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# NORSAR

ROYAL NORWEGIAN COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH

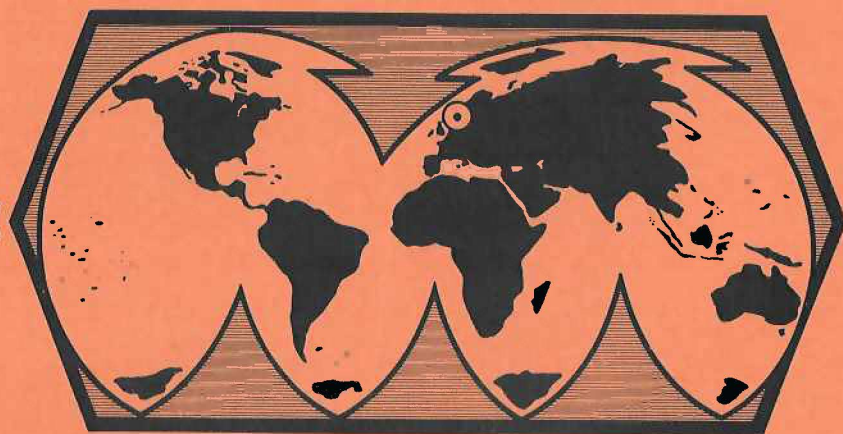
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## SEMIANNUAL TECHNICAL REPORT NORSAR PHASE 3

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Kjeller, 1 September 1974



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G. S WAVE STUDIES

A broadly based project directed to exploiting the well-recorded long period S (and associated SS, SSS, PS, PSS, ScS, PcS, etc.) and surface waves at NORSAR for studies of earth structure has been initiated. Various processing methods are being utilized, including high-resolution f-k analysis, polarization filtering and iterative cross-correlation. Long-term objectives include:

1. The localization of velocity variations, both radial and lateral, within the mantle,
2. The delineation of crustal structure (using converted phases), and
3. The identification of manifestations of the presence of anisotropic layers within the upper mantle.

With regard to the 3rd item, Crampin and Taylor (1971) and Crampin (1974) detail those consequences of aligned anisotropy which are most likely to be observed; these consequences include the generation of Love waves by atmospheric explosions. A preliminary investigation has revealed that the LP records from a large atmospheric explosion in China on 17 June 1974 exhibit convincing evidence for the existence of Love wave energy. In Figure G.1, three-component data is plotted a) as recorded, b) after rotation in both the horizontal and vertical planes, and c) after application of a polarization filter (to rotated data). A detailed analysis is proceeding.

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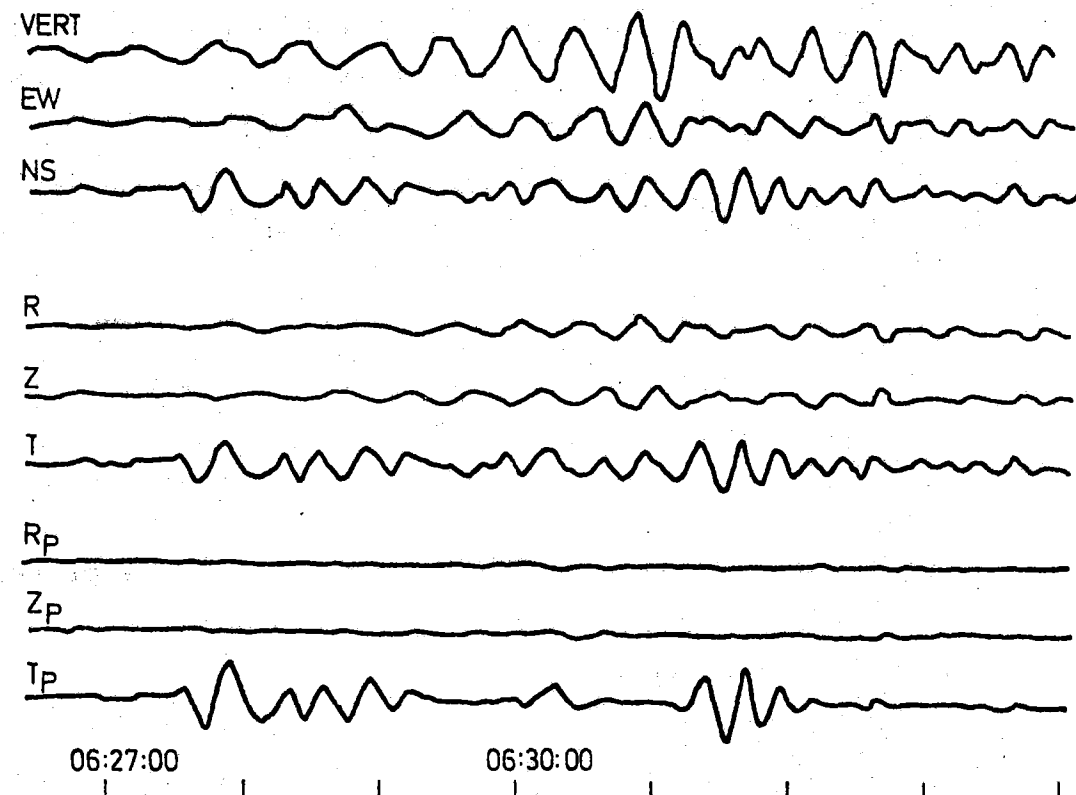


Figure G. 1 Records from LP instruments at subarray 13C of surface waves from atmospheric explosion on 17 June 1974, 05.59.53. R, Z and T are rotated components; subscript P indicates trace has been polarization filtered.

REFERENCES

Crampin, S. (1974): Distinctive particle motion of surface waves in anisotropic media, Report No. 41, Global Seismology Unit, I.G.S., Edinburgh, May.

Crampin, S., and D.B. Taylor (1971): The propagation of surface waves in anisotropic media, Geophys. J.R. Astr. Soc., 25, 71-87.