

thick subgreywacke underlain by dark grey, carbonaceous shale, siltstone and two dolerite sills. Unconformably overlying this sequence were strata of the Lower Cretaceous Otway Group.

Seismic data indicates a wedge of truncated sediments to be present in the offshore area, west of Robe in South Australia. This wedge has an east-west trend, is about 28 miles wide and may contain several thousand feet of strata. The age and lithology of these beds has not been established, however because of the lineation of the wedge and its relation to the overlying Otway Group this sequence may be Jurassic in age and similar to the sediments of possible Jurassic age encountered in the Casterton-1 well. These unknown beds are indicated to have been uplifted, folded and eroded before being unconformably overlain by the Lower Cretaceous Otway Group.

Lower Cretaceous - The Lower Cretaceous Otway Group may have a maximum aggregate thickness of about 15,000 feet and unconformably overlies possible Jurassic sediments or Paleozoic basement. The Otway Group consists of non-marine greywackes, subgreywackes, carbonaceous siltstones, chloritic mudstones and coal which were deposited in a northwest to southeast trending trough which developed parallel to the present coast of Victoria and South Australia from Gippsland to Cape Jaffa. These clastics were probably derived from the uplifted Mesozoic and Paleozoic highlands then present to the north and south of the depositional trough.

Sandstones of the Otway Group usually contain abundant matrix material resulting in very low permeabilities. A clean quartzone sandstone of Lower Cretaceous age was, however, encountered in the Frome-Broken Hill Pty. Ltd. Pretty Hill-1 well in Victoria which exhibited excellent reservoir characteristics. This sandstone unit had a thickness of 1,910 feet and measured porosities of 19 to 25%. The permeabilities were very high and ranged from 198 to 2,756 millidarcies. Quartz sandstones of Lower Cretaceous age were also encountered in wells drilled in the western part of the basin; at Casterton and Heathfield in western Victoria and at Robertson in South Australia. These quartz sands may have been sourced from the granite core of the Padthaway Horst. Quartz sandstones might have developed in the offshore area and are considered to be one of the objectives of the Esso Crayfish A-1 well where the Lower Cretaceous section is expected to attain a thickness of about 3,300 feet.

At the close of Lower Cretaceous time portions of the Otway Basin are indicated by seismic data to have been uplifted and subjected to erosion. Renewed subsidence of the basin in Upper Cretaceous time resulted in the deposition of the paralic clastics of the Sherbrook Group. In parts of the basin the contact between the Sherbrook and Otway Groups appears to be unconformable.

Upper Cretaceous - The first marine rocks in the Otway Basin occur at the base of the Upper Cretaceous Sherbrook Group. The axis of deposition during Upper Cretaceous time appears to have roughly coincided with the axis of Lower Cretaceous deposition.

As the Upper Cretaceous sea encroached on the Otway surface, sands and sandy mudstones of the Flaxmans Formation were deposited which are overlain by the deeper water Belfast mudstone. The Belfast mudstone in turn grades upward into the marine sandstones of the Paaratte Formation. Overlying the Paaratte sandstones are the non marine sandstones, siltstones and coals of the Curdies Formation which is the uppermost member of the Sherbrook Group. The Curdies Formation of late Upper Cretaceous age appears to represent a "filling up" of the depositional area.