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Prepared by
H. Bungum

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T. EXPERIMENTAL ANALOG STATIONS AT NORSAR

Short Period Analog

As mentioned in the previous Semiannual Report (Bungum 1974), a short period analog station has been installed in subarray 05C, with the recording drum in the NORSAR Data Center. The analog high pass filter which was installed in October 1973 was removed on 8 March 1974, since the value of this filter as a local event discriminator turned out to be only marginal. The station is therefore now back to normal operation.

The problem with line outages damaging the recording equipment has been solved by limiting the maximum deflection without affecting the linearity of the recording. Also, a possibility for remote relay switching during monitoring has been implemented.

Broadband Analog (KIRNOS)

The cooperative Nordic research project involving the operation of a Kirnos station at NORSAR has continued. The installation and calibration of the instrument are described in detail by Pettersen and Larsen (1974).

It was indicated in the previous Semiannual Report (Bungum 1974) that the Kirnos recordings at NORSAR were strongly affected by microseismic disturbances with energy peaking in the middle of the passband of the instrument. This has been confirmed through another half year of operation, where the seismograms have been read in comparison with the NORSAR bulletin. Usually, there have been between 10 and 20 events identified every month (Table T.1), with somewhat more events in the summer months. However, this

TABLE T.1

Number of events identified on the KIRNOS recordings at NORSAR. The small number in April is partly explained by longer periods of non-operation. For all the time, recording has been done only 5 days per week.

Month	No. of Events
January	9
February	8
March	13
April	5
May	22
June	18

effect was smaller than could be expected by looking at the usual decrease in average noise level. Due to the broadband response of the instrument, there have been identified a variety of phases, with a dominance of the more long period ones, body phases as well as surface waves. Only for about half of the events have the first arrivals been found. Figure T.1 shows the cumulative and incremental frequency-magnitude distributions for these events, plotted against NORSAR m_b values. For the smaller events (m_b<5) there is a predominance of identification of only later long period phases, including surface waves.

Because of this long period predominance of the KIRNOS, it is a very poor instrument indeed for detection of high frequent explosions. An example of this is given in Figure T.2, which shows the only explosion identified through 6 months of operation. The detection threshold for these events seems to be around m_b=6.0.

H. Bungum
A.K. Nilsen

REFERENCES

Bungum, H. (Editor) (1974): Semiannual Technical Report NORSAR Phase 3, NORSAR Scientific Report No. 4-73/74, NTNF/NORSAR, Kjeller, Norway.

Pettersen, R., and P.W. Larsen (1974): Installation and Calibration of KIRNOS Instrumentation, NORSAR Internal Report No. 7-73/74, NTNF/NORSAR, Kjeller, Norway.

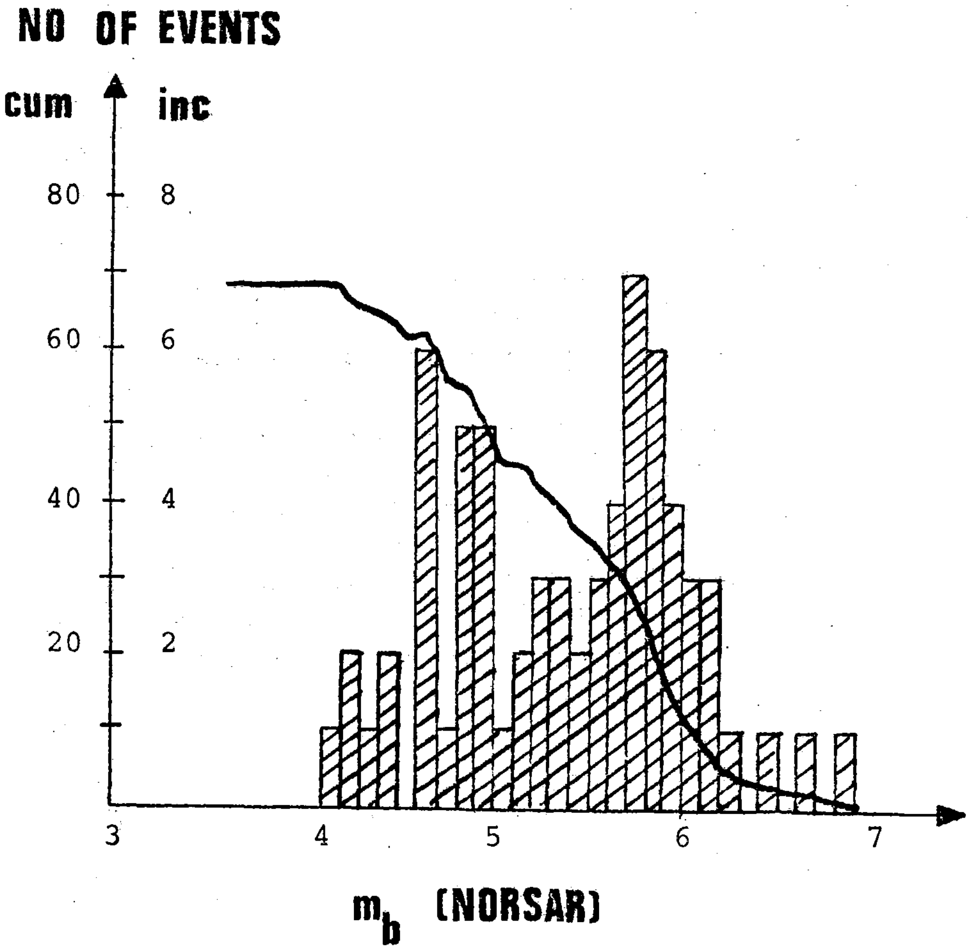

Figure T.1 Cumulative and incremental frequency-magnitude distribution of events identified on the KIRNOS recordings over a time period of 6 months (Jan-Jun 74). The NORSAR body wave magnitude is used as reference. The identification of several of the events below m_b=5.0 is relatively uncertain.

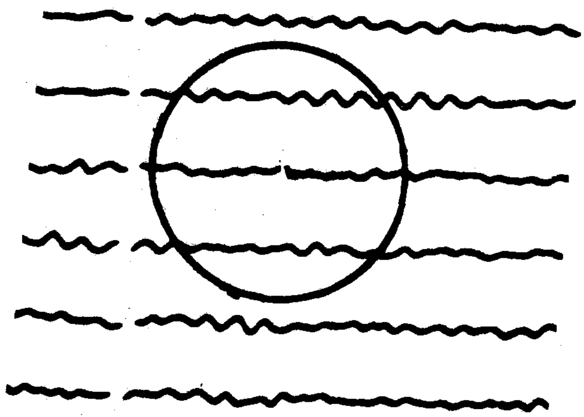

Figure T.2 KIRNOS recording of a presumed underground nuclear explosion in Eastern Kazakh on 31 May 1974, m_b=6.1.