CONCLUSION

The closure of Rajang Sea during Tertiary time trapped and uplifted the deep sea sediments forming the Belaga Formation as the Luconia Block collided with the West Borneo Basement. The Rajang sea oceanic crust was subducted beneath the West Borneo Continent and it eventually broke off. This post collisional event triggered the extension of the Tatau-Balingian continental crust causing it to extend and the inflow of the magma later formed the Lower to Middle Eocene Piring rhyolitic dyke (Hutchison, 2005).

The collision of two continents also formed the Pennian High located to the south of the Tatau area. The highland was eroded and the sediment rich in radiolarian chert and metamorphic fragments from the Belaga Formation was transported and deposited to form the conglomerates and sandstones of the Ransi Member. The Piring rhyolitic dyke also contributed sediments to the Ransi Member.

The Ransi Member beds were deposited within various sub-environments. The Ransi Hill and Tatau Hill outcrops were braided streams associated with some shallow marine coastal environment, whereas the Tutong Hill outcrops were meandering river and ox-bow lake deposits, while the Hormat Pasifik Quarry outcrops were more swampy with coals.

The presence of Lower to Middle Eocene Piring rhyolite fragments suggest that the Ransi Member was formed during or younger than the Early Eocene. The vitrinite reflectance of the coal in Ransi Member suggests that the Ransi Member is part of the Tatau Formation and it is younger than the Belaga Formation and older than the Nyalau and Balingian Formation as suggested by Ismail (2000), Kamaludin Hassan (2004) and Hutchison (2005). The Arip Limestone futher retricts the age of the Tatau Formation to Middle Eocene based on *Globigerinatheca sp.* found in the lower part of the Arip Limestone.

The age of the Ransi Member which from the lower part of the Tatau Formation is from the Middle to Late Eocene. The Ransi Member is the oldest part of the Tatau Formation as it sits unconformably above the Belaga Formation in several outcrops such as Tutong Hill and Ransi Hill. The Ransi Member beds share the same general bed orientation with younger beds of the Tatau Formation and the vitrinite reflectance of the Tatau carbonaceous material is quite similar to those of the Ransi Member.

The Arip Limestone succession was building up in a shallow marine environment at the same time when the Ransi Member was being deposited in a fan delta nearby. Large benthonic foraminifera in the limestone gives similar age of Middle to Late Eocene time. The limestone gradually transited into clastic deposits that forming calcareous mudstone at the top of the limestone sequence (Fig. 7.1).

The Nyalau Formation at the southeastern part of the Tatau area was formed during the faulting that led to the forming of a gentle anticline next to the Anak-Nyalau Fault. A series of growth faults parallel to the Anak-Nyalau Fault were developed offshore beyond Tatau area. These faults probably were formed from post-Miocene to Pliocene time.

The Tatau-Bintulu area was uplifted and exposed during Late Eocene. Subsequent erosion and deposition of Quaternary alluvium in the lowlying areas especially near the coast eventually lead to the present topography.

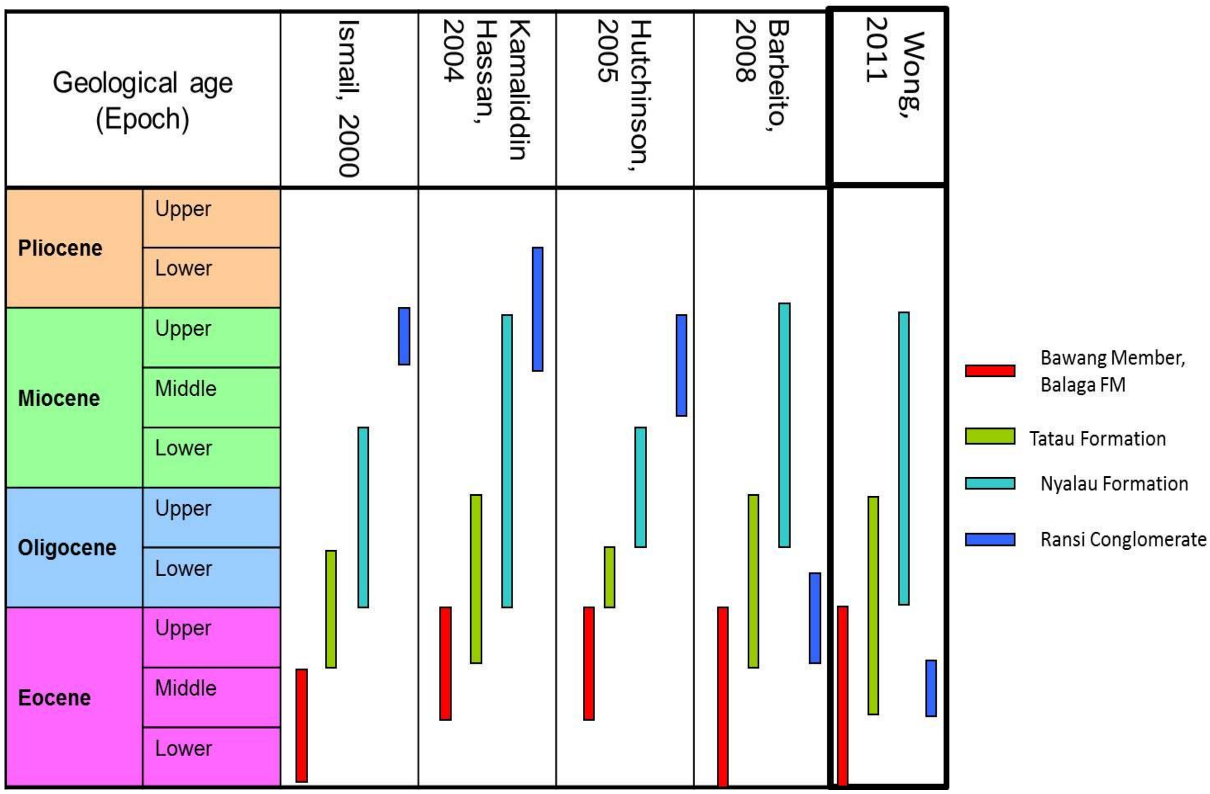

Fig. 7.1 Comparison of the previous stratigraphy and suggestion of new stratigraphy position of Ransi Member and Tatau Formation age.

The overall study of the Ransi Member in Tatau area, following findings are summarized as below:

(i) Ransi Member is likely upper Eocene to Upper Oligocene that was deposited in a marine influenced fan channel environment.

(ii) Ransi Member is the base of the Tatau Formation which overlies unconformably the older turbidite Belaga Formation.

(iii) The sources of the Ransi beds were mainly quartzite, chert and some metamorphic fragments of older Rajang Group rocks mainly the Belaga Formation and volcanic fragments from the Piring rhyolite.

(iv) The Arip Limestone was deposited further offshore simultaneously with the Ransi Member.

Future work:

(i) A detailed study of geochemistry and mineralogy of the Piring Hill rhyolite and Arip volcanic flow will help in understanding the geological history of the Tatau area.

(ii) Correlation of the on-shore data with off-shore data will give a more complete picture of the detailed geology of the area.