

## 2. OBJECTIVES

### (a) Regional Geology

During late Jurassic and early Cretaceous times, southern Victoria was the site of an east-west rift valley extending continuously from South Australia to Gippsland. A monotonous sequence of fluvio-lacustrine mudstones, felspathic and lithic sandstones, and minor coals, known as the Otway Group, accumulated in this trough and was probably derived from the bordering Palaeozoic and early Mesozoic cratonic highs then existent to the north and south. Seismic evidence indicates that these sediments attain thicknesses as great as 15,000 feet in the deeper parts of the basin.

Four major depositional cycles were developed across the area beginning in the mid-Cretaceous and continuing up to the Pliocene. At least two basin-wide unconformities, which can be reasonably well detected on seismic records, separate the successive sedimentation cycles.

The major depositional breaks relate approximately to :

1. Top of Otway Group: Unconformity between the Upper Cretaceous Sherbrook Group above and lower Cretaceous Otway Group and/or Palaeozoic rocks below. From the Portland-King Island Survey records, it appears that the Otway and Sherbrook Groups could be conformable in the deeper parts of the basin.
2. Base of Wangerrip Group: Unconformity between Tertiary and Upper Cretaceous sequences.

A local unconformity or disconformity in the mid-Oligocene between Nirranda Group and the Wangerrip Group developed in the Port Campbell area, east of the Warrnambool High.

The Upper Cretaceous cycle is represented by sediments of the Sherbrook Group which attain thicknesses of more than 5,000 feet. This first cycle consists of a suite of non-marine sands, thin coals, paralic silts and marine shales and minor dolomites, representing transgressive and regressive facies.

Sands at the base (Waarre Formation) and top (Curdies Formation) are believed to be the most prospective hydrocarbon reservoirs in the Sherbrook Group. The Good reservoir properties of the Waarre and the effectiveness of the overlying cap rocks (Belfast Mudstone, Flaxmans Formation) are demonstrated by