



CHAPTER I

INTRODUCTION

1.1 General statement

In Thailand, volcanoes have erupted many times since Devonian – Quaternary ages (Bunopas, 1989; Jungyusuk and Khositantont, 1992). Those volcanic rocks relate to several parts of paleo - oceanic and continental environments. Particularly, Permo-Triassic or Pre-Jurassic volcanic rocks have been used as basic data for tectonic setting in Thailand and adjacent area (Phajuy et al., 2004). It is to be widely noted that Shan-Thai and Indochina cratons were completely convergent in Late Triassic (Bunopas and Vella, 1992; Charusiri et al., 2002). Pre-Jurassic volcanic rocks can be classified into 4 belts, Chiang rai-Chiang mai volcanic belt, Chiang khong-Tak volcanic belt, Nan-Chanthaburi volcanic belt and Loei-Phetchabun-Nakhonnayok volcanic belt (Figure 1.1) (Charusiri et al., 2006 modified from Jungyusuk and Khositantont, 1992). Chatree gold mine in Loei-Phetchabun-Nakhonnayok volcanic belt possibly near to the west margin of Indochina craton .

Chatree gold mine, a wholly-owned subsidiary of Australia's Kingsgate Consolidated NL, was established in Thailand, in 1993 to develop a gold mine discovering along the Loei-Petchabun gold belt. The gold 7 company mine is named as Chatree Gold Mine after a Thai geologist (Mr. Chatree Chaichanapumhol) who joined the early exploration team and passed away after the gold deposit was found.

The Chatree Gold mine is located 280 km north of Bangkok in the upper central of Thailand. The mine's ore reserves will maintain the mining activity for over 10 years. Conventional open pit mining methods are used to collect mineralized rock from surrounding basement before mining activities have been left behind. The Chatree gold deposit is located in the vicinity between Tlap Klo District of Petchabun Province and Wang Pong District of Phichit Province, the upper central of Thailand. The mine covers

an area of 7.5 km by 2.5 km (Kromkhum and Zaw, 2005). The Chatree gold mine (Figure 1.3), consists of At least 6 gold rich vein systems namely A, C, D, H, K, Q and Mar zone. The gold extent of C-H zone were reported from Kingskate, (2004). Ore resource is 33 million tones at 1.7 g/t Au and 11g/t Ag and about 150,000 ounces of gold and 396,000 ounces of silver been produced.

1.2 Location and accessibility

The Chatree gold mine (Figure 1.2) situats closely to Khao Pong and Khao Mo mountain range which stands from an elevation 100-190 meters above mean sea level. Geologically, this Chatree gold mine is located on the edge of Cenozoic Chao Phao basin almost at the provincial boundary of Petchabun and Phichit province. The study area is about 280 kilometers north (or 4.5 hours drive) of Bangkok, and about 45 kilometers south-east of provincial capital of Phichit province. The Chatree gold mine can devided that Chatree North and Chatree South.

The study area is located within the Chatree gold mine and covers the whole C-H pit which is located in the southern parts of the so-called Chatree Norh, (Diemar et al., 2000). It is located at grid reference in UTM system 675800-676800 E and 1791400-1792400 N or latitude 1700mE to 2300 mE and longitude 5800 mN to 6700mN, on the Royal Thai Survey topographic map scale 1:50,000, sheet number 5141 IV, edition 1-RST and series L7018 of Ban Wang Sai Phun

1.3 Objectives

The objectives of this study are : (1) to determine volcanic stratigraphy and to classify volcanic rocks (2) to study the petrography and geochemistry of the volcanic rocks.

1.4 Previous works

The geological data of Phichit province are mainly from geological reconnaissance of Chonglakmani and Satayarak (1979) that compiled the geology and

published a geologic map (NE 47-16) at scale 1:250,000. Their investigations included details on types of rocks, their aerial distribution, ages, stratigraphy and structures of the study area.

Jungyusuk and Khositant (1992)) reported the tectonic setting of Thailand. Their investigations indicated that the 4 volcanic belt in Thailand (the study are include). The Chatree gold mine situated in Loei-Phechabun-Kho chang belt.

Tulyatid and Charusiri (1999) reported the magmatic data and distribution of basic-ultrabasic rocks volcanic at suture zone of Shan-Thai craton and Indochina craton. Their investigations indicated that the central volcanic belt (the study are include) and Chanthaburi –Kho Chang volcanic belt contained high magnetic anomaly components.

Diemar et al. (2000) reported the epithermal Cu-Ag deposit of the Chatree gold mine. Their investigations included exploration history, regional geology and mine geology.

Deesawat (2002) reported the preliminary investigation on hydrothermal alteration of the chatree gold deposit, wangpong area, Phetchabun. His investigations led to identifying hydrothermal alteration & mineralogy and determining types of epithermal deposit.

Marhothon (2002) reported the preliminary fluid inclusion study of the chatree gold deposit, Changwat Phichit. His investigations included fluid inclusion, mineralogy and paragenesis.

Crossing (2004) reported the regional geology around the Chatree gold mine. His investigations mainly focused on the regional stratigraphy, geological setting, volcano-sedimentary unit model, alteration and mineralization.

Kromkham et al.(2005) reported the geological setting, mineralogy and alteration of the H Zone, the Chatree gold mine, central Thailand, Their investigations included mineralogy , Alteration and tectonic setting of the Chatree gold mine.

Cumming et al.(2006) reported the geology and mineralization at Chatree, Central Thailand. Their investigations led to the compilation and re-classification of volcanic rocks, geology, stratigraphy and mineralization. This report covers several major pits and prospects of Chatree gold mine including C-H pit, A pit, Q prospect, K prospect, J prospect, S prospect, D prospect and Mars.

Salam (2006) reported the geology and mineralization at the Chatree gold mine. His investigations included geology of Chatree Deposit, Mineralization and Structure, Vein and Paragenesis.

Tangwattananukul et al. (2008) reported the geology and petrography of dike rock in C-H pit at Chatree mining, Changwat Phichit. Their investigations included petrography, geochemistry and tectonic setting of dike rock.

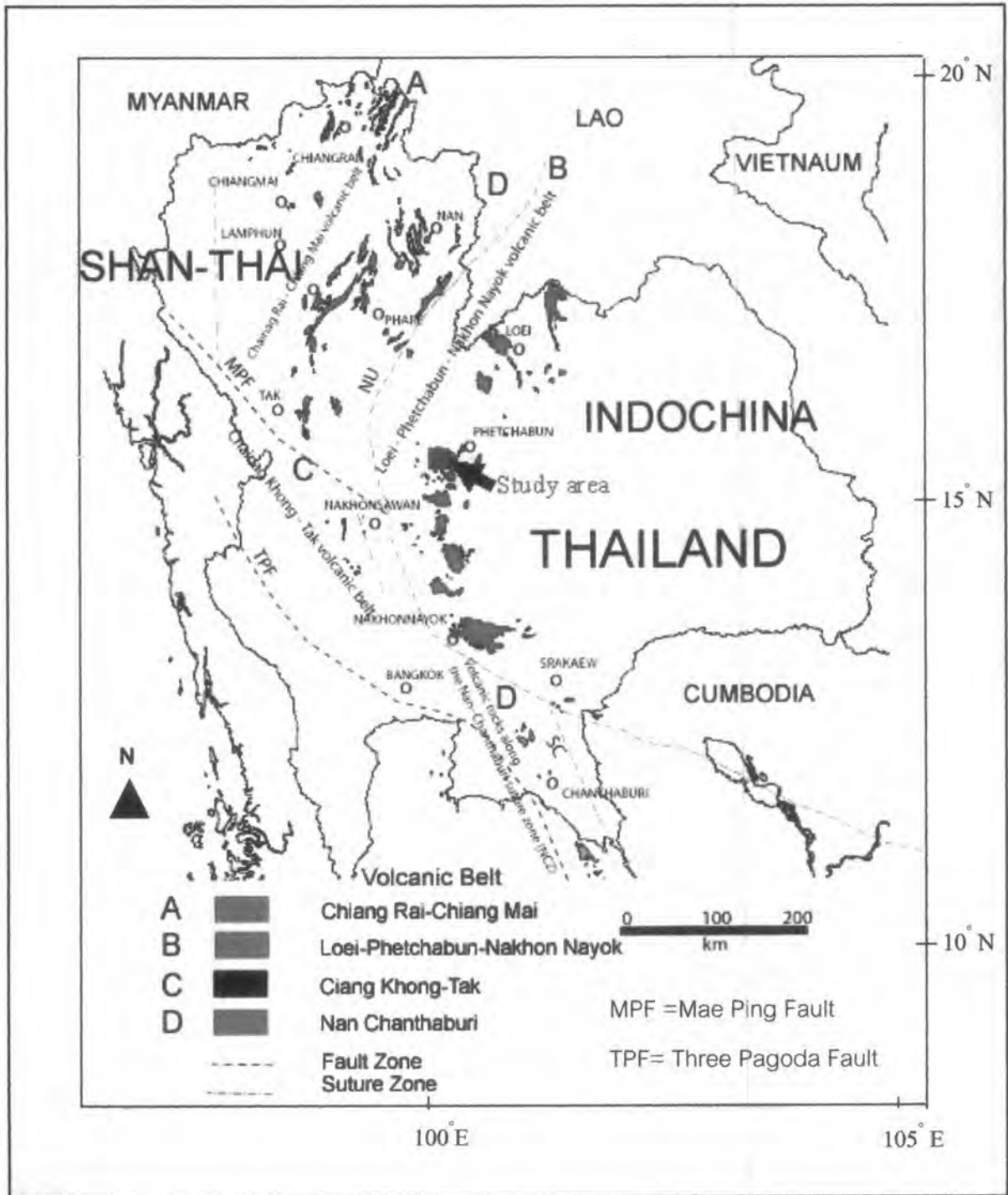


Figure 1.1. Index map of the northern half of Thailand showing volcanic belts, their distributions, Note that the sutures and faults are also shown, (modified from Jungyusuk and Khositantont, 1992; Charusiri et al., 2006).

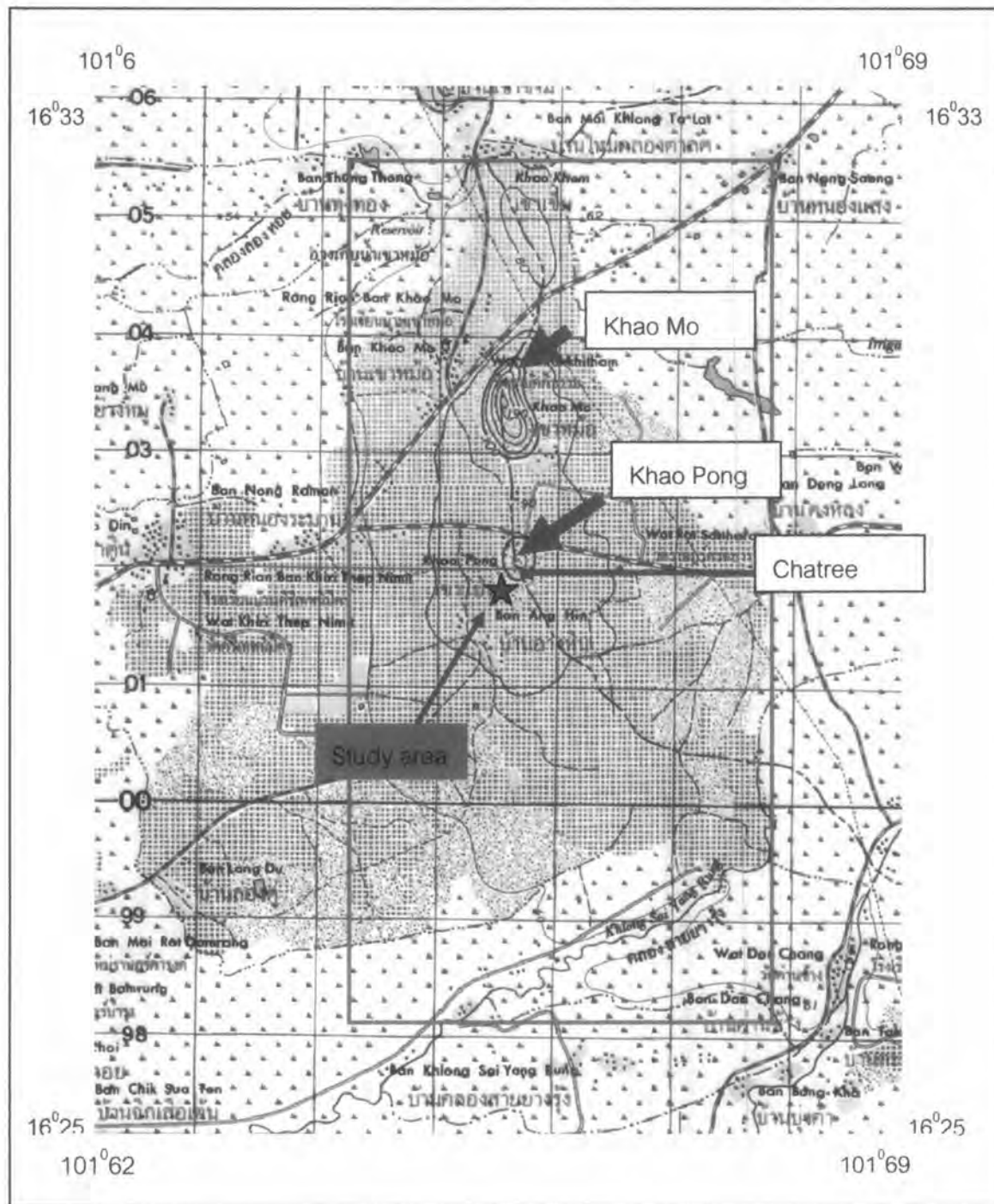


Figure 1.2. Topographic map showing location of the study area in the Chatree gold mine.



Figure 1.3. Orthographic Ikonos aerial photograph showing location of major open pits (C and H) of the Chatree gold mine, Phichit province. Note that the mine pits are surrounded flat alluvial fly plain.

1.5 Methodology

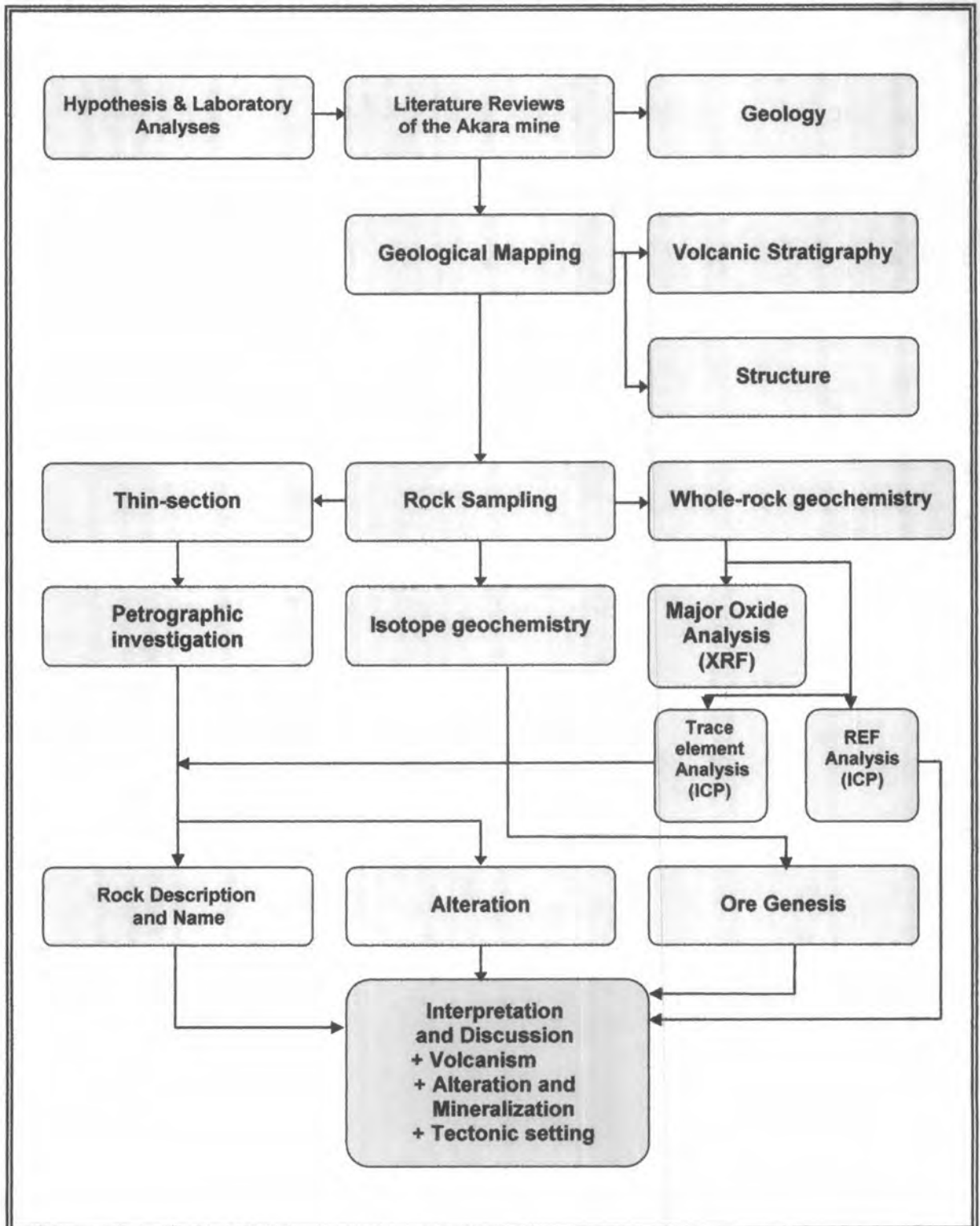


Figure 1.4 Flow chart showing the methodology used in this thesis work.