CHAPTER VII

CONCLUSION

The Carboniferous and Permian limestones under investigation are exposed in the eastern part of Changwat Loei. These rocks consist of dark grey, massive to thick-bedded limestones intercalated with calcareous mudstone, calcareous shale and greywacke. The rich and well preserved organic remains especially fusulinids are found in these limestones. 56 samples collected from twelve localities of the study areas are used for paleontologic study of fusulinids to determine their geologic ages and for petrographic analyses of carbonate rocks to indicate their depositional environments. The classification of carbonate rocks follow Folk (1959, 1962) and Dunham (1962) which are based on composition and texture types. A total of 13 genera of fusulinids were identified and possibly divided into 6 fusulinacean zones. The geologic ages and depositional environments of the rock samples are summarized together with fusulinid zones in ascending order :

Triticites zone

This zone indicates Late Kassimovian to Early Gzhelian, consisting only of *Triticites* sp. It is found in bio-pelmicritic wackestone of Pha Mo (Location TCM 94-1) and Pha Mo Noi (Location TCM 94-2) and stromatolitic boundstone and foreslope talus of Location TCM 94-5. The rock types suggest that they are deposited in the shelf lagoon, organic build-up and foreslope.

Daixina zone

This zone indicates Gzhelian. The fusulinacean fauna consists of *Daixina* sp. and *Triticites* sp. The rock type is biomicritic wackestone in Phu Khao (Location TCM 94-3) including samples no. TCM 94-3-1 to TCM 94-3-5, indicating deep shelf margin.

Pseudoschwagerina zone

This zone indicates Asselian age. It contains *Pseudoschwagerina* sp. together with *Triticites* sp., *Daixina* sp., *Jigulites* sp. and *Schubertella* sp. The rock types are packstone in Location TCM 94-3 (sample no. TCM 94-3-6) and Location TCM 94-4 (sample no. TCM 94-4-1) and biomicritic wackestone in Location TCM 94-4 (samples no. TCM 94-4-2 to TCM 94-4-8). The depositional environment is considered to be deep shelf margin.

Pseudofusulina-Chalaroschwagerina zone

Pseudofusulina sp. and *Chalaroschwagerina* sp. belong to a Yahtashian age. They are associated with *Parafusulina* sp. The rock type is biomicritic wackestone in Location TCM 94-10, indicating open sea shelf.

Pamirina zone

This zone contains *Pamirina* sp. together with *Schubertella* sp. and *Sphaerulina* sp., belonging to Yahtashian age. The rock types are biomicritic wackestone in Location TCM 94-11 (samples no. TCM 94-11-3 to TCM 94-11-6 and

TCM 94-11-9 to TCM 94-11-15) and bio-pelmicritic wackestone in Location TCM 94-11 (samples no. TCM 94-11-1, TCM 94-11-2 and TCM 94-11-7), indicating open sea shelf.

Yangchienia zone

This zone indicates Kubergandian age. The fusulinacean fauna contains *Yangchienia* sp. together with *Verbeekina* sp., *Parafusulina* sp. and *Pseudofusulina* sp. The rock types are packstone in Location TCM 94-9 (samples no. TCM 94-9-19, TCM 94-9-20 and TCM 94-9-22), biomicritic wackestone and grainstone in Location TCM 94-9 (sample no. 94-9-21). The depositional environments are varied ranging from winnowed edge sands and foreslope to open sea shelf.

The lithologic and biostatigraphic column of the Late Carboniferous to Middle Permian sections in the study areas are present in figure 105. Fusulinids and stratigraphy were considered to establish the lithologic column. It represents shallowing upward and indicates regressive sequence in general.

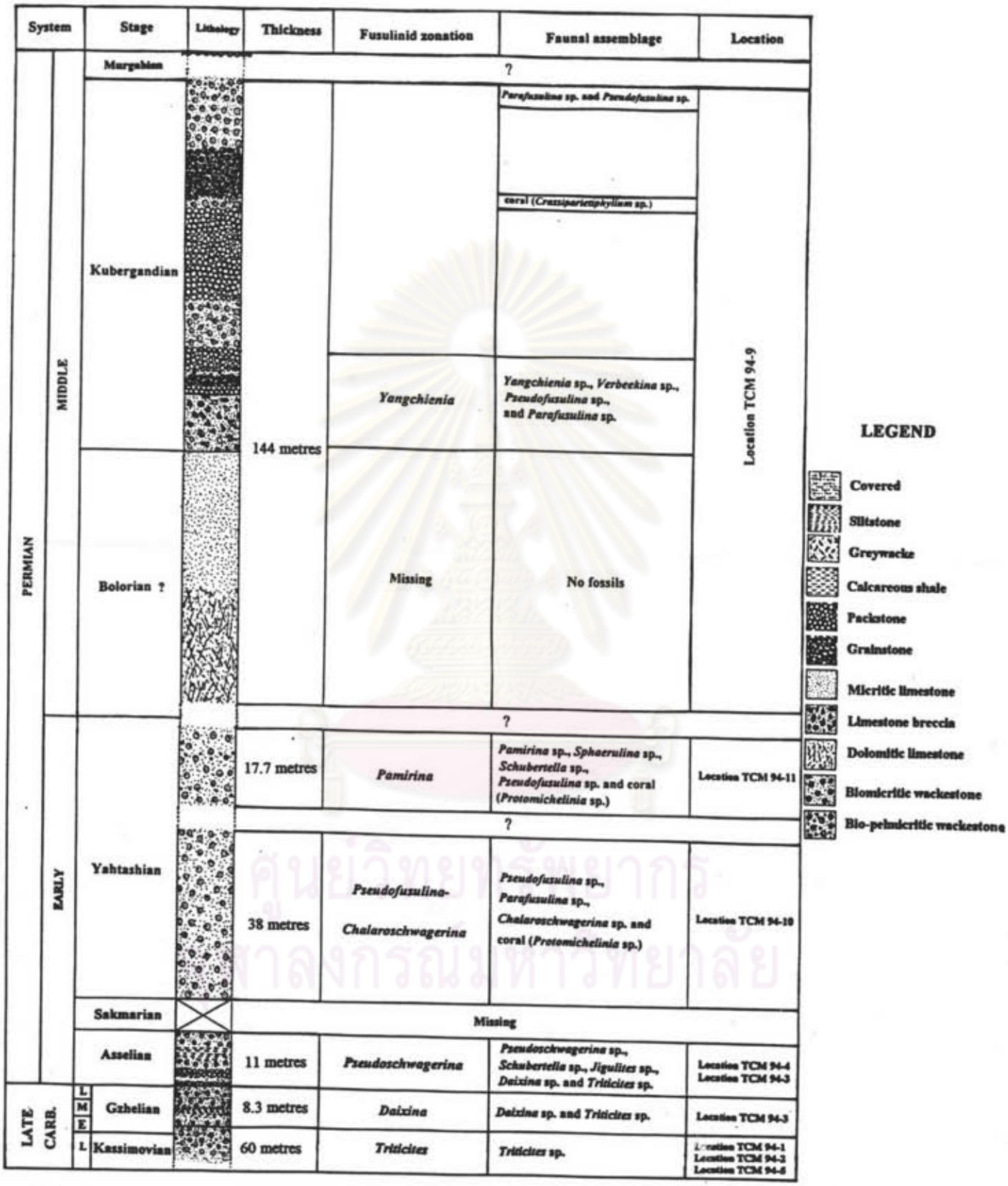

Figure 105 The lithologic column and fusulinacean zonation of carbonate rocks in the study areas.