

# **Biostratigraphy and Paleoecology of Benthic and Planktic Foraminifera from Shell Canada Exploration Wells, Tofino Basin, Offshore Vancouver Island, British Columbia**

Y. Roshni Narayan\*  
School of Earth and Ocean Sciences  
University of Victoria, Victoria, BC, V8W 3P6  
[marayan@uvic.ca](mailto:marayan@uvic.ca)

and

Chris R. Barnes  
School of Earth and Ocean Sciences  
University of Victoria, Victoria, BC, V8W 3P6

In the past thirty years, hydrocarbon exploration in the Queen Charlotte and Tofino basins, has been suspended by a moratorium imposed by the Province of British Columbia and Government of Canada. Prior to this, Shell Canada had drilled 14 exploratory wells, six were in the Tofino Basin, where a thick (~3600 m) sequence of Cenozoic clastic marine sediments were penetrated. Currently, with the possibility of the moratorium being lifted, there is renewed interest in reassessing the energy resource potentials in this region.

In this study, approximately 1100 subsurface samples from the six wells, Shell Anglo J-14, Pluto I-87, Zeus I-65, Zeus D-14, Prometheus H-68, and Cygnet J-100 were available for biostratigraphic study of the foraminiferan faunas present in previously processed cutting residues. The faunas were examined, described and evaluated for the purpose of clarifying the relative stratigraphic ages, and in interpreting the paleoenvironments represented in the offshore marine sequences. Objectives also include correlations with the late Eocene to early Miocene Carmanah Group strata exposed along the western Vancouver Island.

In over 600 samples examined, approximately 80 benthic and planktic species have been identified. Cold-water, temperate faunas ranging from the Miocene to the Pliocene-Pleistocene are well represented, in contrast to relatively few Oligocene and rare warm-water late Eocene foraminiferans. Sea-level fluctuations with uplift in the sand (neritic) facies is evident in some wells (e.g. Pluto). Lithostratigraphic data will assist in constraining events, despite problems of sediment transport and/or wall spalling of the wells. Zones of sparse faunal recovery may limit interpretations.