

one lacks *P. grandis*. This diagnostic species is not at all common and does not occur in every assemblage within its range. There is insufficient evidence to be confident about either interpretation, hence the low confidence rating of the zone determination.

5. 1930 - 1960 m. Mid *N. asperus* Zone, Late Eocene.

The species whose ranges terminate within the Lower *N. asperus* Zone is not found here. The diagnostic species whose ranges begin at the base of the Mid *N. asperus* Zone are not found here either. The nature of the assemblage as a whole, however, is entirely consistent with the Mid *N. asperus* Zone.

Conclusive evidence for the Mid *N. asperus* Zone is found in the dinoflagellates which is discussed later.

6. 1400 - 1855 m. *P. tuberculatus* Zone, Early Oligocene - Early Miocene.

Species whose ranges terminate at the top of the Mid *N. asperus* zone are lacking with the exception of *P. asperopolus* and *P. adenanthoides* in 1400 - 1430 m. As only one half of one grain of each was seen, it is thought that they have been reworked. The general aspects of the assemblages are like those of the Mid *N. asperus* Zone (and this is normally the case) but the latter usually has a variety of diagnostic species whose ranges terminate at the top of the zone. Hence it is unlikely that these assemblages are the Mid *N. asperus* Zone.

Because the zone determination is based on the general characteristics of the assemblage, confidence is only moderate.

There is no evidence whatever of the Upper *N. asperus* Zone.

DINOFLAGELLATES.

Dinoflagellate zonation follows Stover, Helby & Partridge (1979). The zones in this reference are much the same as those in Partridge (1976), with some minor amendments in the former. Neither of these references describe or diagnose the zones. In this report, zone determination relies upon the ranges of a few selected species (see Fig. 2). Dinoflagellates associated with the Early Oligocene - Early Miocene *P. tuberculatus* zone have not been defined. The literature on dinoflagellates of this time