CHAPTER I
OVERVIEW OF INVESTIGATED AREA

The area subject to preliminary prospecting scaled 1:25,000 is located in Vang Tat Nhay, Sanxay district, Attapu province and a large area in the eastern, southeastern Sekon province, Lao's People Democratic Republic. Geographically, the area is adjacent to the border with Vietnam (see Figure I.1).

I.1 – GEOGRAPHICAL LOCATION OF THE PROPERTY SUBJECT TO PRELIMINARY PROSPECTING SCALED 1:25,000:

a) Location:

The preliminary prospecting scaled 1:25,000 has been completed in two separate areas within the 199.1 km2 property (Figure I.1):

*The first concession areas:*located in southeastern Sanxay district, Attapeu province, adjacent to the area subject to 1:25,000 scaled prospecting in Vang Tat, totaling32.5 km^2 defined by the coordinates of the UTM, Zone 48, Indiathailand longitude:

POINT	X (m)	Y (m)
A	754,590.00	1,667,500.00
B	760,000.00	1,667,500.00
C	760,000.00	1,661,500.00
D	754,590.00	1,661,500.00

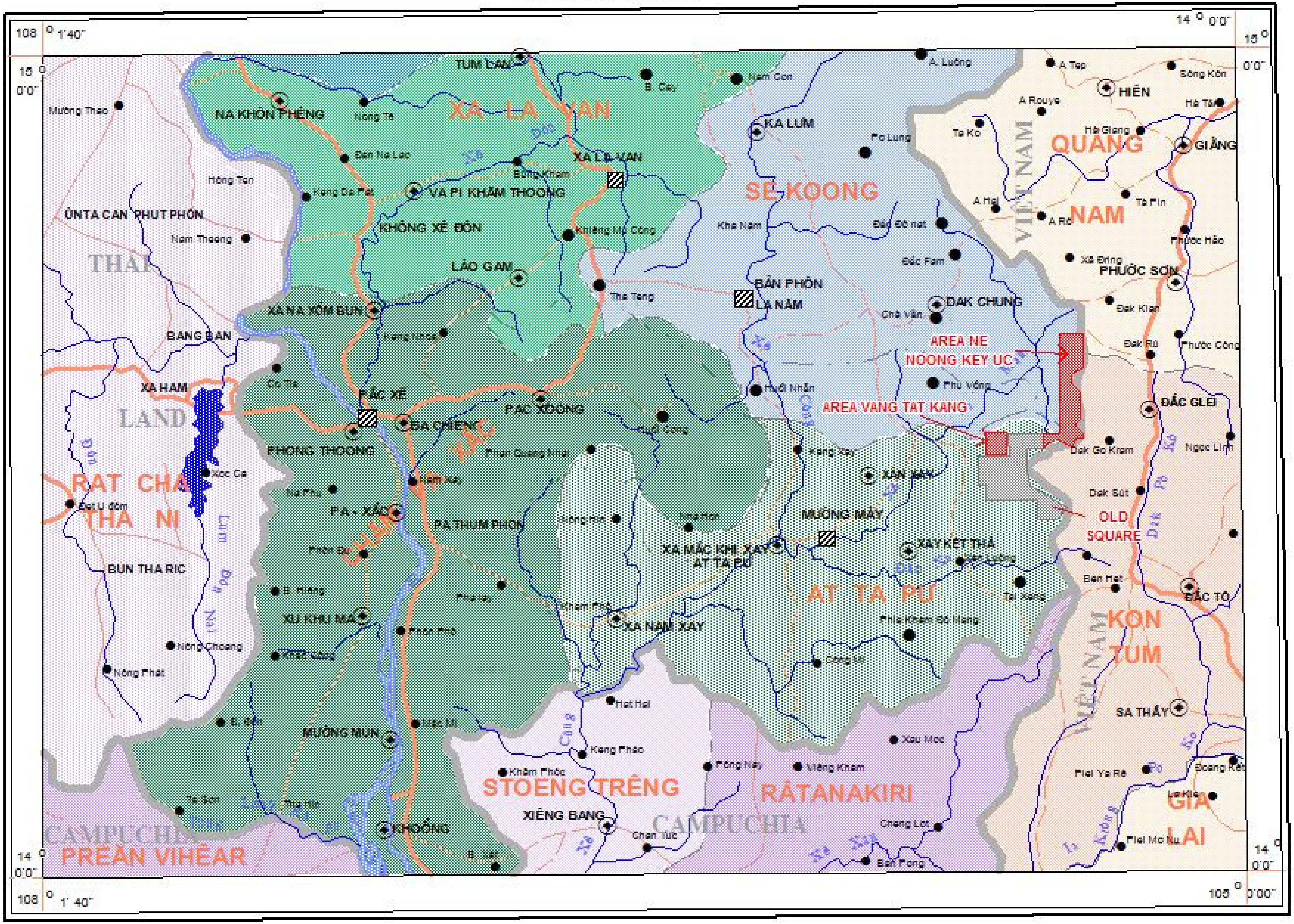
The second concession area: located in northeastern Se Koong province, adjacent to Vietnam boundary, totaling 166.6 km^2defined by coordinates of the UTM, zone 48, Indiathailandaxial longitude:

POINT	X (m)	Y (m)	POINT	X (m)	Y (m)
II-1	18.774.400	1.694.000	II-10	18,780,500	1,667,000
II-2	18.780.700	1.694.000	II-11	18,780,500	1,666,000
II-3	18.780.700	1.685.000	II-12	18,778,700	1,666,000
II-4	18.777.500	1.683.000	II-13	18,778,000	1,664,000
II-5	18,777,500	1,680,500	II-14	18,776,500	1,664,000
II-6	18,780,000	1,678,000	II-15	18,773,000	1,666,000
II-7	18,780,000	1,671,000	II-16	18,770,000	1,663,000
II-8	18,778,700	1,670,000	II-17	18,770,000	1,667,000
II-9	18,778,700	1,665,000	II-18	18,774,100	1,667,000

and mostly adjacent to the border between the Lao PDR and the Vietnam Socialist Republic of Vietnam.

FIG I.1 SKETCH - MAP SHOWING GEOGRAPHIC POSITION AND TRANSPORTATION OF THE PROSPECTING AREA AT THE SCALE OF 1/25.000

SCALE : 1/1.000.000



District center | Provincial center | Road | Old licensed area for prospecting - exploration | New licensed area for prospecting - exploration

b – Topography

The 199.1 km^2property with two separate concession aeras với hai khu riêng biệt trong một tổng thể thống nhất với diện tích đã tìm kiếm 1/25,000 phạm viVang Tắt Nhầy.

*The first concession area(32.5 km^2):*is the administrative centre of Vang Tat characterized by a rather flat topography with a number of mountains reaching 1200m in height surrounding the valley. The difference in topographic height is not high, approximately 300m. The area topography is flat, with few very high cliffs.

The second concession area(166.6 km^2): located north east. It is characterized by high and abrupt mountains, with many mountains rising to 1700 – 1800m, especially mountains near the border with Vietnam.The topography is strongly segmented, however, the topography to the north becomes flatter with the height reduces 1200 – 1300m.

c – Hydrological network:

Two areas of the property have the same hydrological features, particularly water bodies flowing into the Se Ka Man river to the west and have difference in scope of current.

The hydrological networks of both areas comprise upstream water bodies.

Within the first concession area of 32.5 km^2, there is only one current flowing through Vang Tat administrative centre to the west, forming a not large basin. Difference in height of current is generally normal.

Within the second concession area (166.6 km^2),there are two currents in the north east, one current Tap Che in the north flowing from Vietnam to Laos in the sub-parallel direction and Dak Chieep current in the south with its basin located in the territory of Laos.

These currents flow into Se Ka Man river to the west of the property.

Streams present in the investigated area are basically upstream. For this reason, the basins are sloping, flow speed is strong and there are occasional floods in the event of rains.

d – Climate:

The investigated area is a part of the south of Laos, especially an integral part of Attapeu and Se Koong. The property is therefore affected by regional climate with two distinct seasons: wet season and dry season. The wet season lasts from May to October and the dry season occurs between October and April.

With different topographical features, the two areas have their own climate features.

The first concession area (32.5 km^2) is characterized by the climate of Vang Tat, particularly not high rainfall in wet season and higher temperature.

The second concession area (166.6 km^2) is dominated by mountainous climate. Hailstones usually occur in wet season due to cold air and the highest rainfall is usually seen between May and August.

Due to hydrometerological stations unavailable within the investigated area, pre-existing data of some nearby stations were used for reference in this report. The monitoring data collected from Attapeu andSaravane stations,(Laos) and DakTo station, Kon Tum province (Vietnam) during the 1989 – 2003 period indicate the following information:

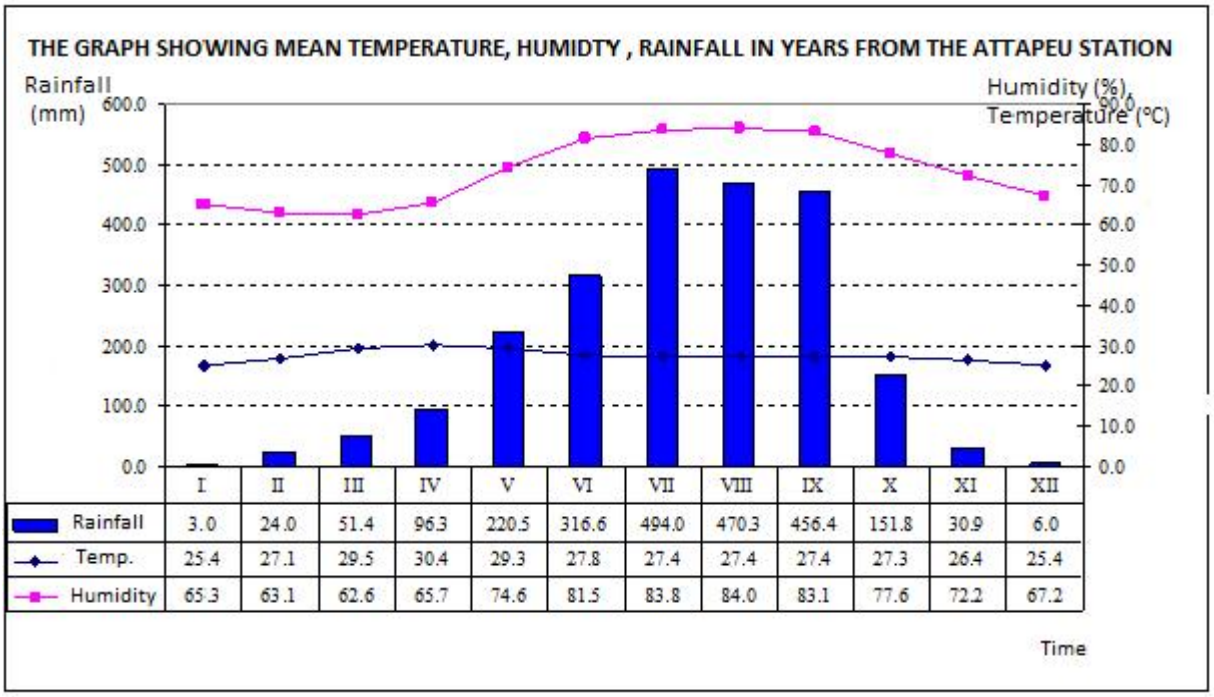
1- Attapeu station:

- Rainfall: according to the climate data collected during the 1990 -2003 period (14 years), maximum annual rainfall varies from 1457.0 to 2321.2mm, particularly the highest rainfall in July, August and September and the lowest rainfall in January. The maximum daily rainfall recorded is 170mm (in September 1996.

- Evaporation: Maximum monthly evaporation occurs in January and February while minimum monthly evaporation occurs in wet season. Total average annual evaporation recorded from the Attapeu station is between 887 and 991.4mm.

- Humidity:Monthly humidity is also affected by rainfall. If the rainfall is high, the humidity will be high and vice versa. Maxium humidity recorded from the Attapeu station falls in July, August and September (83.1 to 84%) and minimum humidity occurs in February and March (62.6 to 63.1%).

Climate data from the Attapeu station are shown in Figure I-2.

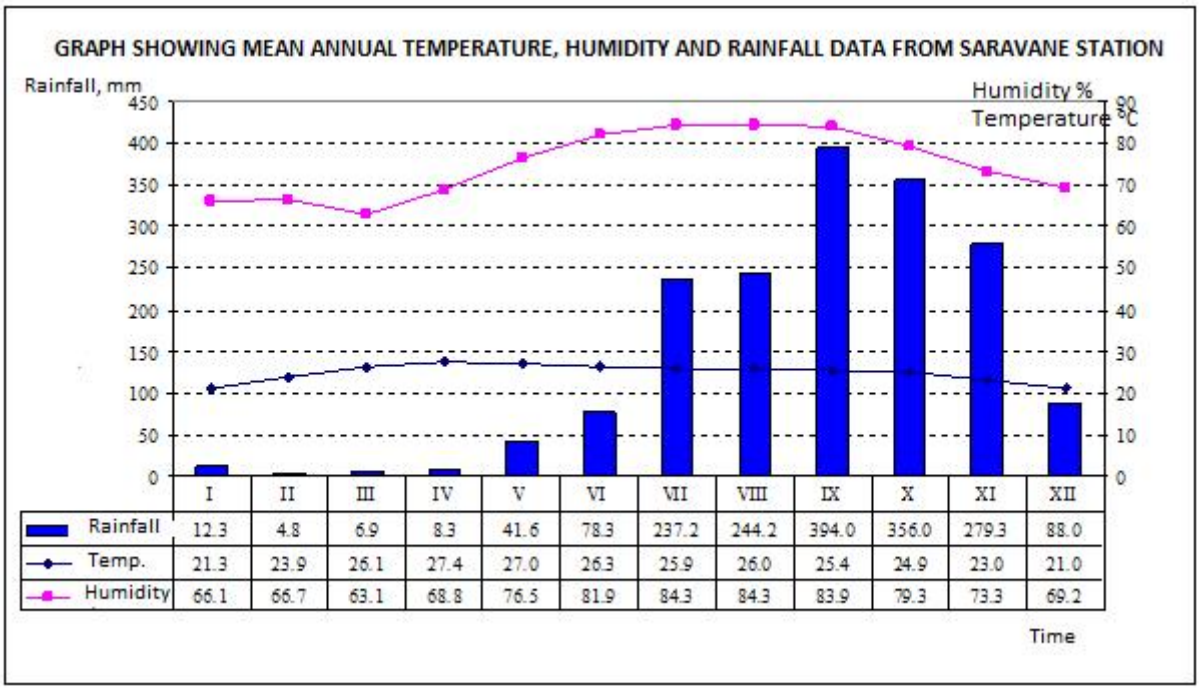


	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Rainfall	3.0	24.0	51.4	96.3	220.5	316.6	494.0	470.3	456.4	151.8	30.9	6.0
Temp.	25.4	27.1	29.5	30.4	29.3	27.8	27.4	27.4	27.4	27.3	26.4	25.4
Humidity	65.3	63.1	62.6	65.7	74.6	81.5	83.8	84.0	83.1	77.6	72.2	67.2

Figure I – 2: Graph showing monthly rainfall in year in Attapeu.

2- Saravane Station:

- Rainfall: The data collected from Saravane station indicate that the rainfall period is one to two months later than that of Attapeu. Maximum rainfall occurs in September and October. Total annual rainfall in this region is lower than that in Attapeu, particularly the highest average annual rainfall recorded to be 1750.9mm.



	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Rainfall	12.3	4.8	6.9	8.3	41.6	78.3	237.2	244.2	394.0	356.0	279.3	88.0
Temp.	21.3	23.9	26.1	27.4	27.0	26.3	25.9	26.0	25.4	24.9	23.0	21.0
Humidity	66.1	66.7	63.1	68.8	76.5	81.9	84.3	84.3	83.9	79.3	73.3	69.2

Figure I – 3: Graph showing monthly rainfall in Saravane

- Evaporation: Maximum evaporation falls in Feburary and March and minimum evaporation falls in wet season (September). Total mean annual evaporation collected from the Saravane station is 1948.3mm, much higher than that from the Attapeu station.

- Humidity: Humidty as recorded at Saravane station is also affected by the annual rainfall. The highest and lowest mean annual humidity falls in August (84.3%) and in March (63.1%). Climate data from the Saravane are shown in Figure I-3***.**

Air temparature:

The difference in temperature among seasons in one year is not high, commonly in the range of 2 -5^{o}C, however the difference in temperature between day time and night time is rather high, in the range of 6 - 8^{o}C. The temperature in dry season (January to mid February) in the 166.6 km^{2}area during the night time is commonly very low, with occasional snow and ice events.

I.2 - TRANSPORTATION, ECONOMY AND POPULATION:

a - Transportation:

The transportation conditions within the area subject to 1:25,000 scaled prospecting has been improved since a road was constructed from Se Xu bridge to

Noong Key Uc using the Laos Government's fund under the scope of economic development program in western Attapeu. Besides this road, there are only local roads for hunting and field cultivation purposes of the local people and pre-existing access roads for forestry exploitation. For these reasons, the transportation conditions for prospecting and survey is very difficult.

Transportation within the 166.6 km^2 concession area is mostly dependent on access roads for mineral mining activities of XMINE and Viet Lao Companies. In addition, there is also a patrol road along the border with Vietnam, facilitating transportation in dry season but hindering transportation in wet season due to landslides caused by flood and heavy rains.In conclusion, transportation conditions in this area are very poor.

b - Population and economic conditions:

The regional population is very sparse, with only two main residential groupings: Vang Tat Nhay and a number of small villages in Noong Phaand Nooong Key Uc. The regional population density is very sparse, only approximately 20 – 30 houses in each village. The population consists of mainly Lao Thom people who live in stream-along valleys and live by field clearance and cultivation on a manual basis.

On economy, as characterized by a remote area, this property's economic conditions are more difficult than district-level and provincial centres, with poor infrastructures. Local people's life is completely dependent on the nature.

c - Flora and Fauna:

Regional forests are mainly primeval forests and partly secondary forest developing during the post-mining period.

Primeval forests account for the majority, primarily seen in upland areas. Flora consists of dominantly trees with low economic value and less pine trees, panoramio trees and fokienia. There are very few precious timbers. Secondary forests are grown primarily in lowland where local people do field clearance and cultivation. Secondary forests are composed of mainly straw grass and reed and minor shrubs. With such characteristics, field surveys and investigation are very difficult. Vegetation cover accounts for 90% of the area subject to 1:25,000 scaled prospecting.

On fauna, there are muntjacs, civets, weasels, pangolins and wild boar. More especially, there are flying lemurs included in the red list of precious animals.

d) Industrial facilities:

There are two main industrial facilities in Vang Tat Nhay:

- Wood exploitation and processing facility: is a factory which focuses on cutting and sawing timber logs to produce wood products. Its production scope is not as large as others in Attapeu.
- Ore gold mining and processing facility of the Mining Unit under the Ministry of National Defense. This facility has small scale and limited equipment.

In conclusion, the regional topographic, geographic, economic and demographic conditions are very difficult.

- *Segmented topography, difficult transportation and unavailable communication system. The energy system required for operations has been self-supplied. These are disadvantages and challenges for the mineral prospecting – investigation within this area in particularly and the entire property in general.*
- *Sparse population and limited living conditions are also difficulties in recruitment of manning for geological investigation.*

I.3 – HISTORY OF GEOLOGICAL AND MINERALS INVESTIGATION:

The property subject to prospecting and investigation is small, and thus requiring the implementation of conventional geological works.Within this property, geological mapping at small scale were previously completed.

The minerals investigation indicates that it is the first time the Viet Lao Minerals JSC. has cooperated with the Mining Unit to jointly conduct investigation over the 3 km^2area for mining activities in Vang Tat Nhay – Sanxay – Attapeu using geological, geographic, survey and drilling methods to evaluate potential and prospect of the mineral resources.

Apart from the above mentioned exploration works, a gold mining company of Laos is also operating at local scale in the proximity. Documentations have not been updated. Furthermore, as funded by the Japanese Government, JICA conducted a preliminary ground checking in respects of natural resources and minerals over this area. In spite of preliminary results, this ground checking has generated a lot of documents relating to isotopic data favored for determination of geological age of some formations and acted as a good basis for determination of following mineral investigation steps.

The investigation results collected from Vang Tat over the past years indicate that it is an area characterized by complicated geological structure due to topography segmented by faults and forming of minerals-bearing blocks inside. Along with the dominant presence of gold associated with line-type structure in the area, there are occurrences of Sn and W associated with circle-type structure, Ni relating to weathering of mafic and ultramafic rocks, Au associated with terrigenous formations and of Fe in the form of sills. It is essential to conduct follow-up investigation and exploration.