

CHAPTER V

DISCUSSION AND CONCLUSION

The main objective of the study is to establish the lithostratigraphy of the carbonate succession in the vicinity of Khao Lamphean, Amphoe Nong Muang, Changwat Lop Buri. Additional attempts have been made to conduct the microlithofacies analysis and fossil identification to assist reconstruction of their depositional environments.

5.1 Classification and nomenclature of the lithostratigraphy

The most economic important carbonate terrane of Thailand, which widely exposed along the western rim of the Korat Plateau, from Changwat Loei to Changwat Saraburi, had been considered as the Permian succession of the Saraburi Group (Bunopas, 1981).

The carbonate succession in Khao Lamphean, which previously assigned in the Tak Fa formation (Nakornsri, 1977) and later on Khao Khok rock unit (Yavichai, 1997), which consist of gray to dark gray limestone, argillaceous limestone, and dolomitic limestone. Nodular and bedded chert are commonly associated and intercalated. The age of the formations was former referred in Artinskian to Kungurian.

It is apparent, in the present investigation that the carbonate sequence Khao Lamphean consists of gray to dark gray limestone, and argillaceous limestone. Elongated nodular cherts are common. The fossils are very abundant including corals, fusulinids, giant bivalves, crinoids, smaller forams, brachiopods, algae and ostracods which have been commonly found in the Middle Permian.

The carbonate succession is well defined and correlated to the Khao Khad formation of the Saraburi Group in Saraburi area. In detailed stratigraphy and the lithofacies analysis, there is a confidence to correlate the successions in this study to the lithofacies IX of the Khao Khad Formation in Khao Chan area which previous proposed by Thambunya (1999)

5.2 Microlithofacies identification

Base on the petrographic study, 9 microfacies are identified, namely, 1) algal and a mixture of skeletal fragments packed biomicrite, 2) shell fragments biomicrudite, 3) encrinite, 4) argillaceous sparse biomicrite, 5) foraminiferal biomicrudite, 6) sparse biomicrite, 7) biosparite, 8) biopelsparite, and 9) biopelmicrite.

5.3 Lithostratigraphy of the carbonate succession at Khao Lamphuan

Stratigraphically, the carbonate succession in the study area, totally 245.5 meters thick in the composite section, are subdivided into 4 members in ascending order as follows:

1) the Wat Khao Lamphuan Member (90 meters-thick) is characterized by abundant coral patch reefs and coral biostrome.

2) the Ban Chon Muang I Member (58 meter-thick) contains abundant fusulinids but rare in corals.

3) the Ban chon Muang II Member (54 meters-thick) is characterized by sparry calcite cement.

4) the Ban Phu Noi Member (42.5 meters thick) is algal abundant but rare in corals and fusulinids.

5.4 Fossil identification and age determination

The fusulinids, such as *Colania* sp., *Sumatrina* cf. *longissima*, *Codonofusiella* sp. and *Verbeekina* sp., are discovered in the study area, and are well correlated with the *Colania duvillei* zone (Toriyama, 1980). Moreover, the index faunas, *Sumatrina* cf. *longissima* distinctly indicate the age of Lower to Upper Capitanian (Midian), in the Middle Permian.

The massive corals *Ipciphyllum* sp. indicates Wordian (Murghabian) age, except *Ipciphyllum Phadangensis* as well as *Multimurinus* sp. occurred in lower part of Capitanian (Midian) (Fontaine, 2002).

The most possible age of the rock in the study area is probably defined within Lower to Upper Capitanian (Midian), in the Middle of Permian.

5.5 Depositional environments

The depositional environment of the study area is believed to be the middle shelf in open marine of carbonate accumulation since early to late Capitanian in the middle Permian. Various types of microfacies indicate almost subtidal zone. The subenvironments could be divided into 4 stages as follows :

Stage 1) The depositional basin may be located near patch reef, sub-wave base environments. The water should be relatively high with moderate circulation with local restriction and protection by shoals and corals patchy reefs.

Stage 2) It could be located in shoal, sub-wave base environments. The water could be relatively moderately deep with gain circulation and lack of patchy reefs.

Stage 3) It could be located near shore, at/over wave base environments. Water could be relatively low, and open circulation would be constantly agitated by wave actions.

Stage 4) Finally, it could be located near shore, sub-wave base environment. Water could be relatively moderately deep with moderate circulation subjected to the effects of terrigenous sediments influx.