

CHAPTER VI

DISCUSSION AND CONCLUSION

Discussion

The Permian rocks in the study area of Khao Nong Hoi, Amphoe Pak Chong, Changwat Nakhon Ratchasima was defined as a part of the Nong Pong Formation (Hinthong et al., 1985). The stratigraphy of the study area is divided into three biostratigraphic zonation; *Robustoschwagerina* Biozone, *Misellina* Biozone, and *Perrinites* Biozone respectively in ascending order.

The *Robustoschwagerina* Biozone indicates Asselian to Sakmarian. The rocks in this zone are composed of recrystalline limestone in stratigraphic block 1 and wackstone and packstone of the lower part of stratigraphic block 2 of the study area.

According to the previous study of Ishibashi et al. (1997), Ingavat (1984), and Dawson and Racey (1993), *Robustoschwagerina* Biozone indicated age of Sakmarian for the fusulinid faunas in Thailand. All these previous data are in accordance with the *Robustoschwagerina* Biozone of the study area.

The *Misellina* Biozone in the study area indicates Artinskian to Kungurian in geological age. This zone comprises of the mudstone and packstone of the middle part of stratigraphic block 2 of the study area. The fossil represent this zone are *Misellina* sp., *Parafusulina* sp., *Pseudofusulina* sp., *Pamirina* sp., and *Thailandina* sp.

The selected fusulinids for represent this zone are in agreement with those of previous researches of Toriyama et al. (1975), Ingavat et al. (1980), Ingavat (1984), and Dawson and Racey (1993). Furthermore, *Parafusulina* sp. discovered in this zone of the study area is also useful fossil for correlation with the fusulinids zonation established by Ingavat et al. (1984), and Dawson and Racey (1993).

The *Perrinites* Biozone of the study area indicates the age of Roadian. This zone is situated in the mudstone and wackstone of the top part of stratigraphic block 2 and the bottom

part of stratigraphic block 3. *Perrinites* group is dominantly discovered in this zone with a large assemblage of other ammonoids.

According to the previous study of Ishibashi et al. (1997), *Perrinites* sp. and *Agathiceras* sp. were selected to represent Bolorian (Kungurian) age. But *Perrinites* sp. and many ammonoids in the study area are defined in Roadian age. It is possible that the *Perrinites* Zone in the study area may range overlap with the uppermost of Kungurian age throughout the Roadian age.

Parafusulina sp. discovered in this zone is synchronized with the previous researches of Ingavat et al. (1980) and Ishibashi et al. (1997).

Furthermore, Yugan et al. (1996) selected *Stacheoceras* sp. to represent Roadian age. The *Perrinites* Zone of the study area also contains *Stacheoceras brunsonorum* Miller and Cline, 1934; *Stacheoceras rothi* Miller and Furnish, 1940; *Stacheoceras mediterraneum* Gemmellaro, 1887.

The preceding study of Hinthong et al. (1985) mentioned that the study area was grouped in the Nong Pong Formation of Saraburi Group. According to the lithology and biostratigraphy of the study area, the Permian limestone rocks in the study area should belong to the Khao Khwang Formation. The Khao Khwang Formation is mainly composed of thickly bedded limestone and contains a various kind of fossil assemblage (mentioned in Chapter II) as in the study area. The record of fossil in Khao Khwang Formation indicated the Sakmarian age. But the Nong Pong Formation characterized by the clastic rocks dominantly intercalated with thinly bedded limestone.

In the study area, clastic rocks; greenish gray siltstone, gray shale exposed at the southern part of the study area. This group of rock is situated at the top part of the stratigraphic block 3 of the study area by fault contact.

For the reason mentioned above, the rocks in the study area is probably belong to the Khao Khwang Formation. But they contact with the Nong Pong Formation by the influence of thrust fault.

Conclusion

The Permian rocks in the study area contain a various kind of fossils. Ammonoids discovered in the study area are five genera, twelve species of *Agathiceras* sp.; *Agathiceras mediterraneum* Toumanskaya, 1949; *Adrianites marathonensis* Bose, 1917; *Adrianites cancellatum* Smith, 1927; *Prostacheoceras pamiricus* (Bogoslovskaya, 1978) sp. nov.; *Stacheoceras brunsonorum* Miller and Cline, 1934; *Stacheoceras rothi* Miller and Furnish, 1940; *Stacheoceras mediterraneum* Gemmellaro, 1887; *Perrinites* sp.; *Perrinites tardus* (Miller and Furnish, 1940), Tharalson, 1984; *Perrinites* cf. *hilli* (Smith, 1903), Miller and Furnish, 1940; *Thalassoceras welleri* (Bose, 1917), Miller and Furnish, 1940; *Daraelites* sp.; *Propinacoceras beyrichi* Gemmellaro, 1888, *Propinacoceras americanum* Miller and Warren, 1933. Fusulinids discovered in the study area are seven genera of *Robustoschwagerina* sp.; *Parafusulina* sp.; *Pseudofusulina* sp.; *Misellina* sp.; *Pamirina* sp.; *Thailandina* sp.; *Quasifusulina* sp.

According to the data of ammonoids and fusulinids, three biostratigraphic zonation are established as *Robustoschwagerina* Biozone, *Misellina* Biozone, and *Perrinites* Biozone respectively in ascending order.

The *Robustoschwagerina* Biozone is defined as the local range zone of *Robustoschwagerina* sp. The lower boundary of this zone is indicated by the first appearance of *Robustoschwagerina* sp., and the upper boundary is the last appearance of *Robustoschwagerina* sp.

The *Misellina* Biozone is defined by the assemblage of various kind of fusulinids. The lower boundary is defined by the first appearance of *Misellina* sp., and the upper boundary is the last appearance of *Misellina* sp. The fusulinids assemblages in this zone are composed of *Parafusulina* sp., *Pseudofusulina* sp., *Pamirina* sp., and *Thailandina* sp.

The *Perrinites* Biozone is defined by local range zone of *Perrinites* group. The first appearance of *Perrinites* sp.; *Perrinites tardus* Miller and Furnish, 1940; *Perrinites* cf. *hilli* (Smith, 1903), Miller and Furnish, 1940 as the lower boundary. The upper boundary is limited by the last appearances of these *Perrinites* assemblage.

The geological age of *Robustoschwagerina* Biozone is considered as Asselian to Sakmarian. The geological age of *Misellina* Biozone is defined as Artinskian. The *Perrinites* Biozone is Kungurian to Roadian in geological age. Consequently, the geological ages of the study area range from Asselian to Roadian.