

CHAPTER II

GEOLOGY

The study area is situated in Amphoe Nong Muang, northwestern part of Changwat Lop Buri. Geologic map of the study area is map sheet : Amphoe Ban Mi, ND 47-4, scale 1 : 250,000 (Nakornsri, 1977) and is illustrated in Figure 2.1. The rocks in the area of Khao Wong and Khao Chakkachan, Amphoe Nong Muang, Changwat Lop Buri consist of Permian carbonate rocks of Tak Fa formation of Saraburi Group (formerly included in Ratburi Group).

2.1 General geology

2.1.1 The Saraburi Group

The name Saraburi Group is proposed by Bunopas (1981), for the sequence of limestones and clastic rocks outcropping on the eastern side of the lower Chao Phraya central plain from south of Nakhon Sawan to Saraburi, and also on the western edge of the Khorat Plateau from Loei, south to Saraburi. The Saraburi Group was previously mapped as part of the Rat Buri Group (Brown et al., 1951; Javanaphet, 1969; Nakornsri, 1977). Eventually, Bunopas (1992) generalized the stratigraphic name for Thailand into seven stratigraphic belts based on tectonic provinces and evolution concept of the Shan – Thai and the Indochina terranes. He also rearranged the Permian rocks into three carbonate – clastic groups, and two clastic – volcanic related subduction groups, the Saraburi Group is located in the VI belt (Figure 2.2 and Table 2.1).

In order to serve a background of the present study, general views of stratigraphy of Saraburi Group on the Chao Phraya central plain reviewed as follows.

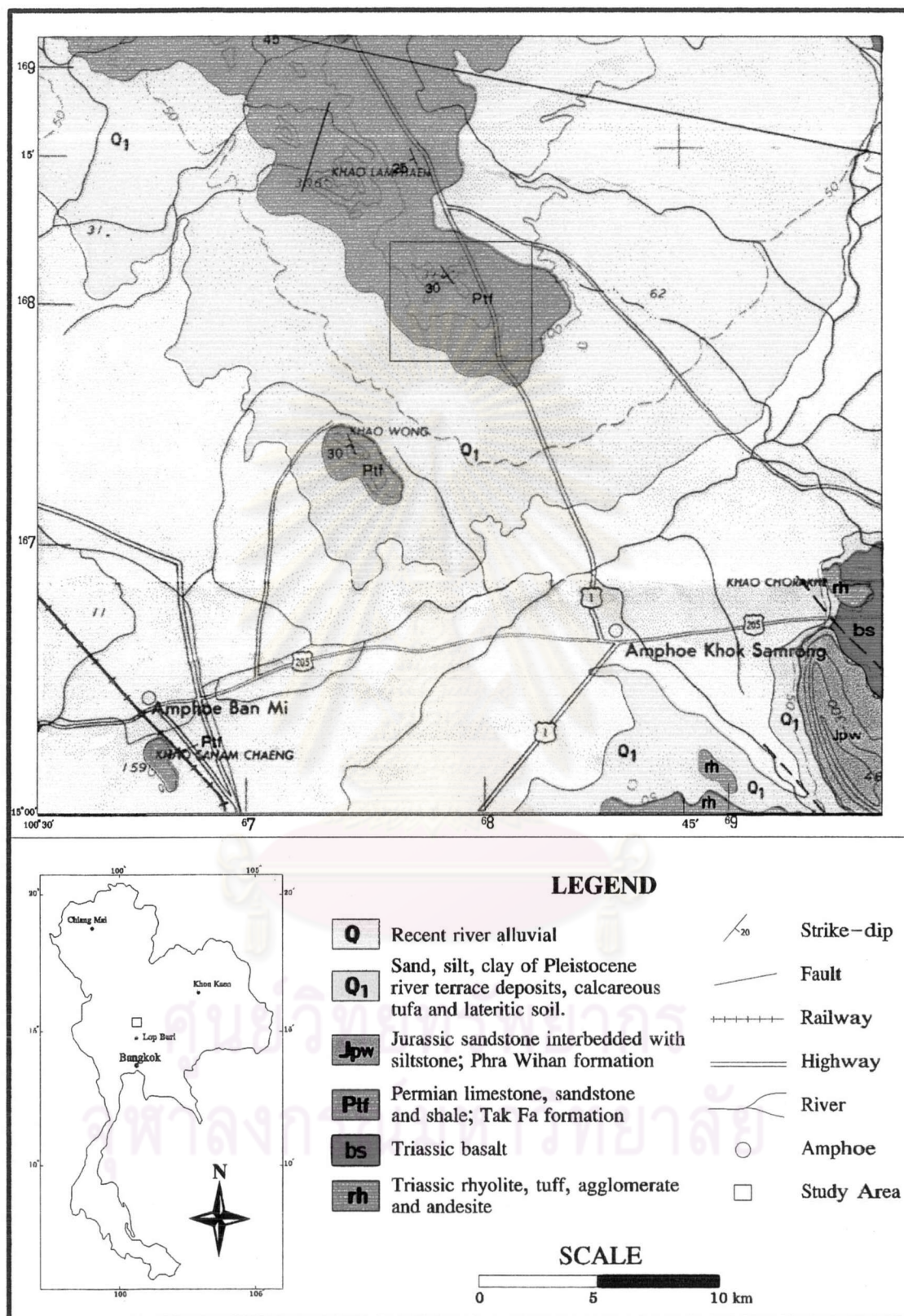


Figure 2.1 Geologic map of the study area : map sheet Amphoe Ban Mi, ND 47-4, scale 1 : 250,000 (Nakornsri, 1977).

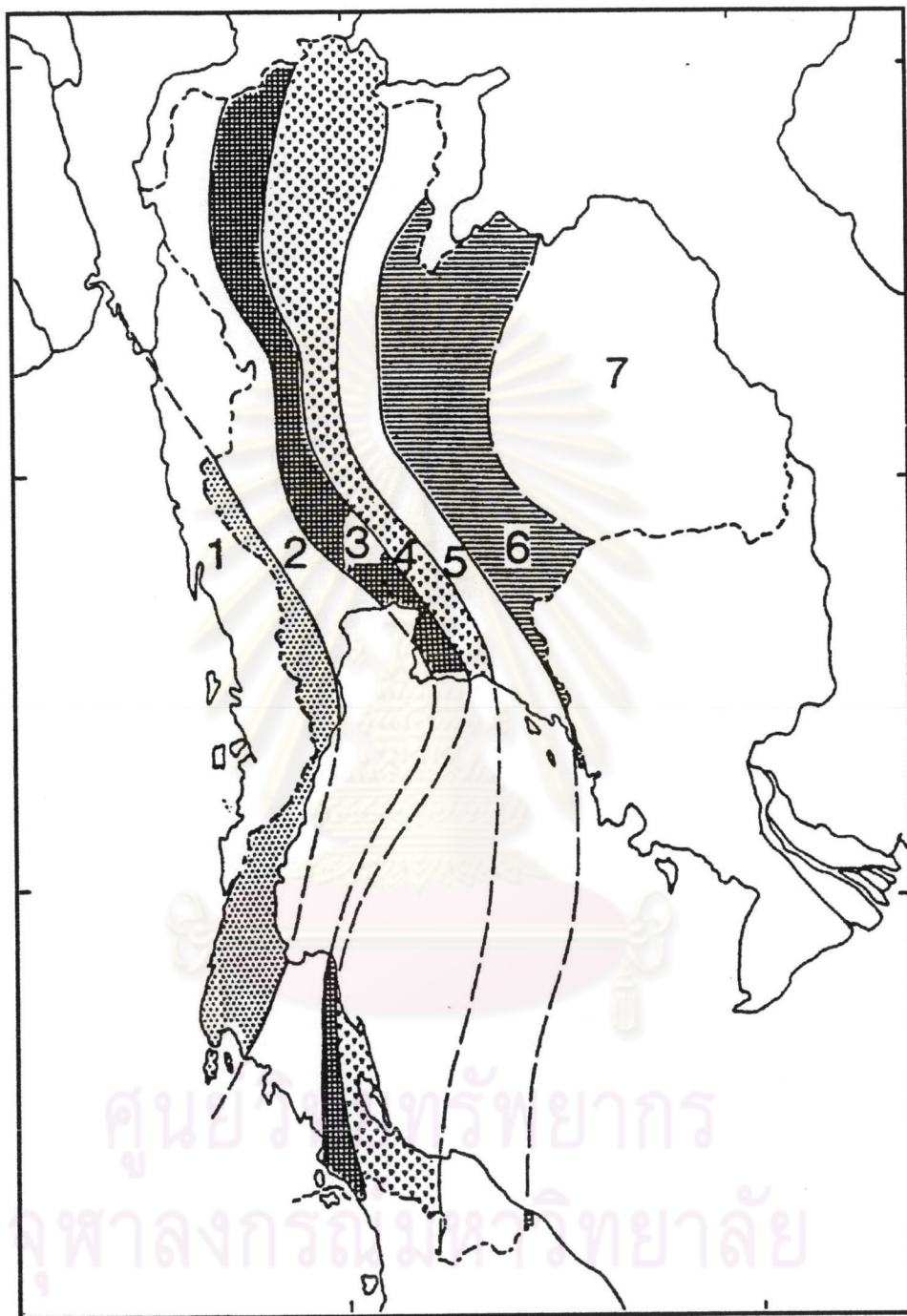


Figure 2.2 Seven stratigraphic belts of Thailand : 1 – 5 on Shan – Thai and 6 – 7 on Indochina terranes (Bunopas, 1992).

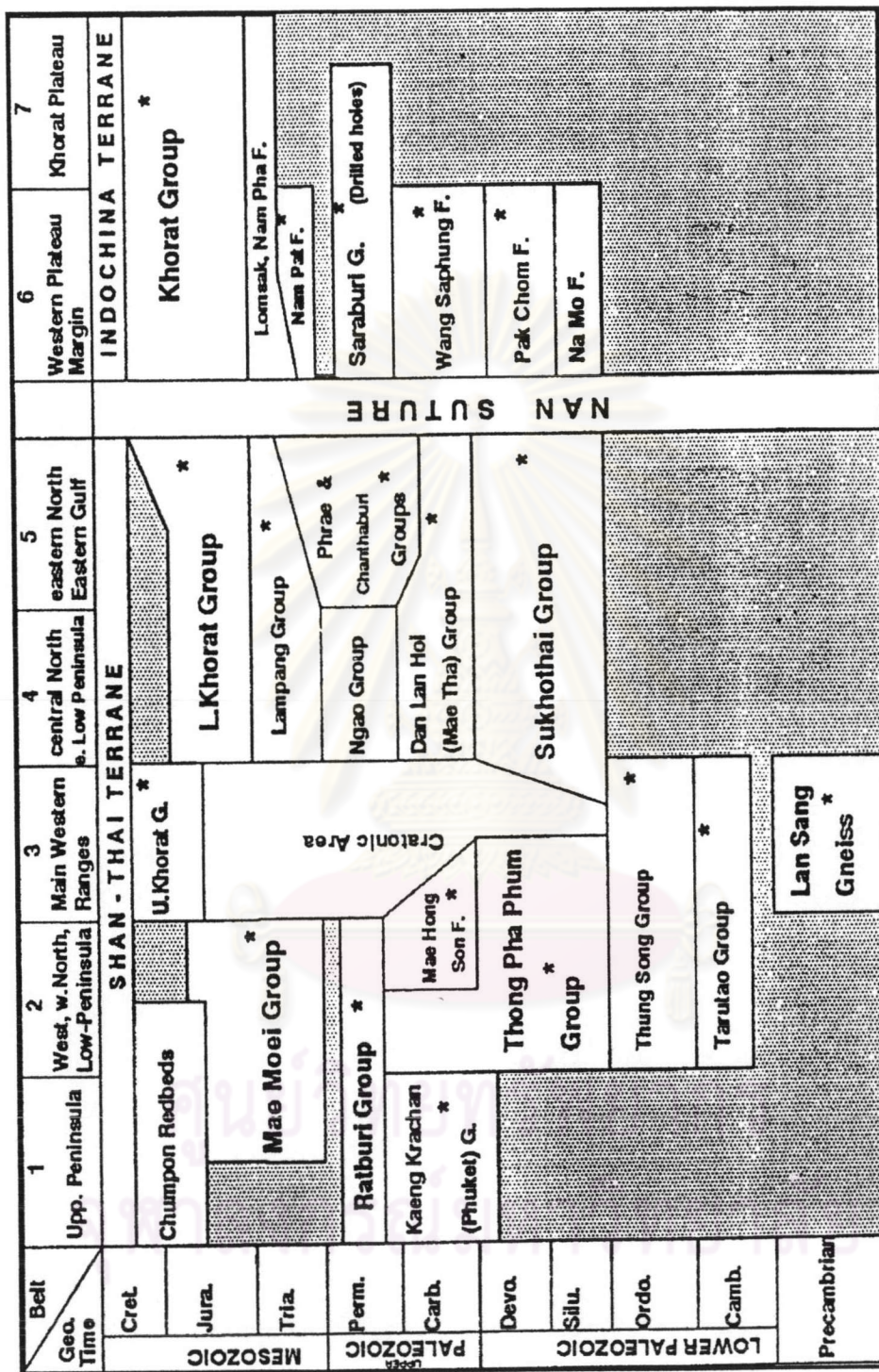


Table 2.1 Generalized stratigraphic nomenclature for Thailand within the seven stratigraphic belts on Shan-Thai and the Indochina cratons divided by the Nan Suture. Names with (*) are adopted by the DMR in new 1 : 2,500,000 geologic map (Bunopas, 1992).

2.1.1.1 The Saraburi Group in Nakhon Sawan- Lop Buri area

According to previous investigation of Nakorn Sri (1977, 1981), Saraburi Group in the study area and adjacent area is subdivided into two formations on the basis of their lithology and fossils content. Khao Luak formation is the older and the younger is Tak Fa formation.

(1) Khao Luak formation

This formation exposed in a long narrow trend of more or less N-S direction at San Khao Luak in the central part of Amphoe Ban Mi map sheet. The rocks consist of shale, slaty shale with interbedded limestone and sandstone. The beds of rocks generally strike N-S and dip into both east and west. Overturning of strata is found locally. Coral, belonging to *Pseudhuangia* sp. is found in the southern part of San Khao Luak indicate a lower Permian age. Nevertheless, in the northern part of Amphoe Ban Mi map sheet, *Verbeekina* of the Middle Permian age was also found. The age of this formation is assigned as Sakmarian to Artinskian.

(2) Tak Fa formation

This formation is named after Amphoe Tak Fa, Changwat Nakhon Sawan. It consists mainly of bedded fossiliferous limestones, and massive locally. Fossils found in this formation are fusulinids, brachiopods, corals and bryozoans. Among them the fusulinids, *Verbeekina verbeeki* and *Parafusulina* sp. indicate Middle Permian age, they are common in this formation. In Amphoe Ban Mi map sheet, Tak Fa formation is exposed at three isolate groups of hills characterized by karst topography in Amphoe Tak Fa, west of Amphoe Wichian Buri and east of Lam Narai area. This formation is Artinskian to Kungurian in age. It is overlain by rhyolite and tuff, they are found at Wat Mai So Phim, Amphoe Nong Muang.

2.1.1.2 The Saraburi Group in Saraburi area

The Department of Mineral Resources (1992), based on the works of Hinthong (1985), reestablished the six formal formations of Saraburi Group in Saraburi area in the lexicon of stratigraphic names of Thailand. They are arranged in ascending order as follows : Phu Phe Formation, Khao Khwang Formation, Nong Pong Formation, Pang Asok Formation, Khao Khad Formation, and Sap Bon Formation.

(1) Phu Phe Formation

The type section is located at Khao Phu Phe and Khao Krom Thang, km 131-132, east of the Friendship Highway, totally 593 meters-thick. This formation consists of purplish-gray to very dark gray, medium to very thick-bedded carbonate rocks with nodular chert, slaty shale partially intercalated. Fusulinids indicate a Sakmarian age.

(2) Khao Khwang Formation

Namely after Khao Khwang Mountain range, north of Changwat Saraburi. The total thickness is 490 meters. It consists of dark to light gray, medium to thick-bedded limestones with thin-bedded and nodular chert. Locally, recrystallized limestone. Fossils include fusulinids, brachiopods, bivalves, and bryozoans. The fusulinids indicate Sakmarian in age.

(3) Nong Pong Formation

The 673 meters-thick of the rocks type at locality, Ban Nong Pong, east of Khao Khwang, Changwat Saraburi, consists of dark gray to brownish-gray shales intercalated with dark gray to gray laminated to thin-bedded limestones, with locally chert and hornfels interbedded. Ammonoids and fusulinids indicate Artinskian to Kungurian in age.

(4) Pang Asok Formation

The formation is named after Ban Pang Asok, Changwat Saraburi. Total thickness is 366 meters. It comprises gray, bluish-gray, pale brown to reddish-brown thin-bedded shales, slate, slaty shale interbedded and intercalated with sandstones and limestones. Fossils are very rare in this formation.

(5) Khao Khad Formation

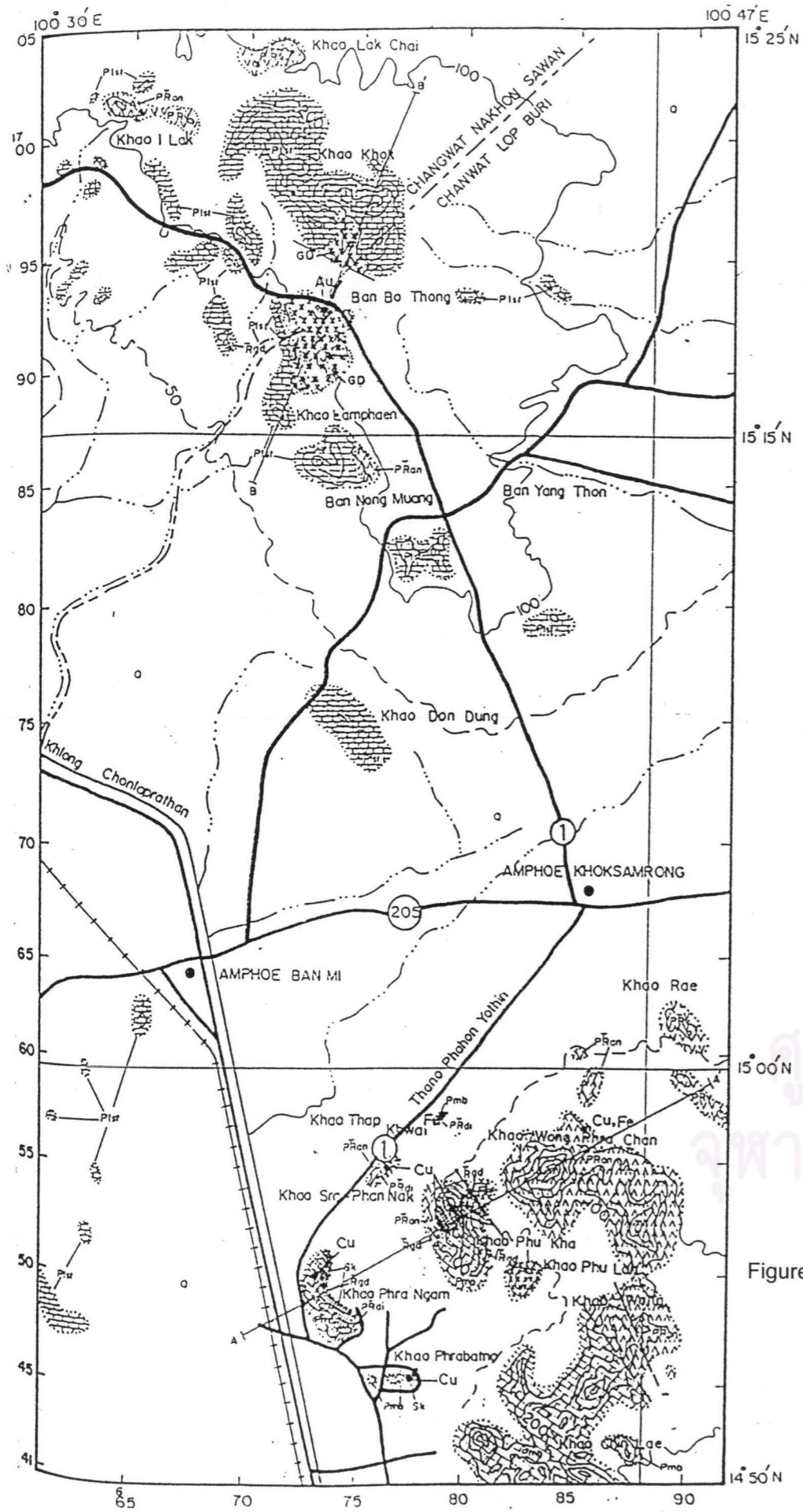
This formation is denominated after Khao Khad Mountain Range, northeast of Amphoe Phraputtabat, Changwat Saraburi. The total thickness is 1,812 meters, consists mainly of white, gray to dark gray thin-bedded to thick—bedded limestone interbedded with chert, and locally intercalated with sandstone and shale. Abundant fusulinids, brachiopods, gastropods, ammonoids, bryozoans, and crinoid stems indicated Artinskian to Kungurian. The data of lithology and more than one hundred species of fusulinids in this formation were reported by Toriyama (1975) and Tittirananda (1976), suggest that the Khao Khad Formation can be correlated with Tak Fa formation in Lop Buri-Nakhon Sawan area.

(6) Sap Bon Formation

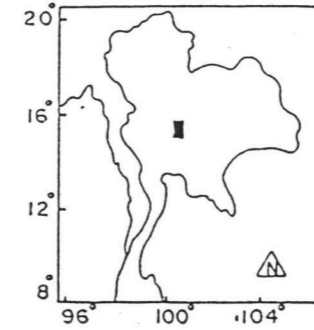
This formation presents pale brown to gray shales interbedded with limestones, siltstones, sandstones, and schist. Total thickness at Ban Sap Bon, Ban Sok Luk and Huai Sap Tai is 1,103 meters. Ammonoids : *Agathiceras* sp. is common in this formation. Fusulinids indicating Kungurian to Wordian age.

2.1.2 Geology of Lop Buri area

Moreover, the detailed geology of Lop Buri area in scale 1 : 50,000 was mapped by Yavichai (1993), the aim of this survey was to explore for economic mineral deposits. The geological map is shown in Figure 2.3. According to lithology and age, he subdivided the rocks in Lop Buri area into 12 units as follows : Khao Phra Ngam (Pmb),



GEOLOGICAL MAP OF LOP BURI AREA



INDEX MAP

SYMBOL

- | | | | |
|--|---|------|--------------------------------------|
| | Slope wash deposits, residual deposits, and valley deposits | | Hornblende-diorite, and granodiorite |
| | Sandstone, Conglomerate | | Limestone, recrystalline limestone |
| | Garnet quartz-epidote skarn | | Marble |
| | Granodiorite, hornblende-granodiorite, hornblende-granite, quartz-diorite, and andesite | ● Fe | Iron occurrence |
| | Diorite | ● Cu | Copper occurrence |
| | Andesite, andesite porphyry, and agglomerate | ● Au | Gold occurrence |

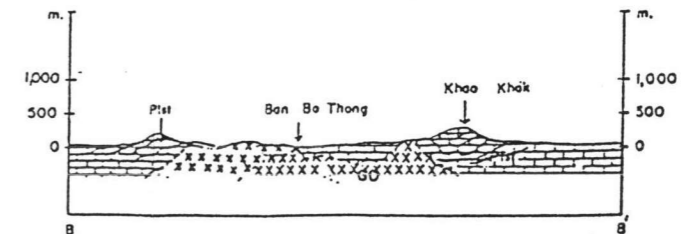
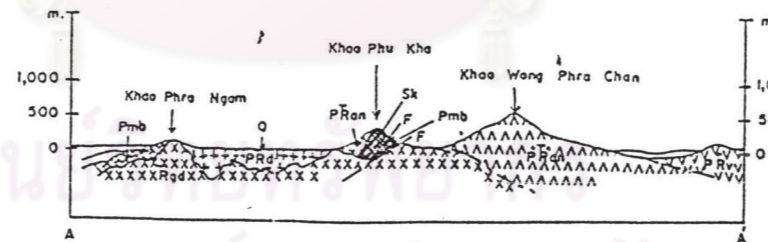


Figure 2.3 Geologic map of Lop Buri Area, scale 1 : 50,000 (Yavichai, 1993).

CHIEF GEOLOGIST :	SOMSAK POTISAT
FIELD GEOLOGIST :	PONGSUNT YAVICHAI AMNUAY SONG-URAILAM
SURVEYER :	HONGKOL KHLONGKHAYAN RATTANA PHREEDASAMARD SOMCHAI PHOLTREE
DRAWN BY :	CHATCHAI KHANCHANAWAT
MINERAL EXPLOITATION AND EVALUATION SECTION MRDP., DMR. AUGUST 1993	

Khao Khok (Plst), Khao Wong Phra Chan (PTran), Khao Lak Chai (PTrv), Khao Sapan Nak (PTrdi), Khao Pu Lon (Trgd), Huai Pong (Tran), Wat Mai Sophim 1 (Jr), Wat Mai Sophim 2 (An), Ban Bo thong (Gd), Skarn (Sk), and Unconsolidated Sediments (Q). They are composed of marble, skarns, intrusive igneous rocks, extrusive igneous rocks, limestone, conglomerate, and sandstone. Among them, the Khao Khok unit is interested, it is named after a large hill at the border of Amphoe Tak Fa, Changwat Nakorn Sawan and Amphoe Nong Muang, Changwat Lop Buri. It comprises gray to dark gray bedded limestone intercalated with chert bed and chert nodule. This unit exposed at Khao Khok, Khao Lamphaen, Khao Don Dung, small hills at Ban Bo Thong, small hills at southwest of Amphoe Ban Mi. The thesis area, Khao Wong and Khao Chakkachan, is also covered by this unit.

Although Tak Fa formation can be correlated with Khao Kad Formation (Hinthong, 1985) and Khao Khok unit (Yavichai, 1993), this study is still followed Tak Fa formation of Nakornsri (1977,1981), the original map with more detailed descriptions.

2.2 Geology of study area

The study area covers 3 hills : Khao Wong, Khao Chakkachan, and a very small hill Khao Wat Kirinakratanaram, the photographs of these hills are shown in Figure 2.4, 2.5, and 2.6. The lineaments of study area interpreted from aerial photographs scale 1 : 15,000 of run 17 : no. 148, 150, 152 and run 18A : no.194, 196, 198, 200 are shown in Figure 2.7. The traverse lines of measured sections are illustrated in Figure 2.8.

2.2.1 Geology of Khao Wong

The strata were measured at the northwest wing of Khao Wong where the limestones are good exposures and continuous sequence. The geologic map cover line of measured sections is shown in Figure 2.9. The attitudes of beddings have various trend of strike N 70 W to N10 E, dipping 13 ° to 45 ° to west and 10 °-15 ° to east. Limestones at northwest wing of Khao Wong are subdivided into four units : unit W₁, unit

W_2 , unit W_3 , and unit W_4 . According to the attitude of bedding and structural geology in the Khao Wong area, unit W_1 is separated from unit W_2 by fault zone with attitude of fault plane N 55 W and dipping 50° to west, while unit W_2 , unit W_3 and unit W_4 are considered that unit W_2 is the lowermost, unit W_3 are situated at the middle part, and the uppermost is unit W_4 . The stratigraphic columns of three measured sections of Tak Fa formation at Northwest of Khao Wong are shown in Figure 2.10, Figure 2.11, and Figure 2.12. The composite stratigraphic sequence of Tak Fa formation at Khao Wong area is shown in Figure 2.13.

Unit W_1

This unit is separated from unit W_2 by fault contact (Figure 2.14). At least 26.50 meters – thick of the unit displays very thick – bedded (150 - 700 cm) gray biomicritic limestone with locally pellets and black nodular cherts (Figure 2.15). It is flourished with fusulinids, algae, bryozoans, and smaller forams. This unit also presents broad gently anticlinal fold of very thick – bedded limestone (Figure 2.16).

Unit W_2

The thickness of this unit is approximately 62.15 meters. It is separated from the upper unit by changing of lithology and characteristic of bedding surface. It comprises medium (20 - 30 cm) to very thick- bedded (120 - 150 cm), but mostly medium to thick-bedded, dark gray biomicritic limestone, and locally interbedded with laminated dark gray shale. Commonly, brown sedimentary replacement features exist on the bed surfaces. Bedding surfaces of this unit show even parallel type (Figure 2.17). Fusulinids and brachiopods are abundant (Figure 2.18). Other fossils are massive rugose corals, brachiopods, bryozoans, calcareous sponges, and smaller forams.

Unit W₃

This unit W₃ mainly consists of medium (25 - 30 cm) to very thick- bedded (130 - 170 cm), but mostly medium to thick- bedded, dark gray to gray limestone commonly intercalated with brown sedimentary replacement features (Figure 2.19). Black nodular cherts are locally found. Bedding surfaces show discontinuous wavy parallel features (Figure 2.20). Fossils are very rare throughout the unit, they are shell fragments, smaller forams, brachiopods, massive rugose corals, solitary rugose corals, gastropods, crinoid stems, and fusulinid fragments. The limestone is identified as fossiliferous micrite (allochems 1-10%). This thickness of this unit is 49.70 meters.

Unit W₄

Unit W₄ is totally 15.95 meters – thick. This unit is composed of thick (70 - 80 cm) to very thick- bedded (110 - 150 cm), but mostly very thick- bedded, gray to dark gray fossiliferous micritic limestones with commonly black chert nodules and lenses (Figure 2.21). Fossils are very rare throughout the unit, they are shell fragments, smaller forams, brachiopods, massive rugose corals, solitary rugose corals, gastropods, crinoid stems, and fusulinid fragments.

2.2.2 Geology of Khao Chakkachan and Khao Wat Kirinakratanaram

The sections measured at Khao Chakkachan were performed at the southwest side and north side of this hill where limestones crop out continuously, while the strata of Khao Wat Kirinakratanaram were measured at the east side of this hill. The geologic map cover the measured sections of Khao Chakkachan and Khao Wat Kirinakratanaram is shown in Figure 2.22.

At Khao Chakkachan, rock strata are generally lay in direction of N 65 W to N 70 W and dipping 15° to 30° to west. Despite of its considerable thickness and lithology, limestones of Khao Chakkachan section is regarded as two units : unit C₁ and unit C₂. The stratigraphic columns of section - A and section - B of Tak Fa formation at Khao

Chakkachan area are shown in Figure 2.23 and Figure 2.24. Correlation of stratigraphic columns of section - A and section - B of Tak Fa formation in Figure 2.25 shows that section - B is possibly a part of unit C₁.

Unit C₁

Unit C₁, the lowermost unit, is approximately 33.00 meters thick. The rocks are very thick – bedded (200 - 500 cm), light gray to gray biosparitic limestones with locally brownish gray chert nodules, and are flourished with fusulinids (Figure 2.26). Other fossils are locally tabulate corals, brachiopods, bryozoans, solitary rugose corals, massive rugose corals, gastropods, rare fasciculate rugose corals, smaller forams, fragments of algae, calcareous sponges and crinoid stems. The giant bivalves of the family Alatochonchid? is abundant at middle part of this unit (Figure 2.27).

Unit C₂

This unit is approximately 45.20 meters thick, and is composed of thick (60 - 90 cm) to very thick – bedded (140 - 350 cm), gray to dark gray biomicritic limestones with commonly black chert nodules and chert lenses (Figure 2.28), and are flourished with fusulinids and massive rugose corals. Others faunas are locally brachiopods, bryozoans, solitary rugose corals, tabulate corals, gastropods, ostracodes, rare fasciculate rugose corals, smaller forams, algae, calcareous sponges and crinoid stems.

Corals, smaller forams, and fragments of algae in this hill had been identified by Fontaine et al. (1994) are as follows :

Solitary rugose coral : *Lophophyllidium zaphrentoidea*.

Fasciculate rugose corals : *Waagenophyllum (Chaophyllum) sp.* and *Pseudohuangia chiuyaoshanensis*.

Massive rugose corals : *Ipciphyllum subelegans*, *Ipciphyllum elegans*, *Paraipcyphyllum magificum n. sp.*, *Multimurinus kmerianus*, and *Multimurinus fontainei*.

Tabulate corals : *Protomichelinia simplex* and *Sinopora asiatica*.

Smaller forams : *Climacammina*, *Pachyphloia*, and *Globivalvulina*.

Algae : *Epimastopora* and *Undarella*.

The small hill, about a half of a kilometer northwest of Khao Chakkachan, namely Khao Wat Kirinakratanaram, was recognized too. Toriyama and Pitakpaivan (1973) identified fusulinids collected from this hill and determined to be Middle Permian in age. There was not any detailed about biostratigraphy yet. It is composed of very thick – bedded (150 - 500 cm), light gray to dark gray biosparitic limestone, and is prolific with fusulinids and massive rugose corals. It also contains smaller forams, tabulate corals, a few brachiopods, giant bivalves (family Alatochonchid?), calcareous algae, and crinoid stems. Attitude of bedding are mainly N 75 W to N 80 W and are dipping to the southwest direction with 15° to 20°. Massive rugose corals at this hill also had been identified by Fontaine et al. (1994) as *Ipciphyllum subelegans*, *Multimurinus kmerianus*, and *Multimurinus frechi*.

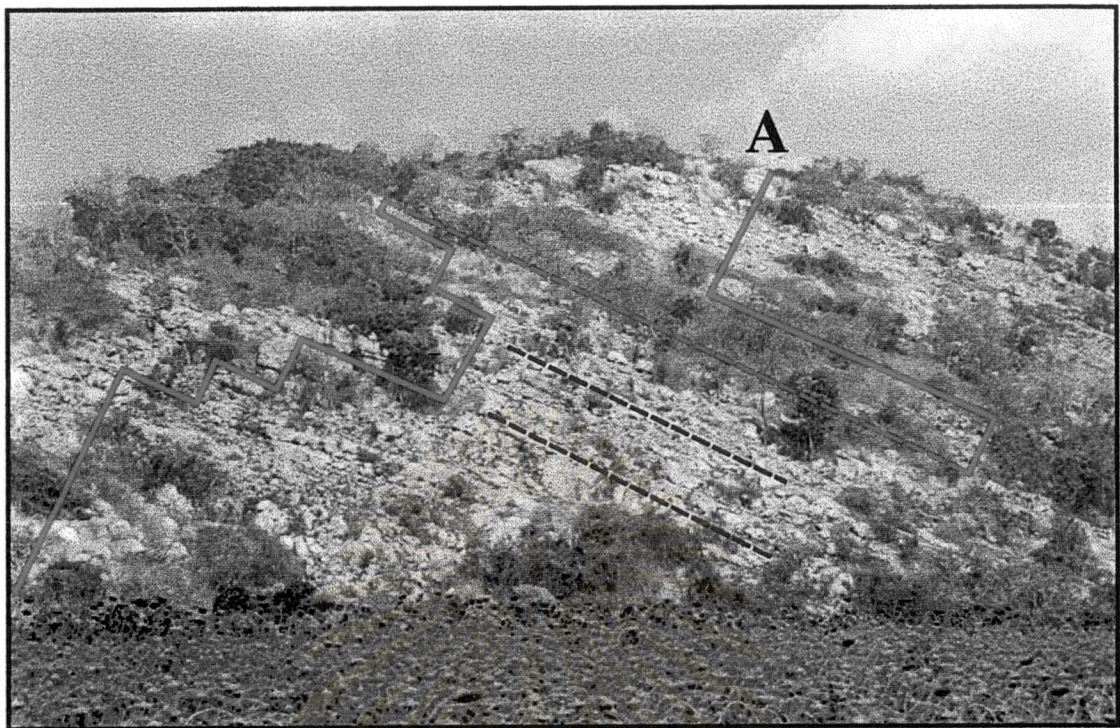
The stratigraphic columns of two measured sections of Tak Fa formation at Khao Wat Kirinakratanaram are shown in Figure 2.29 and Figure 2.30. Bedding, lithology, and fossils of two measured sections show that section - C is a part of section - D (Figure 2.31). Correlation of stratigraphic columns of Tak Fa formation at Khao Wat Kirinakratanaram with stratigraphic columns of Tak Fa formation at Khao Chakkachan in Figure 2.32 by a horizon of giant bivalves, it concluded that the rock of Khao Wat Kirinakratanaram should be grouped into a part of Khao Chakkachan unit C₁.



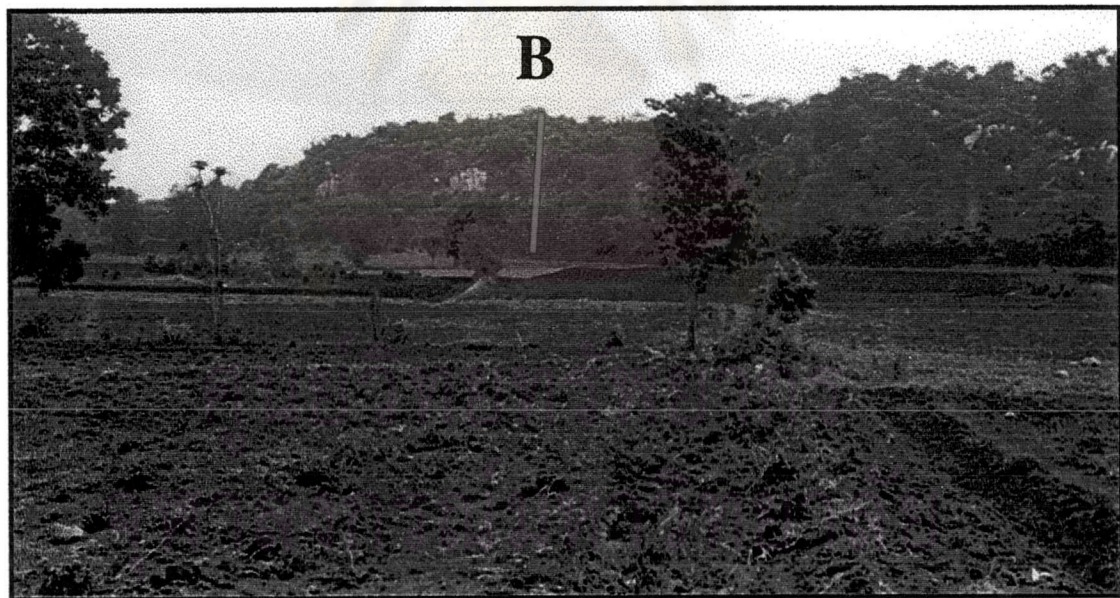
— Line of measured section

- - - Trace of bedding

Figure 2.4 Khao Wong (look south)



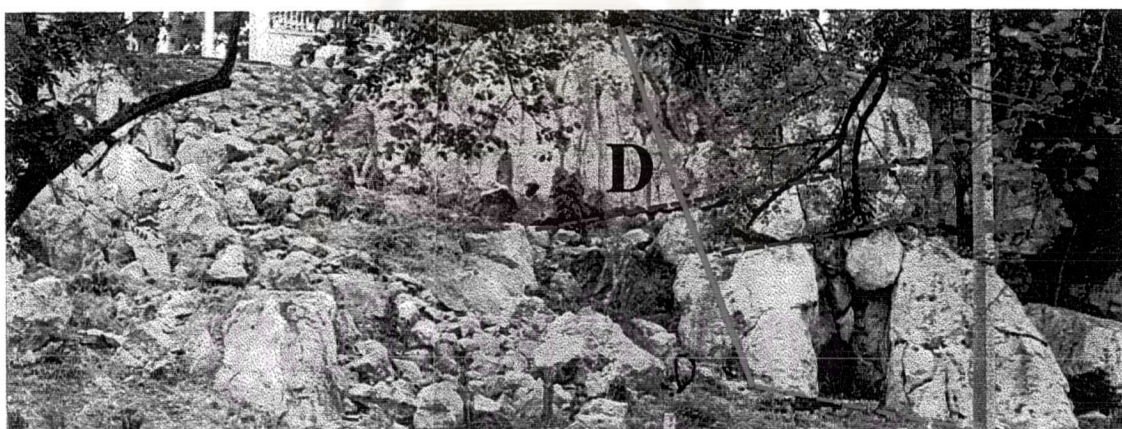
A



B

- Line of measured section
- Trace of bedding

Figure 2.5 Khao Chakkachan look E (A, B)



- Line of measured section
 - - - - - Trace of bedding

Figure 2.6 Khao Wat Kirinakratanaram, look W

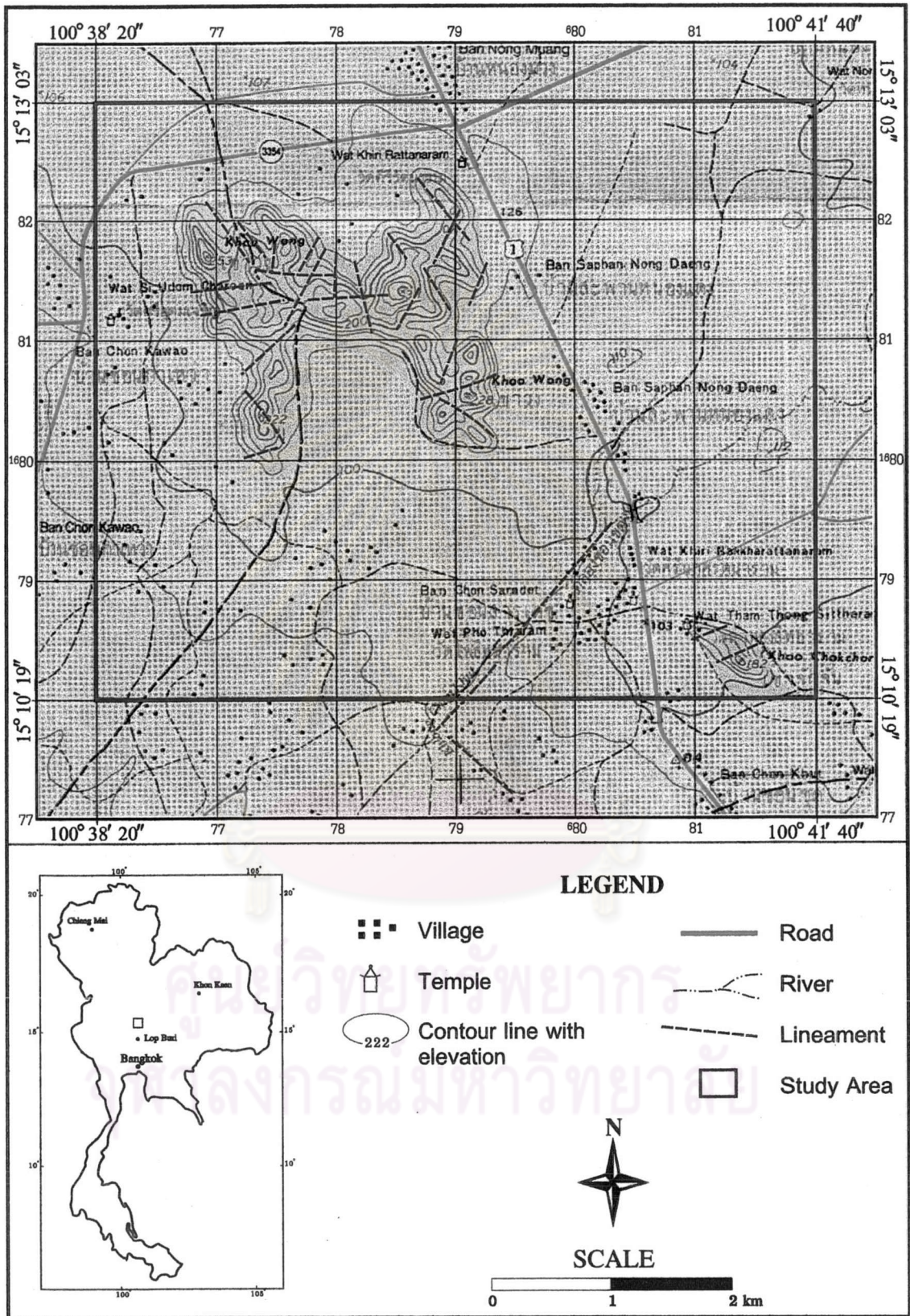


Figure 2.7 Lineaments of the study area interpreted from aerial photographs.

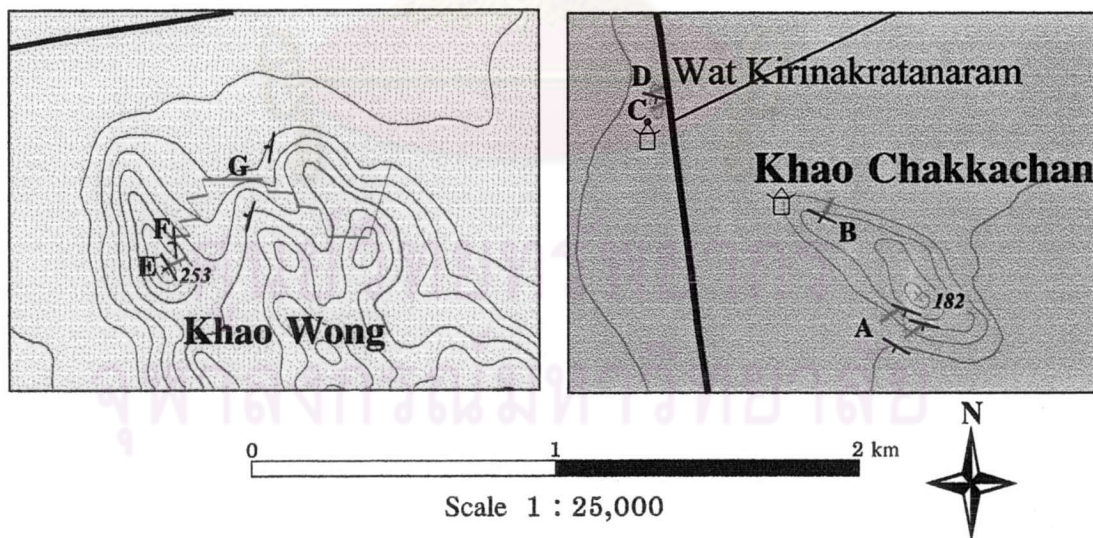
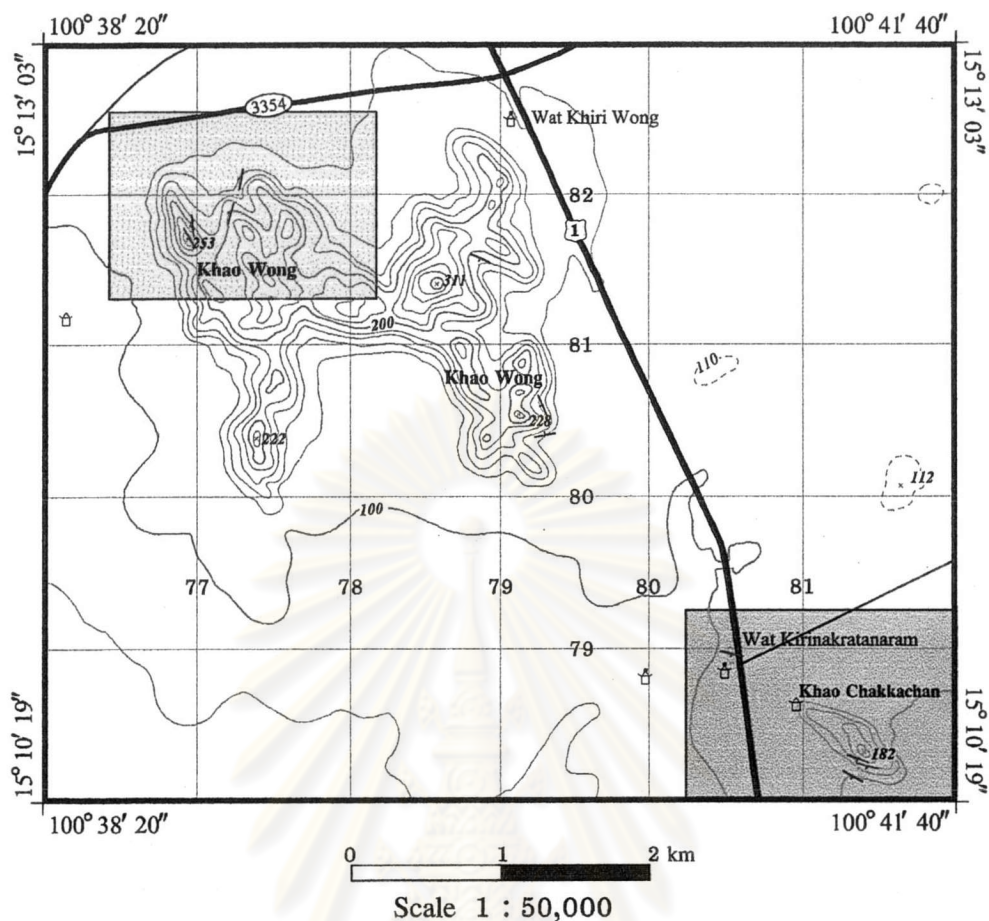




Figure 2.8 Map of the study area showing attitude of bedding and location of the measured sections.

-  Attitude of bedding
-  Measured section

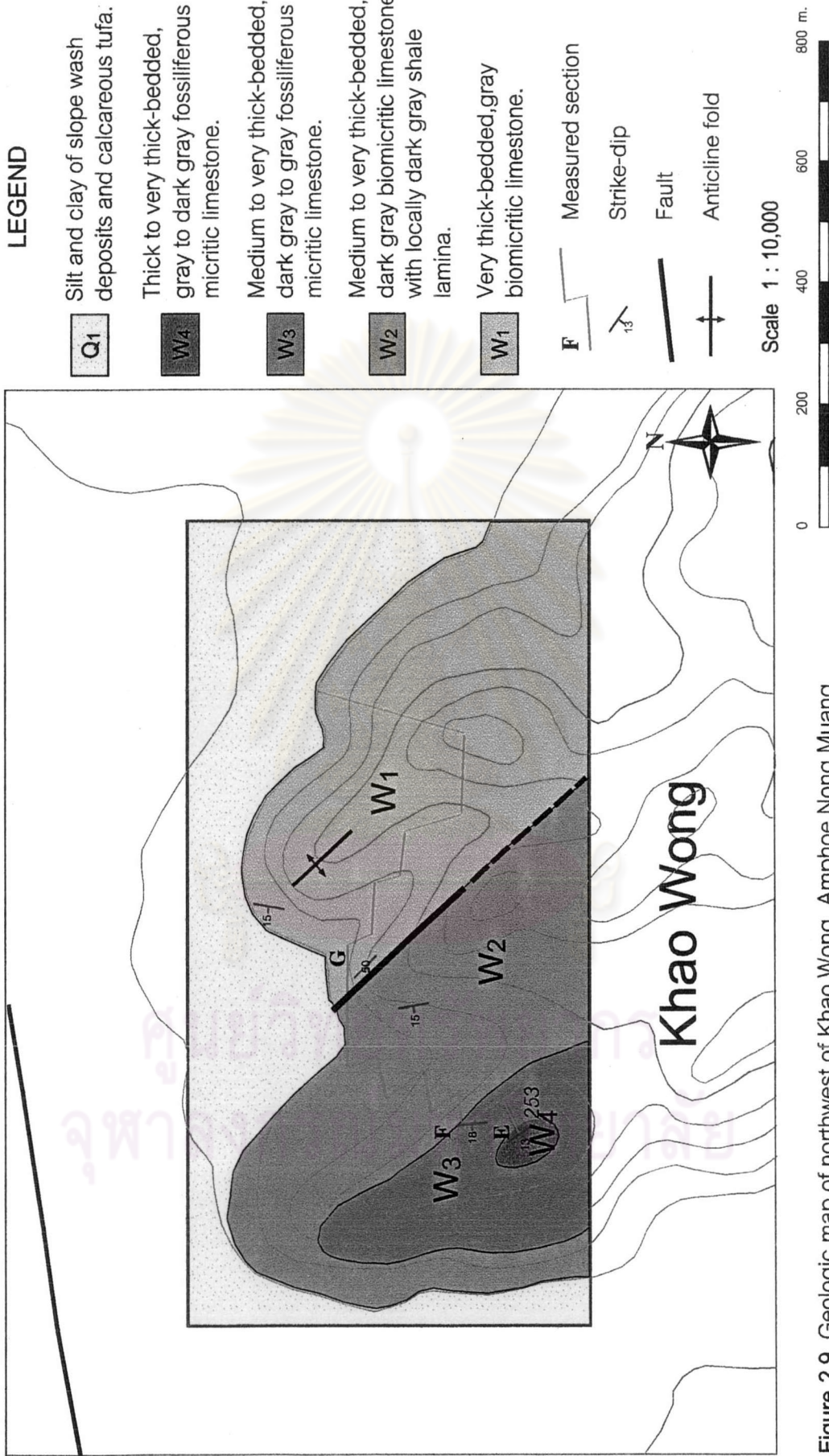
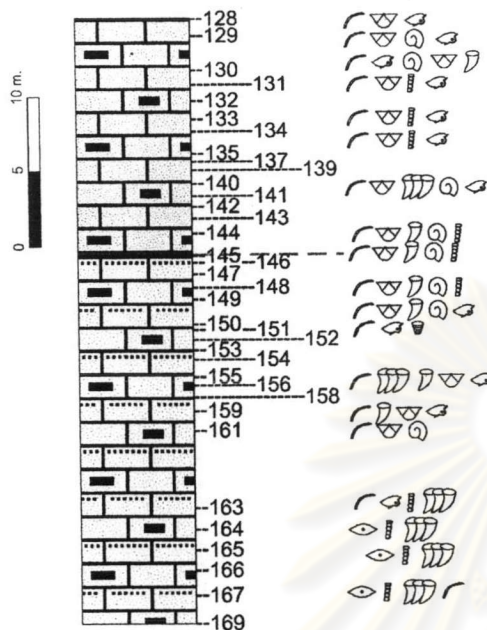


Figure 2.9 Geologic map of northwest of Khao Wong, Amphoe Nong Muang Changwat Lop Buri, scale 1 : 10,000 (index map shows in Figure 2.8)

SECTION - E

Descriptions



Unit W4

Thick to very thick-bedded, gray to dark gray fossiliferous micrite with black chert nodules and lenses.

Unit W3

Medium to very thick-bedded, dark gray to gray fossiliferous micrite intercalated with brown secondary replacement features and black chert nodules.

Total thickness 40.15 m.

Explanation

-213 specimen number


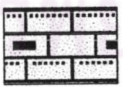















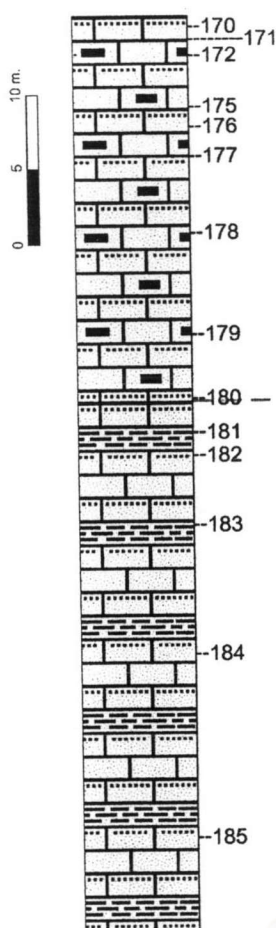
 <p>Thick to very thick-bedded, gray to dark gray fossiliferous micrite</p>	 <p>Medium to very thick-bedded, dark gray to gray fossiliferous micrite</p>		
 Solitary rugose coral	 Fusulinid	 Bryozoa	 Algae
 Massive rugose coral	 Gastropod	 Ostracod	 Sponge
 Fasciculate rugose coral	 Brachiopod	 Smaller foram	 Bivalves
 Tabulate coral	 Crinoid stem	 Shell fragment	

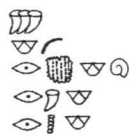
Figure 2.10 Stratigraphic column of section - E of Tak Fa formation at northwest of Khao Wong.

SECTION - F

Descriptions



Total thickness 60.60 m.



Unit W3

Medium to very thick-bedded, dark gray to gray fossiliferous micrite intercalated with brown secondary replacement features and black chert nodules.

Unit W2

Medium to very thick-bedded, dark gray biomicrite, intercalated with brown secondary replacement features, locally dark gray shale lamina, flourished with fusulinids.

Explanation

-213 specimen number

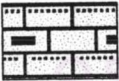
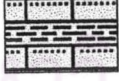















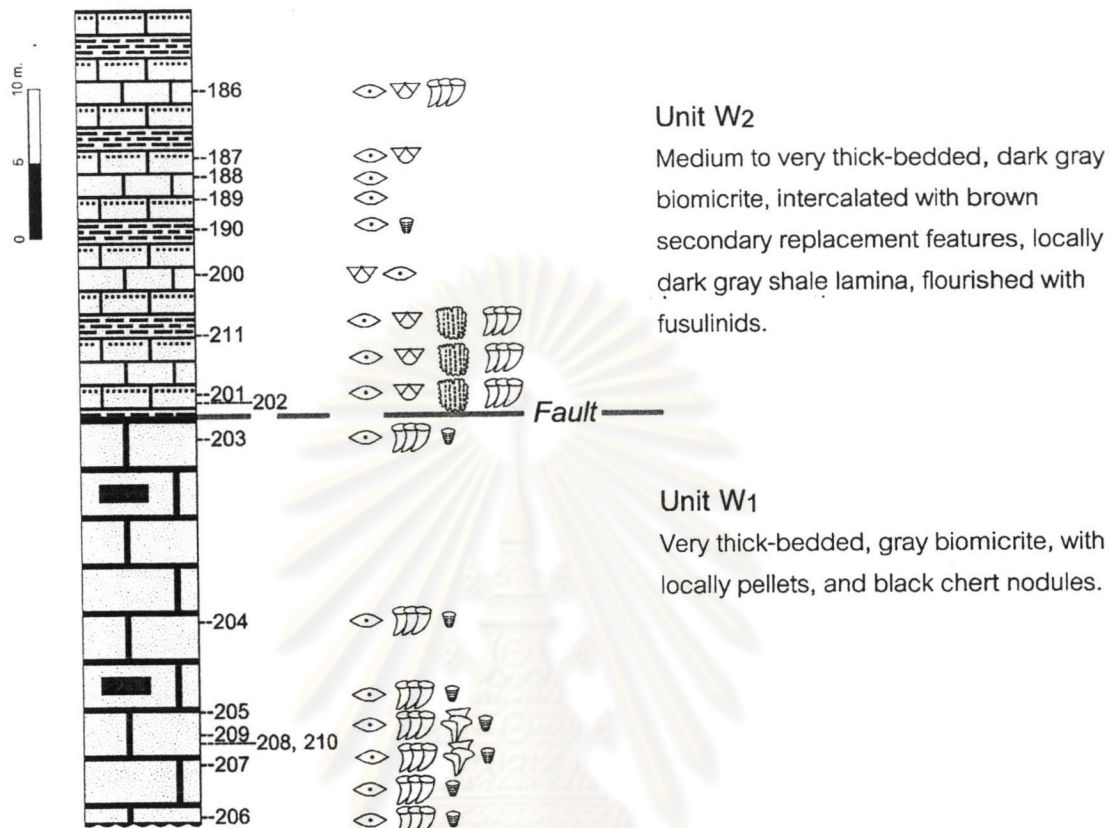
 Medium to very thick-bedded, dark gray to gray fossiliferous micrite	 Medium to very thick-bedded, dark gray biomicrite		
 Solitary rugose coral	 Fusulinid	 Bryozoa	 Algae
 Massive rugose coral	 Gastropod	 Ostracod	 Sponge
 Fasciculate rugose coral	 Brachiopod	 Smaller foram	 Bivalves
 Tabulate coral	 Crinoid stem	 Shell fragment	

Figure 2.11 Stratigraphic column of section - F of Tak Fa formation at northwest of Khao Wong.

SECTION - G

Descriptions



Total thickness 53.55 m.

Explanation

-213 specimen number

	Very thick-bedded, gray biomicrite		Medium to very thick-bedded, dark gray biomicrite
	Solitary rugose coral		Fusulinid
	Massive rugose coral		Gastropod
	Fasciculate rugose coral		Brachiopod
	Tabulate coral		Crinoid stem
			Bryozoa
			Ostracod
			Smaller foram
			Shell fragment
			Algae
			Sponge
			Bivalves

Figure 2.12 Stratigraphic column of section - G of Tak Fa formation at northwest of Khao Wong.

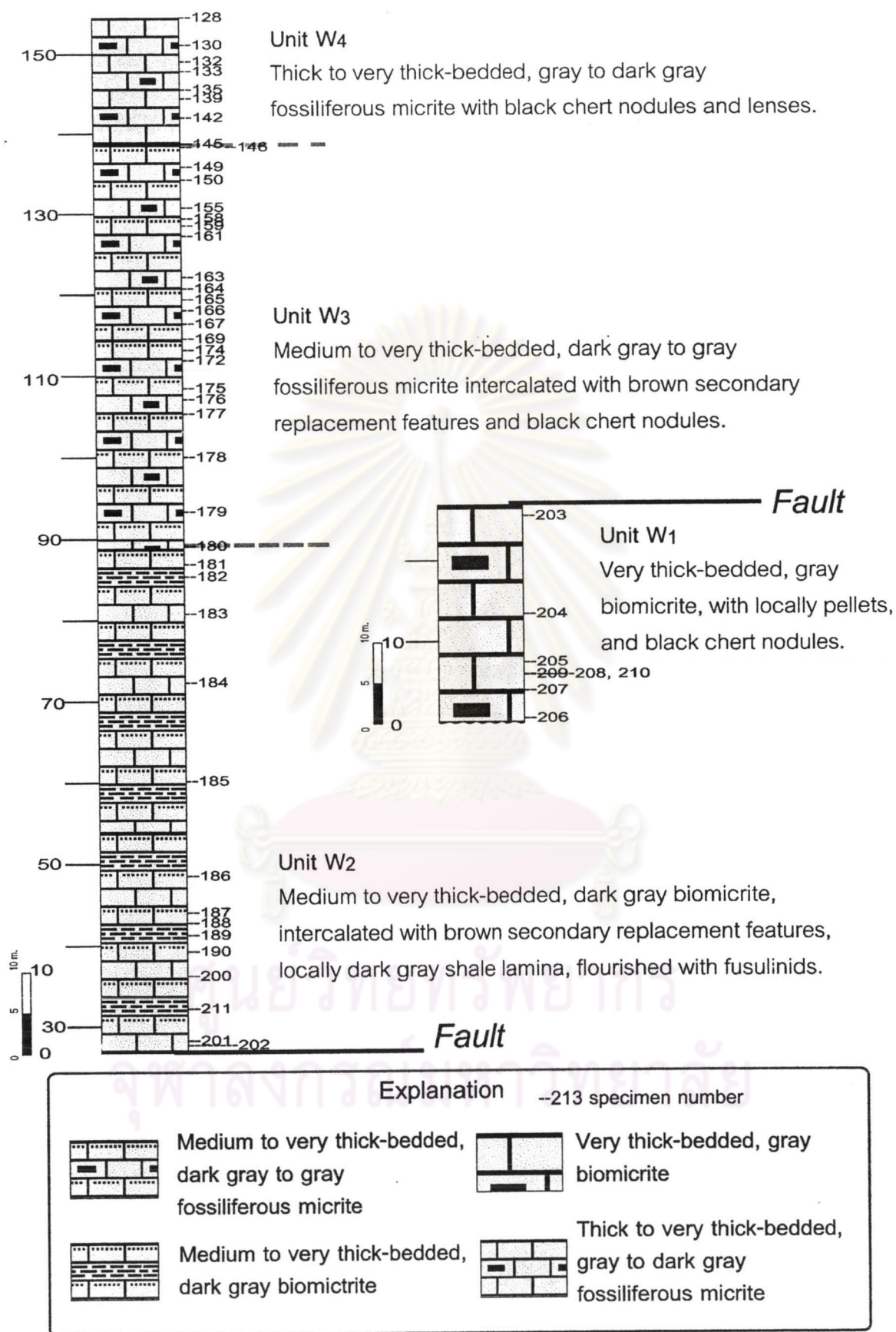


Figure 2.13 The composite stratigraphic sequence of Tak Fa formation at northwest of Khao Wong.

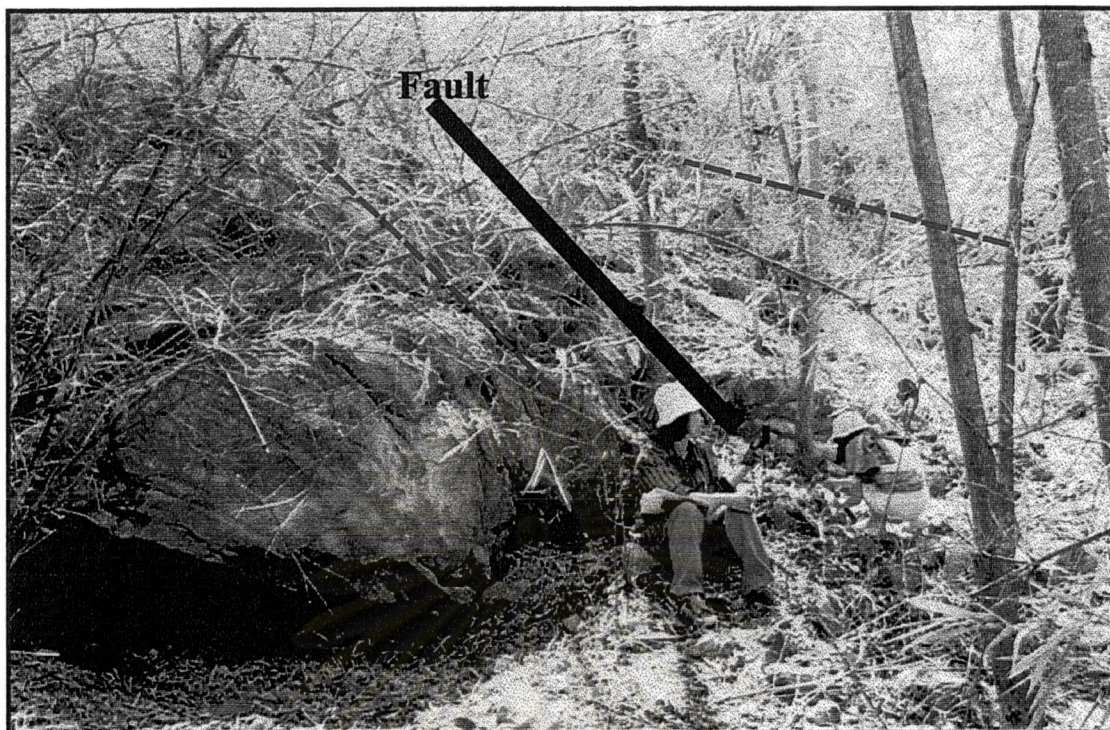


Figure 2.14 Fault contact between unit W₁ and unit W₂ at Khao Wong (Grf. 820772).



Figure 2.15 Very thick-bedded gray biomicrite with black nodular cherts at Khao Wong unit W₁ (Grf. 820773).



Figure 2.16 Crest of broad gently anticlinal fold at Khao Wong unit W₁ (Grf. 818775).



Figure 2.17 Thick-bedded dark gray biomicrite show even parallel bedding surfaces at Khao Wong unit W₂ (Grf. 820771).



Figure 2.18 Brachiopods and fusulinids in thick-bedded dark gray biomicrite at the lower part of Khao Wong unit W₂ (Grf. 819771).



Figure 2.19 Very thick-bedded dark gray fossiliferous micrite intercalated with secondary replacement features at Khao Wong unit W₃ (Grf. 817770).



Figure 2.20 Very thick-bedded dark gray fossiliferous micrite shows discontinuous wavy parallel bedding surface at Khao Wong unit W3 (Grf. 818769).



Figure 2.21 Thick-bedded gray fossiliferous micrite with black cherts lenses at Khao Wong unit W4 (Grf. 817769).

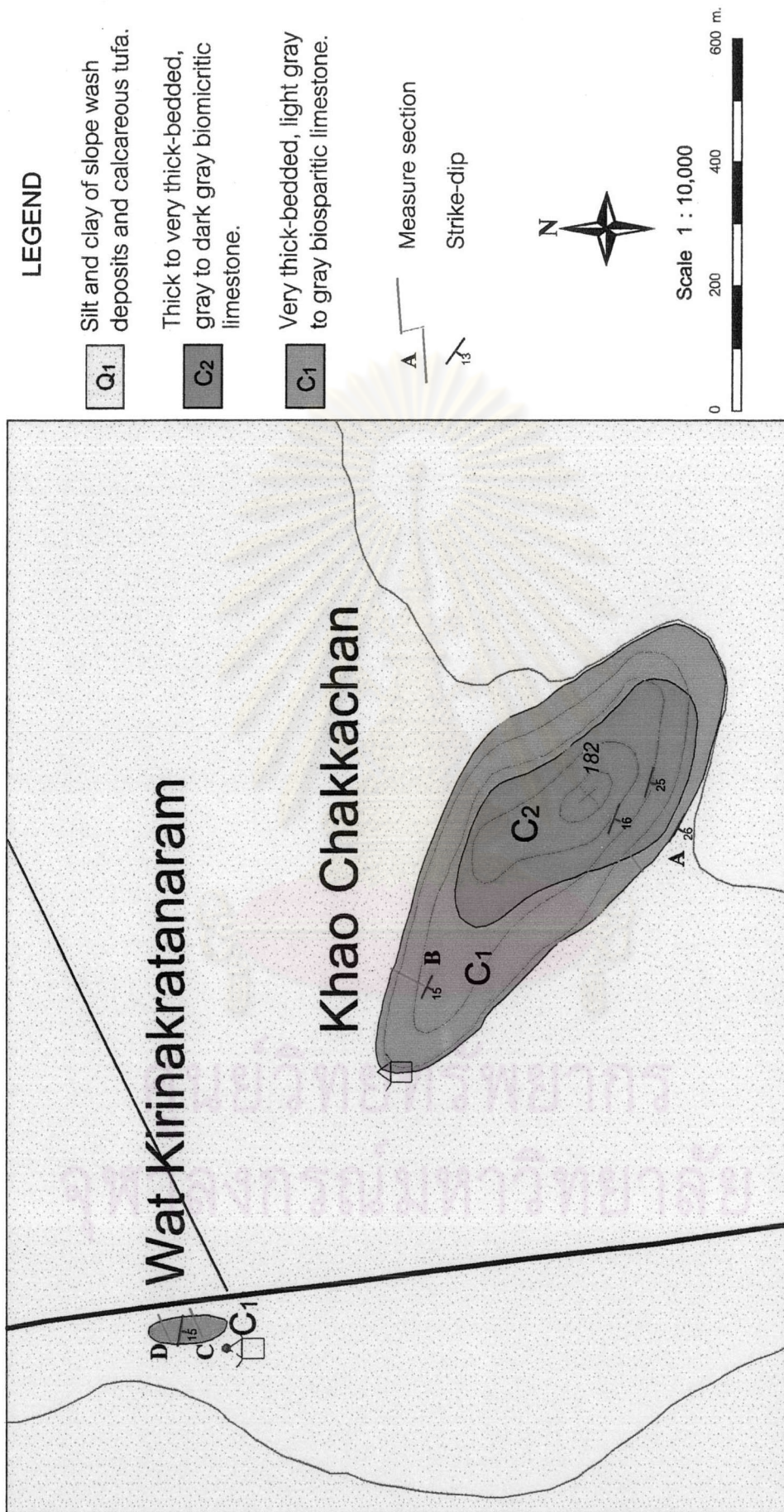
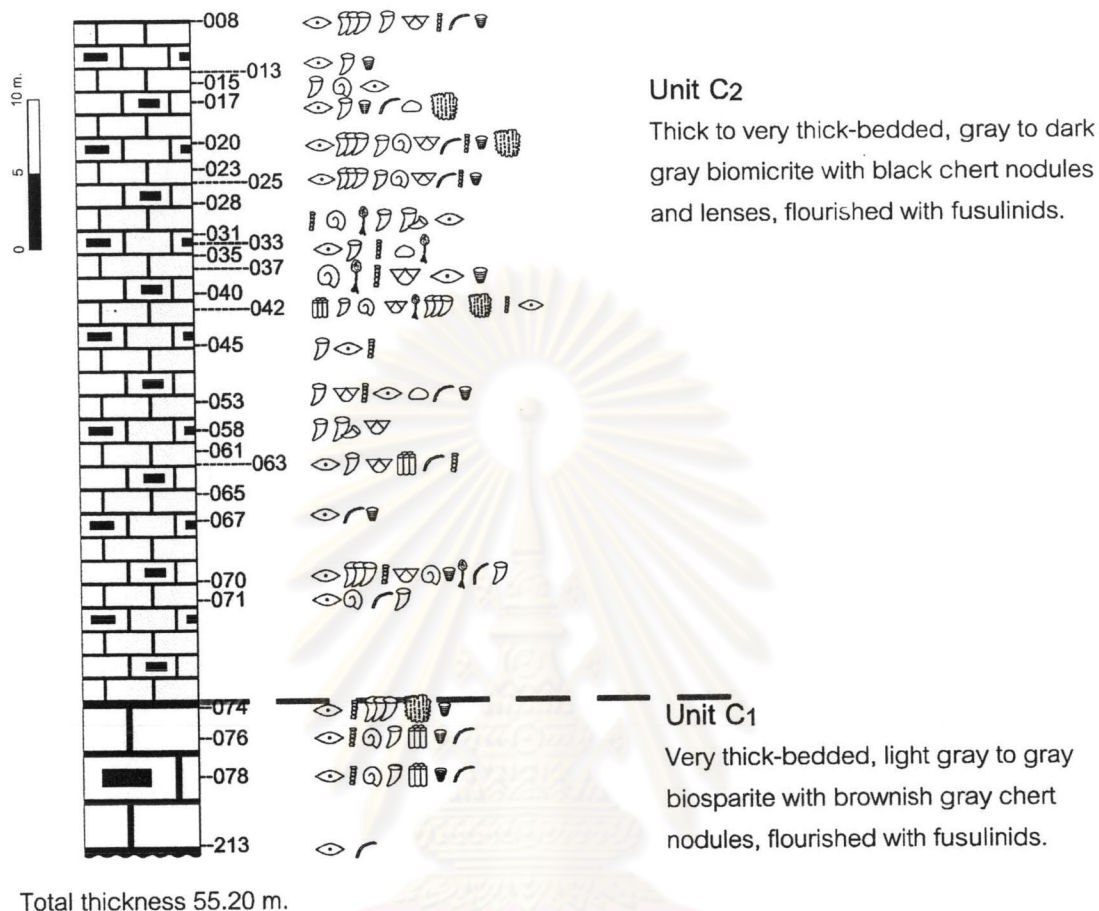


Figure 2.22 Geologic map of Khao Wat Kirinakratanaram and Khao Chakkachan, Amphoe Nong Muang, Changwat Lop Buri, scale 1 : 10,000 (index map shows in Figure 2.8)

SECTION - A

Descriptions

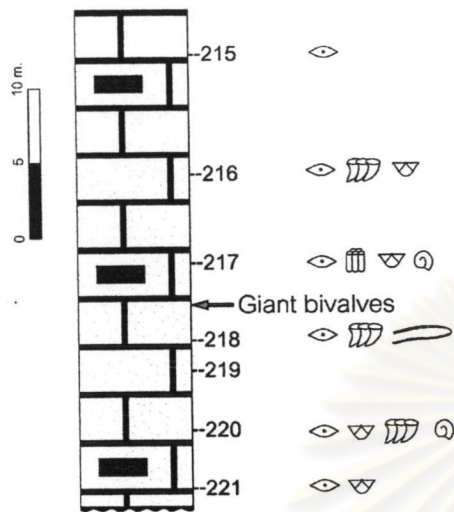


Explanation		--213 specimen number	
	Thick to very thick-bedded, gray to dark gray biomicrite		Very thick-bedded, light gray to gray biosparite
	Solitary rugose coral		Fusulinid
	Massive rugose coral		Bryozoa
	Fasciculate rugose coral		Gastropod
	Tabulate coral		Ostracod
			Brachiopod
			Smaller foram
			Crinoid stem
			Shell fragment
			Algae
			Sponge
			Bivalves

Figure 2.23 Stratigraphic column of section - A of Tak Fa formation at southwest of Khao Chakkachan.

SECTION - B

Descriptions



Unit C1

Very thick-bedded, light gray to gray biosparite with brownish gray chert nodules, flourished with fusulinids.

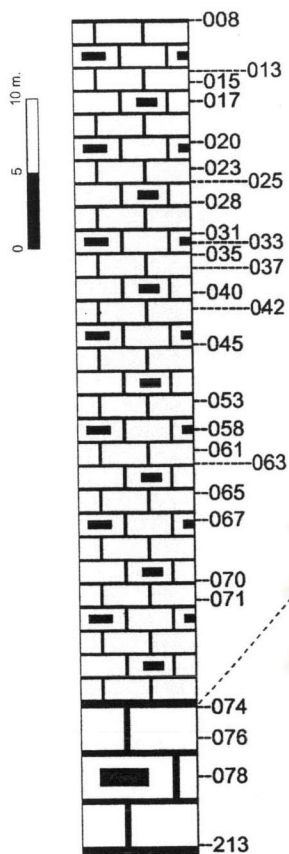
Total thickness 33.00 m.

Explanation

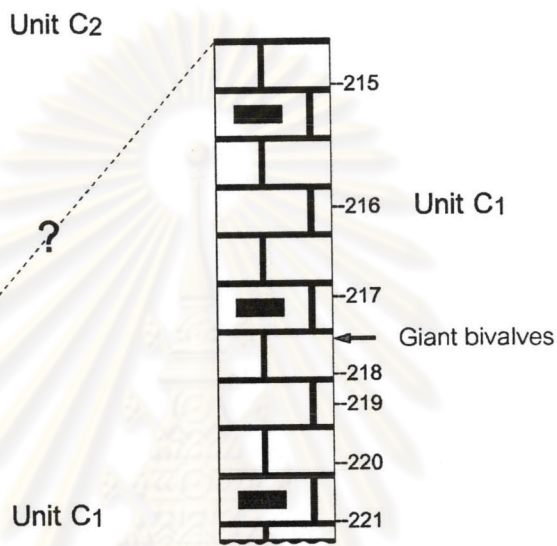
	Very thick-bedded, light gray to gray biosparite	--213 specimen number	
	Solitary rugose coral		Fusulinid
	Massive rugose coral		Gastropod
	Fasciculate rugose coral		Brachiopod
	Tabulate coral		Crinoid stem
			Bryozoa
			Ostracod
			Smaller foram
			Shell fragment
			Algae
			Sponge
			Bivalves

Figure 2.24 Stratigraphic column of section - B of Tak Fa formation at north of Khao Chakkachan.

SECTION - A



SECTION - B



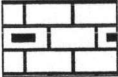

Explanation		-213 specimen number
	Thick to very thick-bedded, gray to dark gray biomicrite	
		Very thick-bedded, light gray to gray biosparite

Figure 2.25 Correlation of stratigraphic column section - A and section - B of Tak Fa formation at Khao Chakkachan.

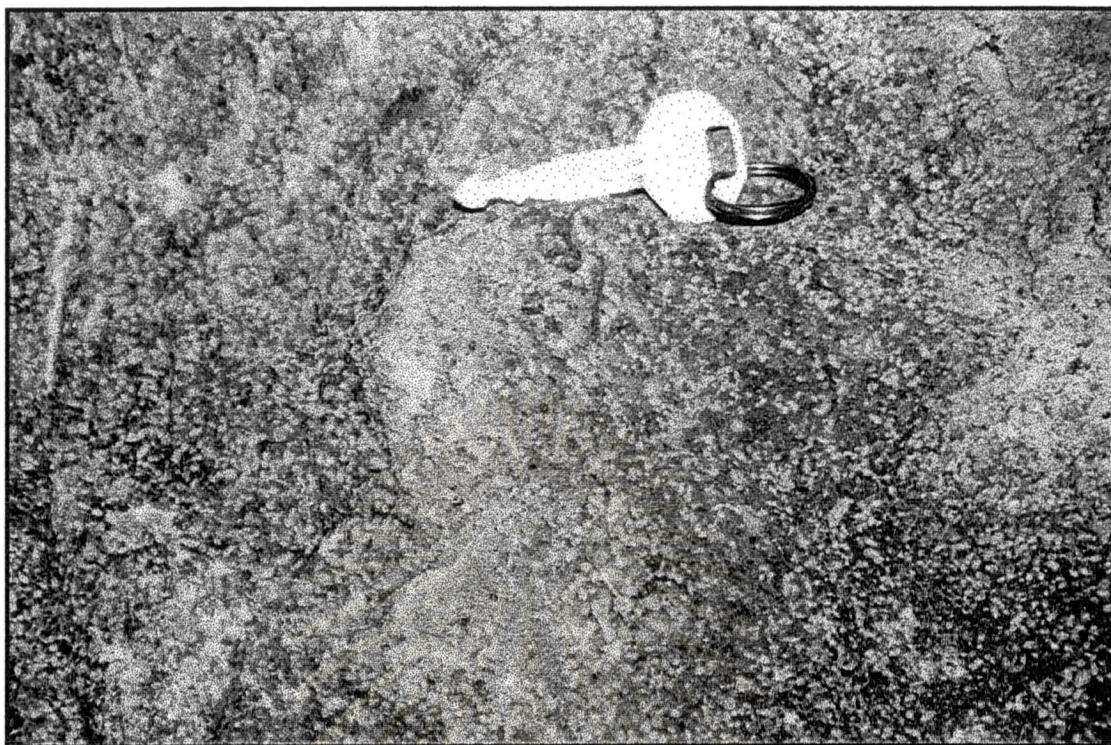


Figure 2.26 Very thick-bedded light gray biosparite flourished with fusulinids at Khao Chakkachan C₁ (Grf. 786811).



Figure 2.27 Very thick-bedded light gray biosparite with giant bivalves of the family Alatochonchid (?) at Khao Chakkachan unit C₁ (Grf. 786811).

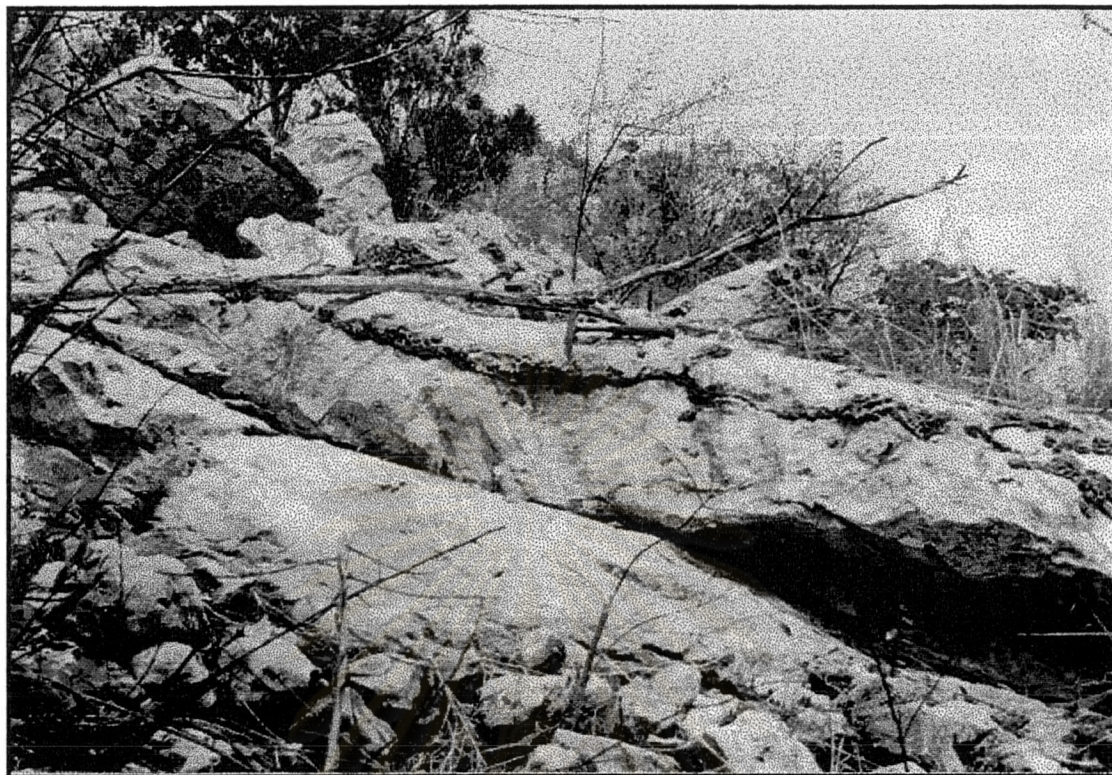
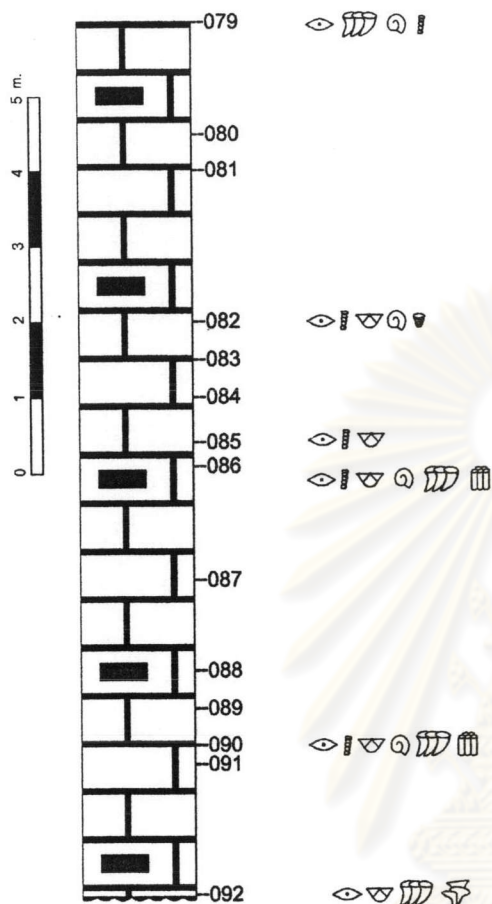


Figure 2.28 Very thick-bedded dark gray biomicrite with black chert lenses and nodules at Khao Chakkachan unit C2 (Grf. 773813).

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จุฬาลงกรณ์มหาวิทยาลัย

SECTION - C

Descriptions



Unit C1
 Very thick-bedded, light gray to gray biosparite with brownish gray chert nodules, flourished with fusulinids.

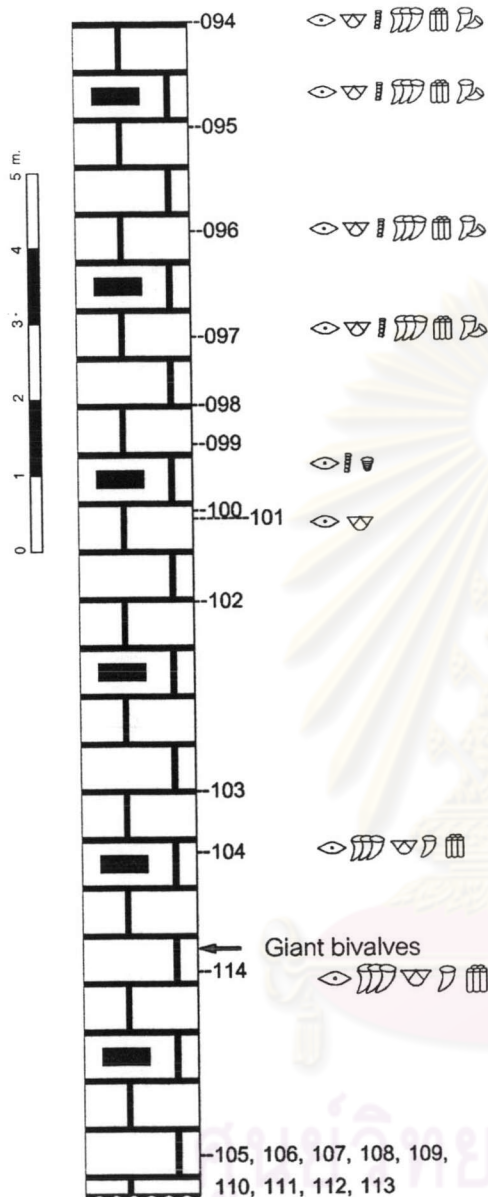
Total thickness 11.60 m.

Explanation		-213 specimen number
	Very thick-bedded, light gray to gray biosparite	
	Solitary rugose coral	
	Massive rugose coral	
	Fasciculate rugose coral	
	Tabulate coral	

Figure 2.29 Stratigraphic column of section-C of Tak Fa formation at east of Khao Wat Kirinakratanaram.

SECTION - D

Descriptions



Unit C1

Very thick-bedded, light gray to gray biosparite with brownish gray chert nodules, flourished with fusulinids.

Total thickness 15.50 m.

Explanation		--213 specimen number	
	Very thick-bedded, light gray to gray biosparite		Solitary rugose coral
	Fusulinid		Bryozoa
	Massive rugose coral		Ostracod
	Gastropod		Smaller foram
	Fasciculate rugose coral		Sponge
	Brachiopod		Bivalves
	Tabulate coral		Shell fragment
	Crinoid stem		

Figure 2.30 Stratigraphic column of section - D of Tak Fa formation at east of Khao Wat Kirinakratanaram.

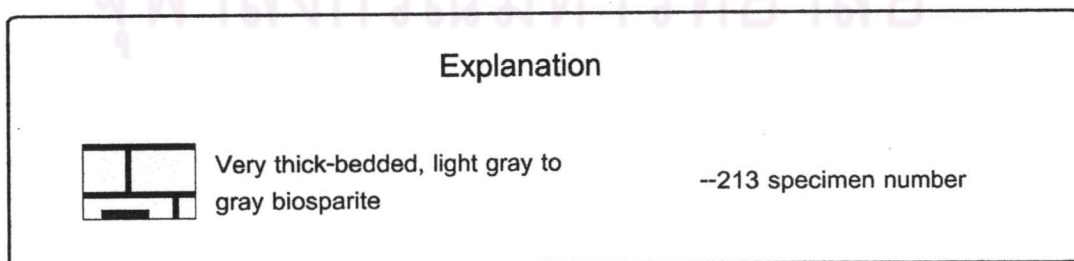
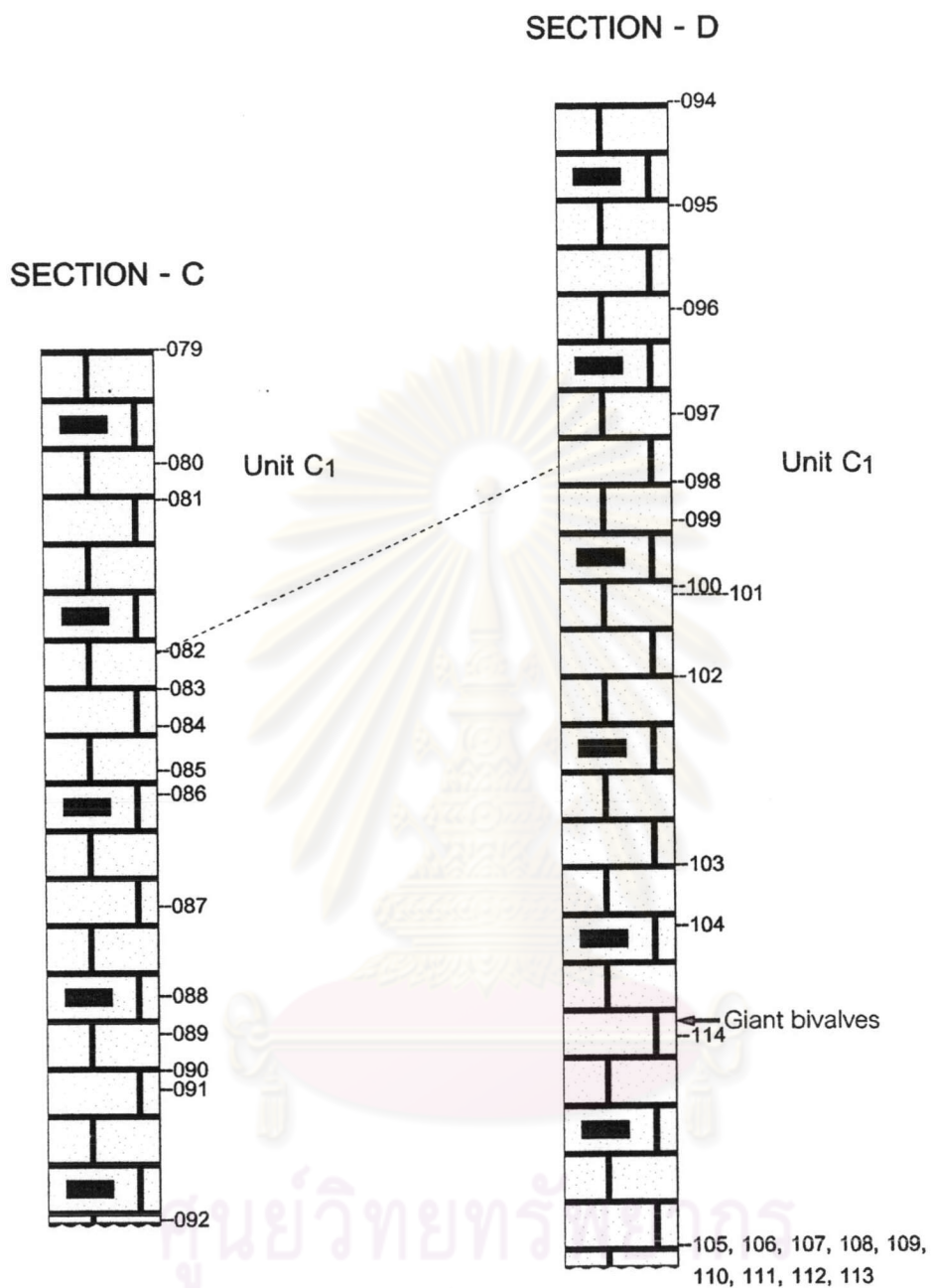
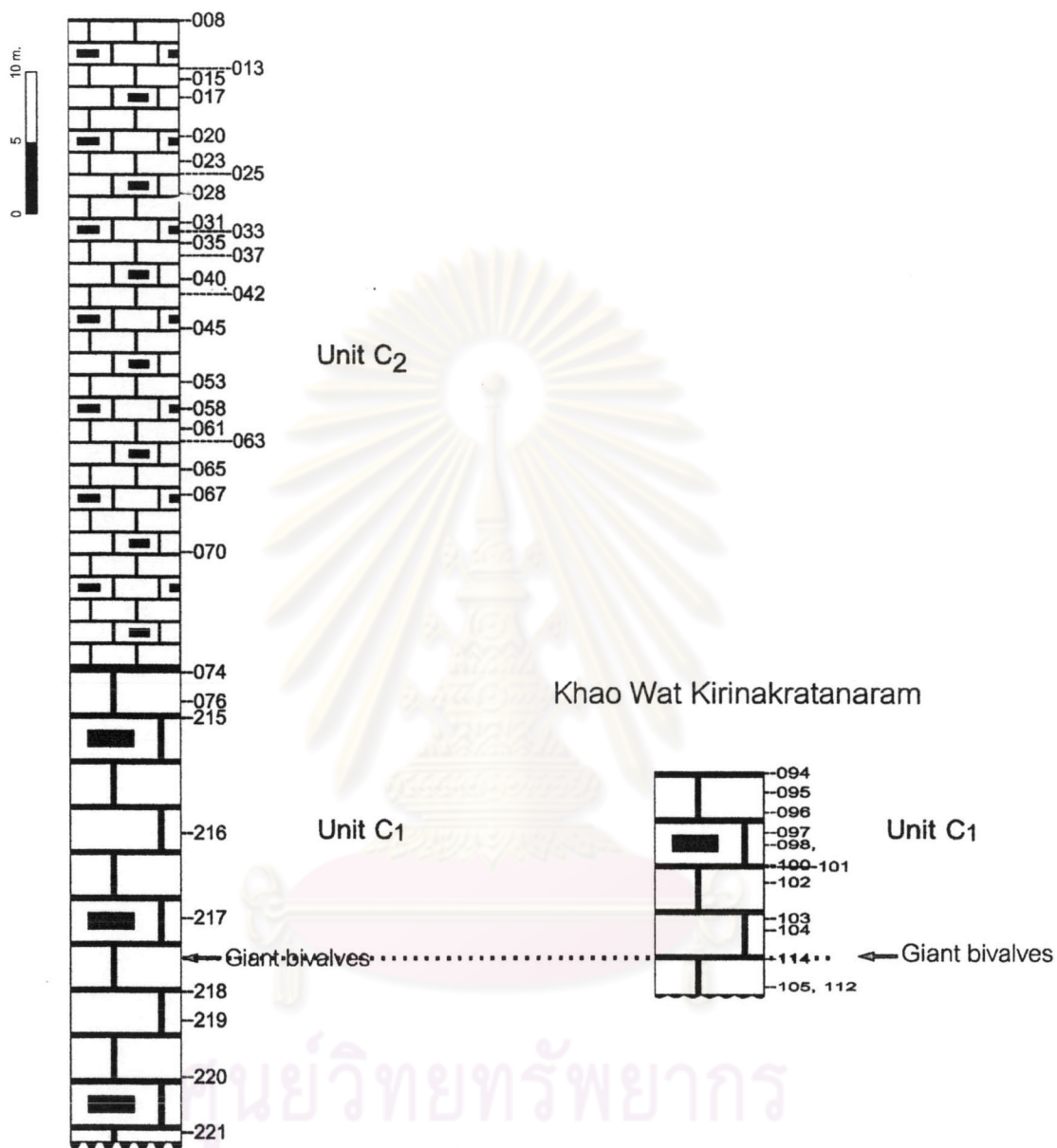


Figure 2.31 Correlation of stratigraphic column of section - C and section - D of Tak Fa formation at east of Khao Wat Kirinakratanaram.

Khao Chakkachan



Explanation

--213 specimen number

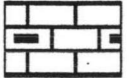

 <p>Thick to very thick-bedded, gray to dark gray biomicrite</p>	 <p>Very thick-bedded, light gray to gray biosparite</p>
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Figure 2.32 Correlation of stratigraphic column of Tak Fa formation at Khao Chakkachan with stratigraphic column of Tak Fa formation at Khao Wat Kirinakratanaram.