

---

**Ben Nevis and Avalon formations – A review**

---

HARRY J. KLASSEN

*Canada-Newfoundland Offshore Petroleum Board,  
St. John's NL, A1C 6H6.*

From 1972 to present, more than 165 wells have been drilled in the Jeanne d'Arc Basin. Most of the wells have encountered an Early Cretaceous sandstone/shale section. The Ben Nevis and the Avalon formations have been formally described by McAlpine, 1990 who used as his type section the well, Mobil et al Ben Nevis I-45. Unfortunately, no cores were cut in the well. Sinclair, 1993 described the Gambo Member of the Ben Nevis Formation using as the type section the well, Mobil et al South Mara C-13.

At least 9 stratigraphic charts have been compiled for the Whiterose to Nautilus interval which includes the Ben Nevis and the Avalon formations. Lithostratigraphic picks show a distinct variability for the top of the Avalon Formation. Cross sections through a number of areas in the basin highlight the problem of the complexities of the two formations. The Ben Nevis Formation has been defined as a fining upward sandstone / siltstone sequence with the top of the Ben Nevis Formation being regularly picked at the emergence of the shales of the Nautilus Formation. In contrast, the Avalon has been represented as a coarsening upward cycle of shale, siltstone and sandstone. The Gambo member is composed of a highly variable lithology.

Biostratigraphy will not give absolute age dates for the two formations. Ranges for age dating is also presented in various charts. The Ben Nevis has been dated from Late Aptian to Late

Albian while the Avalon has been dated as Late Barremian to Late Aptian.

Isopach maps of the units show the variability within the basin. Isopachs for the Ben Nevis Formation differ from 5m to over 300 m while the Gambo Member varies from 6 m to 124 m. Similarly the Avalon Formation fluctuates from 40 m to over 250 m.

Lithostratigraphic picks for the Jeanne d'Arc basin are best established by using all available data such as sedimentology, biostratigraphy and seismic. Above all, a consistent approach is required. Development areas have a higher volume of applicable data leading to a more detailed treatment.