data of individual station P and Rayleigh wave detection capabilities will, when inserted into the formal calculations, improve on our assessment of existing global detection. This, among all suggestions for studies given here, is the study most easily undertaken by national agencies; it simply requires documentation of probabilities of detection of P and Rayleigh waves as a function of event magnitude for the more important stations in each country.

In addition, it is important to obtain as soon as possible empirical capabilities for the two new large aperture arrays, the Norwegian SPZ/LPZ array NOS and the United States LPZ array ALP.

We have illustrated a number of cases in which geophysical peculiarities of the earth are assisting the discrimination process, and a few cases in which they may hinder the process. However, we are able to employ only those peculiarities with which we are familiar, from published and unpublished research and personal experience, and which pertain particularly to the North American situation. These phenomena are very important to global discrimination and urgently require documentation for other areas. Knowledge of P wave phenomena will be a by-product of any P wave detection studies that are undertaken; the Rayleigh wave phenomenon that needs extensive study in other regions is the significant reduction in detection and identification thresholds achieved in North America using the short period R_g waves. It is recommended that other countries with conventional stations on the same continental mass with earthquake and explosion sources further test the R_g applications.

The most widely applicable discrimination criterion, the M versus m discriminant, has a threshold of application that is controlled by the threshold of detection of explosion Rayleigh waves. The LPZ arrays are able to dominate the Rayleigh detection calculations principally because the recording and/or analysis procedures can reject the dominant long period noise band. But, because there are too few LPZ arrays to provide adequate Rayleigh wave detection, some conventional stations must be employed. The total number of LPZ stations required need not exceed 20 (i.e., significantly fewer than the 51 LPZ stations we have employed in Rayleigh wave detection calculations) if the included conventional stations had an improved capability; and a significant improvement of a conventional LPZ station can be achieved with modest investment. For example, WOL and GRF (see section 3.3) are considered to have magnifications about a factor of 3 greater than standard photographic recording stations because they record on magnetic tape and have the facility to filter and reject the dominant microseismic noise band. An alternative method that can be used on photographic recording seismographs is the addition of an electronic or electromechanical component designed to reject periods below, say, 10 seconds.

An improvement of this type on one LPZ seismograph in each of a number of countries could significantly improve Rayleigh wave detection, considering those countries in the UN returns that possess LPZ stations in reasonably quiet locations, and also considering the locations of existing LPZ arrays. Any additional new or improved stations (LPZ or SPZ) in the southern hemisphere would, of course, be of great value.