PU3).

S. Mykkeltveit

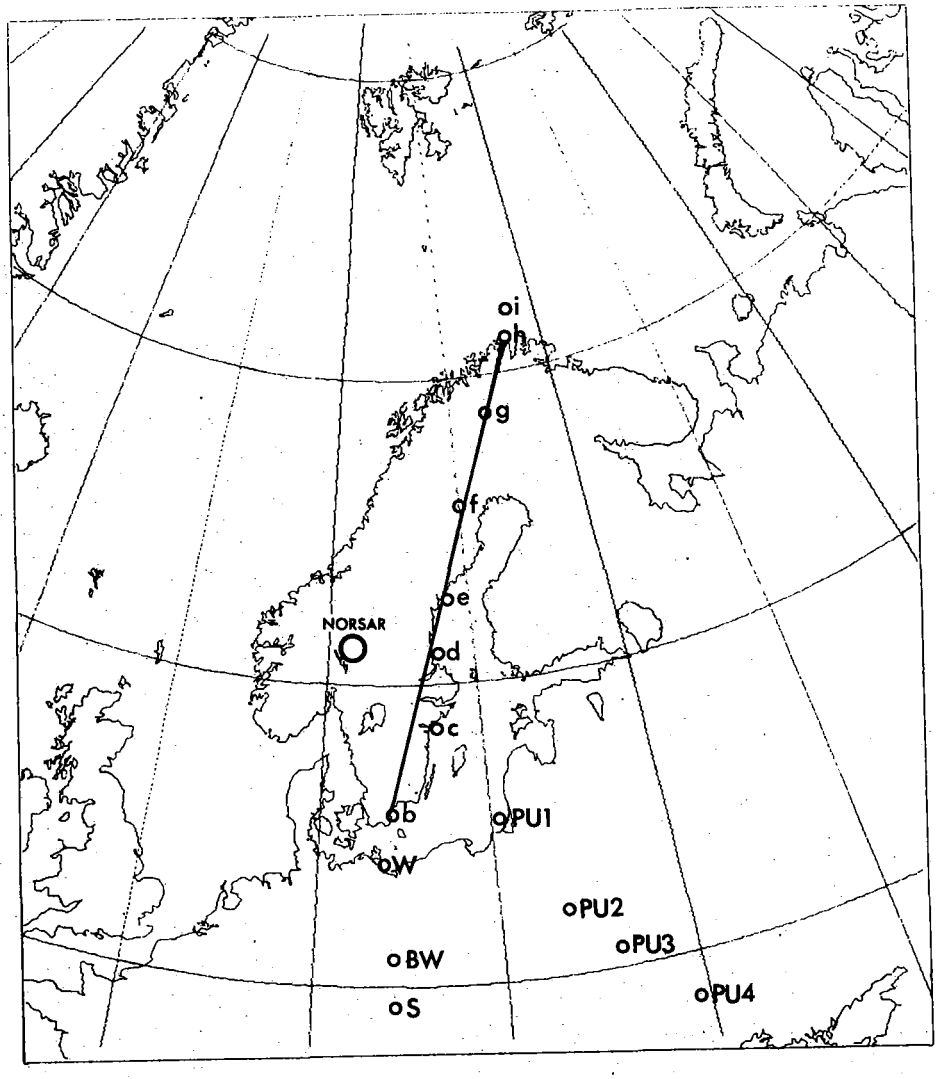

Fig. VI.5.1 Shotpoint locations for the 'Fennoscandia Long Range Profile 1979'. The profile line for deployment of mobile seismic stations is indicated.

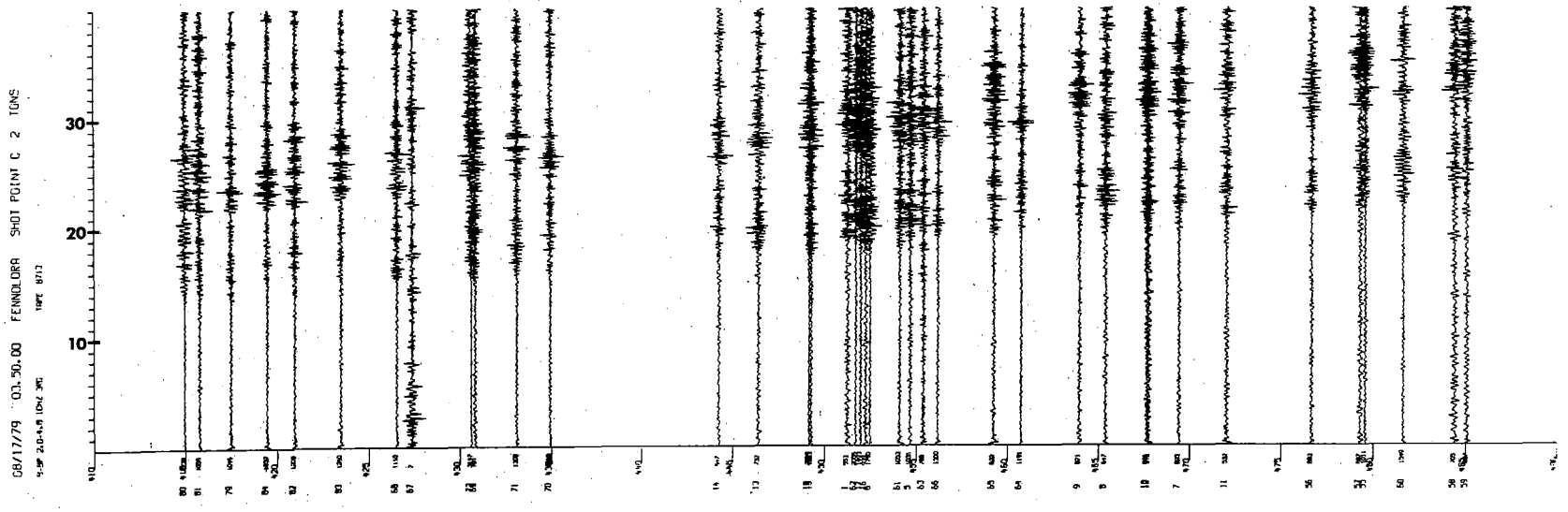

Fig. VI.5.2 A normalized seismic 'section' for a 2-ton shot at point c. The distance interval covered runs from 415 to 485 km. Plotting start time is 46 secs after shot time for each trace. A bandpass filter 2.0-4.8 Hz is applied. The numbers in front of each trace represent sensor number (bottom) and maximum amplitude.