PP 188/12/90 ISSN 0126-5539

PERSATUAN GEOLOGI MALAYSIA

WARTA GEOLOGI

NEWSLETTER OF THE GEOLOGICAL SOCIETY OF MALAYSIA

Jil. 17, No. 2 (Vol. 17, No. 2) Mar-Apr 1991

KANDUNGAN (Contents)

GEOLOGICAL SOCIETY OF MALAYSIA

DIKELUARKAN DWIBULANAN
ISSUED BIMONTHLY

PERSATUAN GEOLOGI MALAYSIA
Geological Society of Malaysia

Majlis (Council) 1991/92

Presiden (President)	:	Ahmad Said
Naib Presiden (Vice-President)	:	Khalid Ngah
Setiausaha Kehormat (Hon. Secretary)	:	Jimmy Khoo Kay Khean
Penolong Setiausaha Kehormat (Asst. Hon. Secretary)	:	Ahmad Tajuddin Ibrahim
Bendahari Kehormat (Hon. Treasurer)	:	Lee Chai Peng
Pengarang Kehormat (Hon. Editor)	:	Teh Guan Hoe
Presiden Yang Dahulu (Immediate Past President)	:	Hamzah Mohamad
Juruodit Kerhormat (Honorary Auditor)	:	Peter Chew

Ahli-Ahli Majlis (Councillors)

1991–93	1991–92
Abdul Ghani Mohd. Rafek	Andrew Spykerman
Mazlan Madon	Cheang Kok Keong
Nik Ramli Nik Hassan	Chin Lik Suan
Tan Teong Hing	Fateh Chand

Jawatankuasa Kecil Pengarang (Editorial Subcommittee)

Teh Guan Hoe (Pengerusi/Chairman)

Lee Chai Peng	Ng Tham Fatt
Lili Sulastri	Tan Boon Kong
Mazlan Madon	Tan Teong Hing

Lembaga Penasihat Pengarang (Editorial Advisory Board)

Aw Peck Chin	C.A. Foss	Senathi Rajah
Azhar Hj. Hussin	N.S. Haile	Shu Yoon Khoon
K.R. Chakraborty	K.F.G. Hosking	P.H. Stauffer
Cheang Kok Keong	C.S. Hutchison	Tan Boon Kong
Choo Mun Keong	Ian Metcalfe	H.D. Tjia
Chu Leng Heng	John Kuna Raj	Yeap Cheng Hock
Dennis N.K. Tan	Leong Lap Sau	Yin Ee Heng

About the Society

The Society was founded in 1967 with the aim of promoting the advancement of earth sciences particularly in Malaysia and the Southeast Asian region.

The society has a membership of about 600 earth scientists interested in Malaysia and other Southeast Asian regions. The membership is worldwide in distribution.

Published by the Geological Society of Malaysia,
Department of Geology, University of Malaya, 59100 Kuala Lumpur.
Tel: 603-757 7036 Fax: 603-756 3900

Printed by Art Printing Works Sdn. Bhd., 29 Jalan Riong, 59100 Kuala Lumpur.

The Nenering Tertiary deposit, Keroh, north Perak — A preliminary study

G. H. TEH & S. G. SIA
Geology Department, University of Malaya, 59100 Kuala Lumpur.

Abstract : The Nenering Tertiary deposit is well-exposed along a 3.5 km stretch of the new Kg. Ayer Panas-Kg. Lalang highway in north Perak, near the Malaysia-Thai border.

The deposit is essentially of gently dipping beds (12-22°) of mudstones, sandstones and conglomerates forming a broad NS trending syncline which plunges southwards. Numerous sand–filled gullies and channels represent a braided stream pattern which flowed from west to east.

The deposit sits on an angular unconformity over the more tightly folded Keroh Formation of Silurian age. A thicker lower portion of the Nenering deposit is separated from the thinner, more sandy upper portion by another angular unconformity.

The Nenering Tertiary deposit is probably a southwestward extension of the Thai-Betong Tertiary deposit as more exposures are encountered along the road skirting the Malaysia-Thai border.

INTRODUCTION

This is a preliminary report on the occurrence of the Tertiary deposit at the Felda Nenering area at Keroh (Pengkalan Hulu), north Perak (Fig. 1) henceforth called the Nenering Tertiary Deposit. The outcrops were first observed by one of us (Sia), and the deposit is believed to be of Tertiary age because of the many similarities to the well-documented Lawin Tertiary deposit (Jones, 1970; Sia, 1989).

LOCATION

The Nenering Tertiary deposit is well exposed along the Kg. Ayer Panas-Kg. Lalang highway (Fig. 2), which is 24 km north of Grik and stretches for 22 km. The deposit outcrops as far north as where the highway cuts Sg. Kuak, that is 3.5 km south of Kg. Ayer Panas (or 7 km from Hulu Perak), and extends to as far south as the township of Felda Nenering just ½ km south of where the highway cuts Sg. Kuak again (Fig. 3), at 7 km south of Kg. Ayer Panas (or 10 km from Hulu Perak), that is an extent of about 3.5 km along the highway (Figs. 4 & 5).

The Tertiary deposit can be traced northeastwards to the Malaysia-Thai border where spectacular outcrops are also exposed along the road skirting the border (Fig. 6a & 6b).

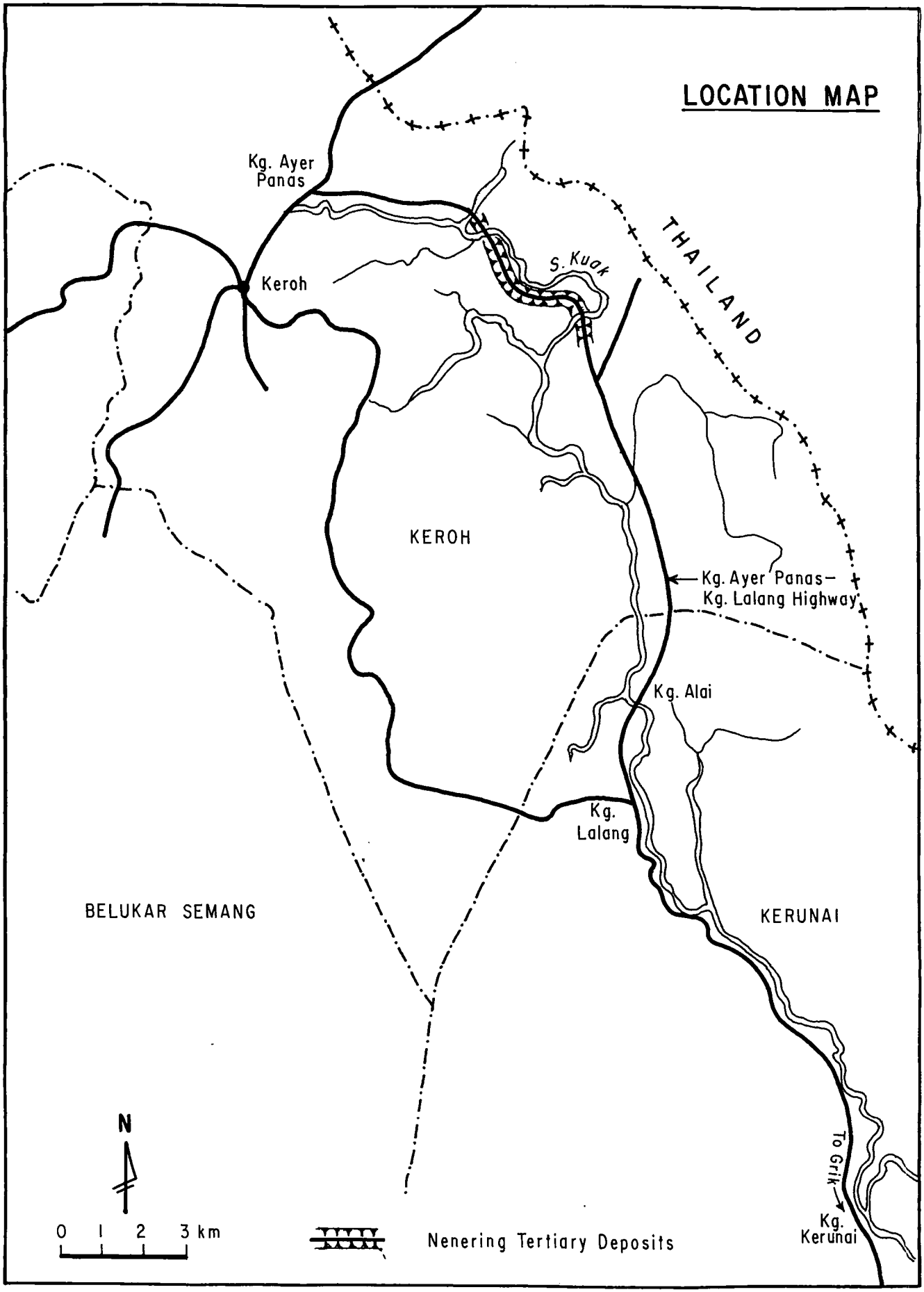


Figure 1. Map showing the location of the Nenering Tertiary deposit along the Kg. Ayer Panas–Kg. Lalang highway, Keroh, Perak.

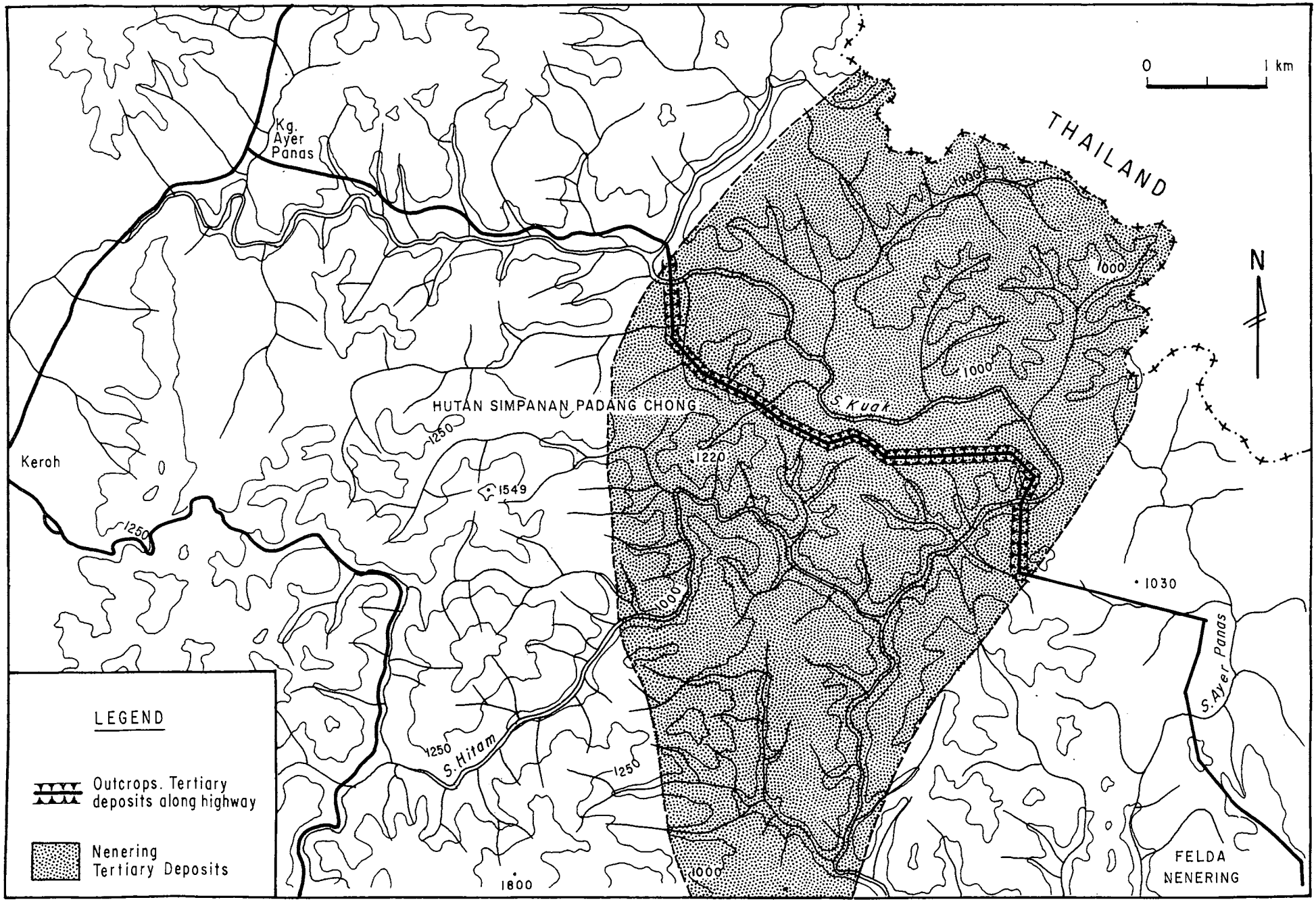


Figure 2. Map showing the exposures of the Nenering Tertiary deposit in the vicinity of the Kg. Ayer Panas-Kg. Lalang highway, Keroh, Perak.

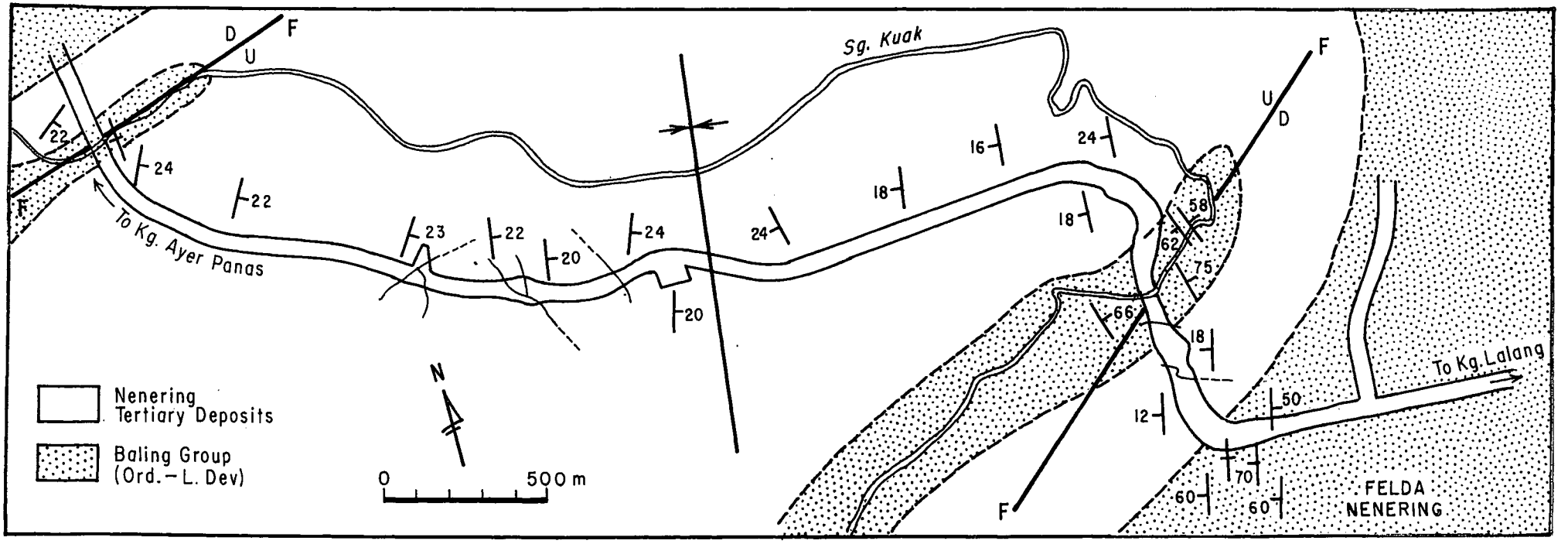


Figure 3. Map showing the geology of the main exposures of the Nenering Tertiary deposit along the Kg. Ayer Panas-Kg. Lalang highway, Keroh, Perak.

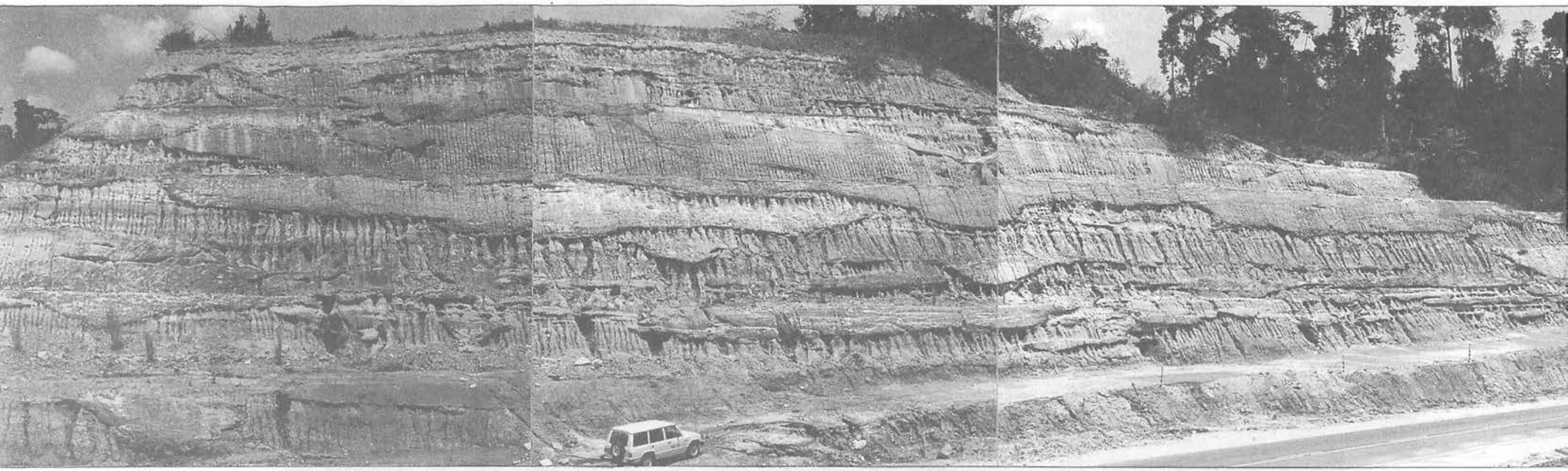


Figure 4. Good outcrops of the Nenering Tertiary deposit at the vicinity of Felda Nenering along the Kg. Ayer Panas-Kg. Lalang highway.

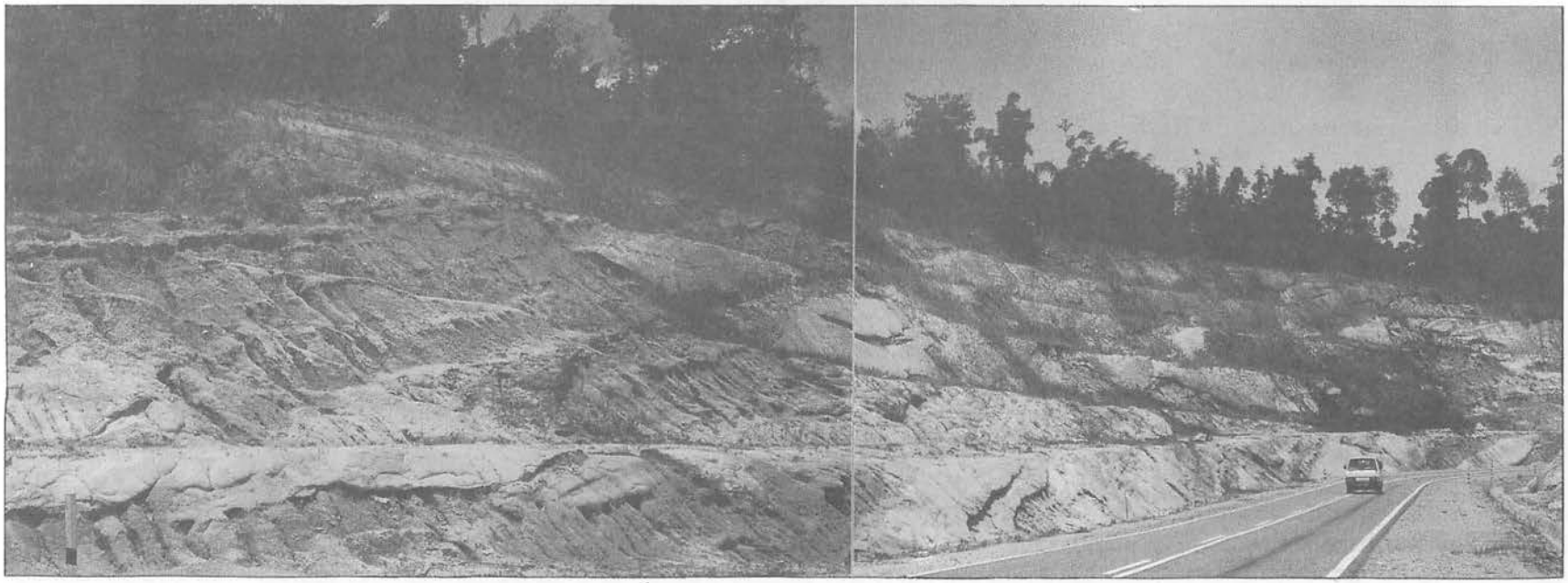


Figure 5. Gently westward dipping beds of the Nenering Tertiary deposit at km 7 (from Hulu Perak) Kg. Ayer Panas-Kg. Lalang highway.

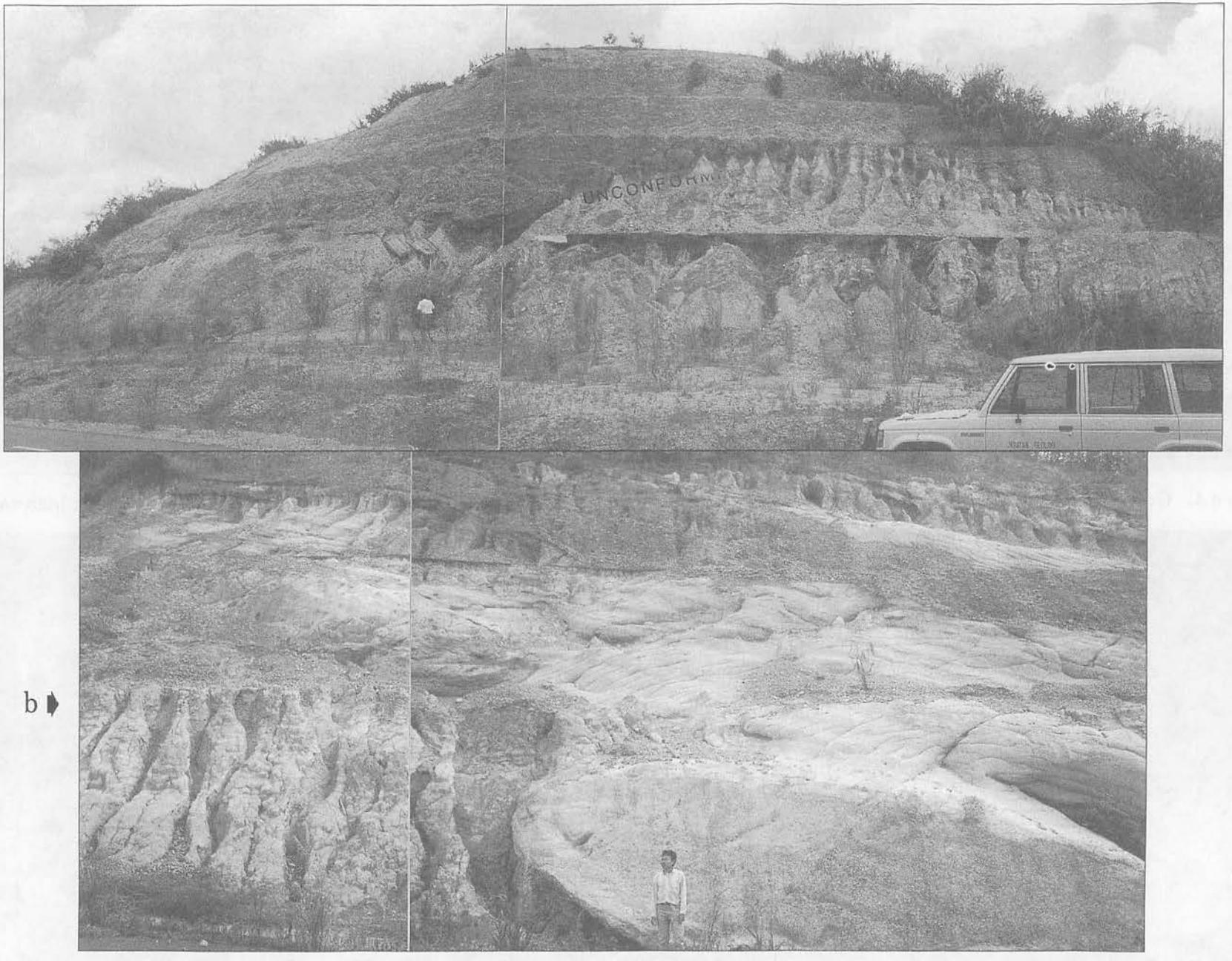


Figure 6a. Northernmost outcrop of angular unconformity of basal conglomerate of Nenering Tertiary deposit on tightly folded rocks of Baling Group along the road skirting the Malaysia-Thai border.

Figure 6b. Another outcrop of the Nenering Tertiary deposit along the road skirting the Malaysia-Thai border showing prominent sandy channels.

GEOLOGY

The deposit at Nenering is made up essentially of mudstones, sandstones and conglomerates. The gentle dips of the beds are characteristically and prominantly shown by the alternating bands of sandstone (and minor conglomerate) and mudstone (Fig. 7) — a feature so well revealed by the Lawin Tertiary deposit at Felda Lawin (Sia, 1989), 45 km south of the Nenering area.

The Nenering outcrop on the whole shows the western and eastern extent of a gently dipping basin, with beds in the west striking 020° and dipping 22° SE while the beds in the east strike 005° and dip 12° west, that is a broad syncline with its axis trending approximately NNW–SSE and plunging SSE. The basin rests on an angular unconformity on the steeper dipping and tightly folded beds of the Keroh Formation of the Baling Group, of Lower Palaeozoic (probably Silurian) age, and made up essentially of mudstone with chert and limestone lenses (Burton, 1986; Jones, 1970). The thicker and more extensive lower portions of the Nenering deposit is separated from a thinner, more sandy upper portion by another angular unconformity.

Figure 7. The outcrop of the gentle eastward dipping Nenering Tertiary deposit of conglomerate (with graded-bedding), sandstone and mudstone overlying the steeply dipping limestone of the Baling Group near where Sg. Kuak cuts Kg. Ayer Panas-Kg. Lalang highway.

The better, more spectacular and fresh outcrops of the Nenering deposit along the Kg. Ayer Panas-Kg. Lalang highway, occur at its eastern limits (near Felda Nenering) (Figs. 4 & 5) where they post significant problems to road construction causing extensive landslides.

A closer observation of the beds show sedimentary features like cross-bedding in the sandstone and graded-bedding in the conglomeritic beds. The sandstone beds also show numerous gullies or channels and variation in grain size from fine to coarse and very coarse. The conglomeritic beds also show significant variation in size of the clasts, from 2 mm to 20 cm, made up essentially of the more resistant quartz, chert and granite.

The conglomerates, with larger clasts occur to the west and there appears to be a gradual decrease in size and abundance to only a narrow band overlying the sandstones and mudstones at km 9 (from Hulu Perak) towards the east. Beyond that the deposit is essentially

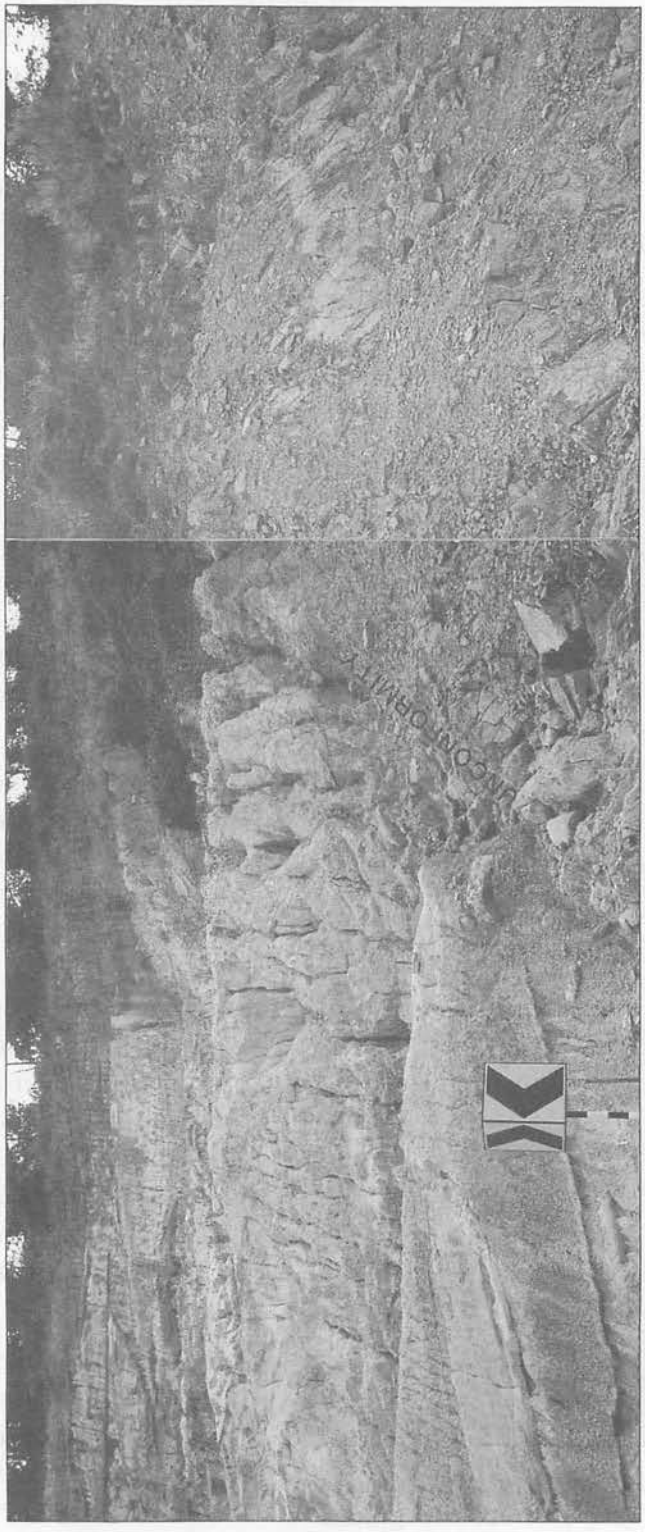


Figure 8. An angular unconformity separating the gently dipping Nenering Tertiary deposit and the steeply dipping limestone of Keroh Formation (Baling Group) at km 8 Kg. Ayer Panas-Kg. Lalang highway.

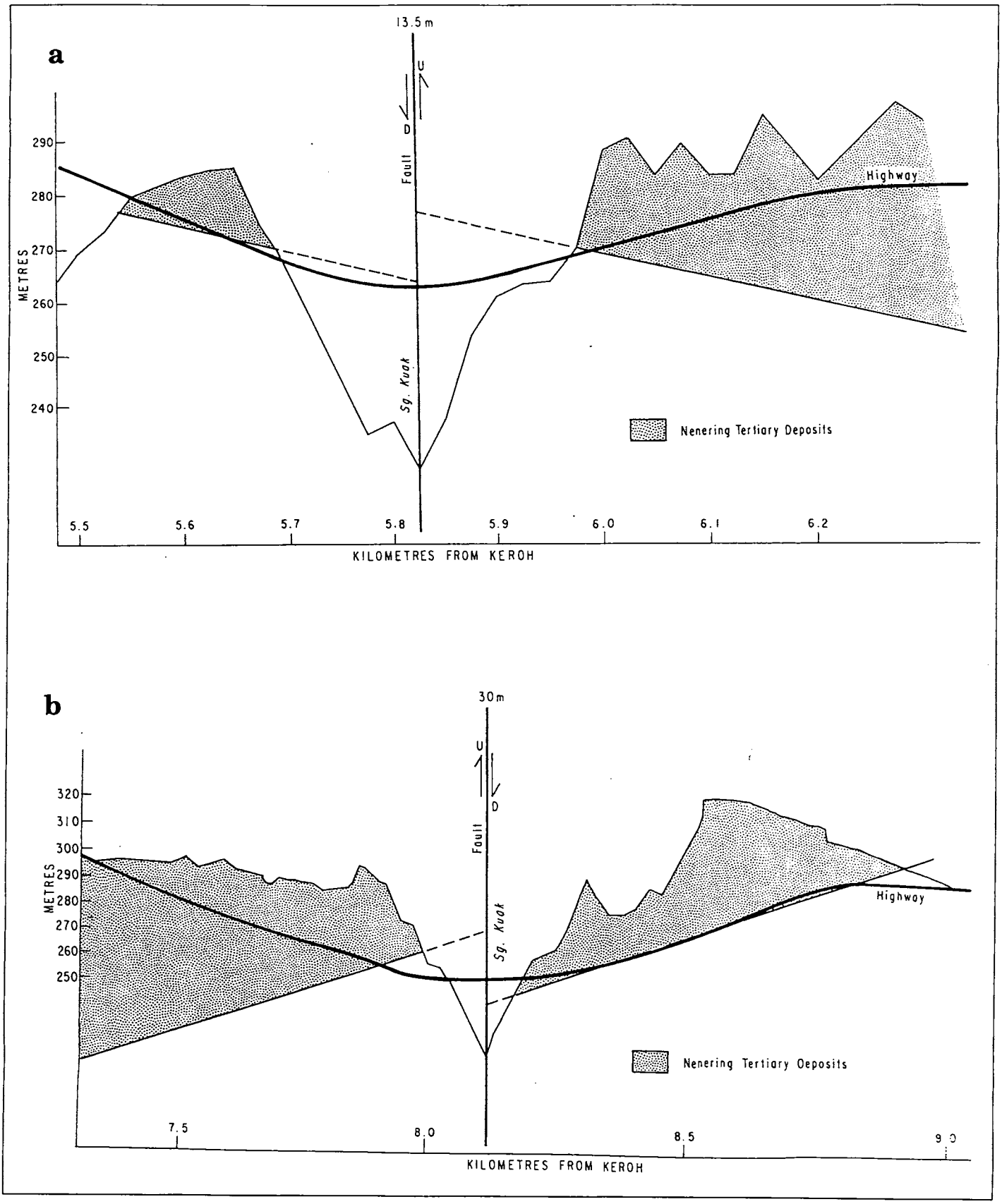


Figure 9a & 9b. Sketch showing the throw of faults along Sg. Kuak where it cuts the Kg. Ayer Panas-Kg. Lalang highway at kms 5.8 and 8.1 (from Keroh).

sandstones and mudstones till its eastern contact (essentially an angular unconformity) (Fig. 8) with the Keroh Formation.

The mudstones and shales are in the most parts highly weathered giving rise to a greyish clay mottled with a deep red colour. No coal-bearing bands were observed in this preliminary study.

The limestones at the western and eastern contacts with the Nenering deposit are highly sheared, as a result of post Tertiary faulting (Fig. 9a & 9b), with throws of 15 m and 26 m respectively.

The upthrown block of Tertiary sediments probably sagged and adjusted to a broad syncline.

CONCLUSIONS

The Tertiary deposit at Nenering turns out to be one of the better outcrops exposed by the construction of a new highway.

This initial study of the outcrop shows that the Nenering basin drained essentially from west to east, with the heavier conglomerates to the west. The nature of the drainage was a braided stream pattern. The area has probably undergone very little tilting since the Tertiary.

The Nenering deposit is probably an extension of the Betong Tertiary deposit just north of the Malaysia-Thai border (Gobbett, 1972; Stauffer, 1973).

Further work is being carried out on the sedimentological, petrography and paleontological aspects.

ACKNOWLEDGEMENTS

This study has been funded by a F-vote Research Grant from the University of Malaya. The authors greatly appreciate the co-operation and data on the alignment of the Kg. Ayer Panas-Kg. Lalang highway provided by the Jabatan Kerja Raya (JKR) at Grik.

REFERENCES

BURTON, C.K., 1986. The Baling Group/Bannang Sata Group of the Malay/Thai Peninsula. *J. SE Asia Earth Sciences*, vol. 1, No. 2, pp 93-106.

GOBBETT, D.J., 1972. Geological map of Malay Peninsula (1:1,000,000). Kuala Lumpur. Geological Society of Malaysia.

JONES, C.R., 1970. The Geology and Mineral Resources of the Grik area, upper Perak. *Geological Survey District Memoir* 11, 144p.

SIA, S.G., 1989. *Geology of the Grik–Lawin area.* University of Malaya B.Sc. (Hons) Thesis. 145p.

STAUFFER, P.H., 1973. Cenozoic. *In:* Gobbett, D.J. and Hutchison, C.S., (Eds.), Chapter 6 *Geology of the Malay Peninsula (West Malaysia and Singapore).* New York, Wiley-Interscience, pp 143-176.

* * * * *

Manuscript received 1.4.91

Sabah serpentinite sandstone and conglomerate

CHARLES S. HUTCHISON[1] & TUNGAH B. SURAT[2]

[1]Department of Geology, University of Malaya, 59100 Kuala Lumpur.

[2]Geological Survey of Malaysia, Locked Bag 2042,
88999 Kota Kinabalu, Sabah.

INTRODUCTION

The only documented occurrences of serpentinite sandstone and serpentinite conglomerate in the whole of Malaysia have been described by Newton-Smith (1967) from the eastern margin of the Bidu-Bidu hills ophiolite of the Labuk Valley. These fascinating unusual rocks have been paid remarkably little attention, because of their remote location. If they had been more readily accessible, their position in the geological history of Sabah would be established. As it is, their relationships to contiguous formations and their tectonic significance have not been documented.

A new road is being aligned linking Sandakan with the Rumidi Estate. This road branches from the main Sandakan-Telupid road at mile 69 from Sandakan (Fig. 1). It is still under construction and not yet officially opened. Figure 1 shows the end of this road at the Rumidi Estate, and also the location of the Leadstar mining camp, where we made an overnight stop during our visit in June 1990.

THE NEW ROADCUTS

During our visit, new roadcuts of ultrabasic conglomerate and sandstone were found on the western side of the new road at locality 2 (Fig. 2). To be certain that these are the same rocks as described by Newton-Smith (1967), we drove to Locality 1, which is along the Rumidi Estate road leading to the now abandoned manager's house (Fig. 2). This locality was described in detail by Newton-Smith (1967, page 18) under his Kuala Dudor locality. We sampled the conglomerate and found it to be identical to that at locality 2. The conglomerate contains angular to sub-rounded clasts up to 8 cm diameter of serpentinized peridotite in a fine grained serpentinite matrix. Other clast lithologies are angular ribbon chert, amygdaloidal spilite and feldspar-tremolite schist. The typical thin-section appearance of a finer-grained part of the conglomerate is shown in Figure 3.

The ultrabasic conglomerate is commonly partly gossanized and coloured reddish-brown in outcrop (Fig. 2), and outcrops of iron-manganese gossan occur close to the manager's house. Such occurrences are probably related to the mineralization, an example of which occurs at the Leadstar mining prospect.

At locality 2 (Fig. 1), the ultrabasic conglomerate is overlain by serpentinite sandstone, which is characteristically greyish-green in outcrop (Fig. 2). The sandstone is bedded and some beds show grading, but the locality is sedimentologically and structurally complex. Typical thin sections are shown in Figure 3. The sandstone contains fresh angular grains of pyroxene and angular to sub-rounded serpentinite clasts, some of which look as if they may have been transported as single olivine crystals. Several varieties of serpentinite are found, some angular, others rounded. The matrix is of finer

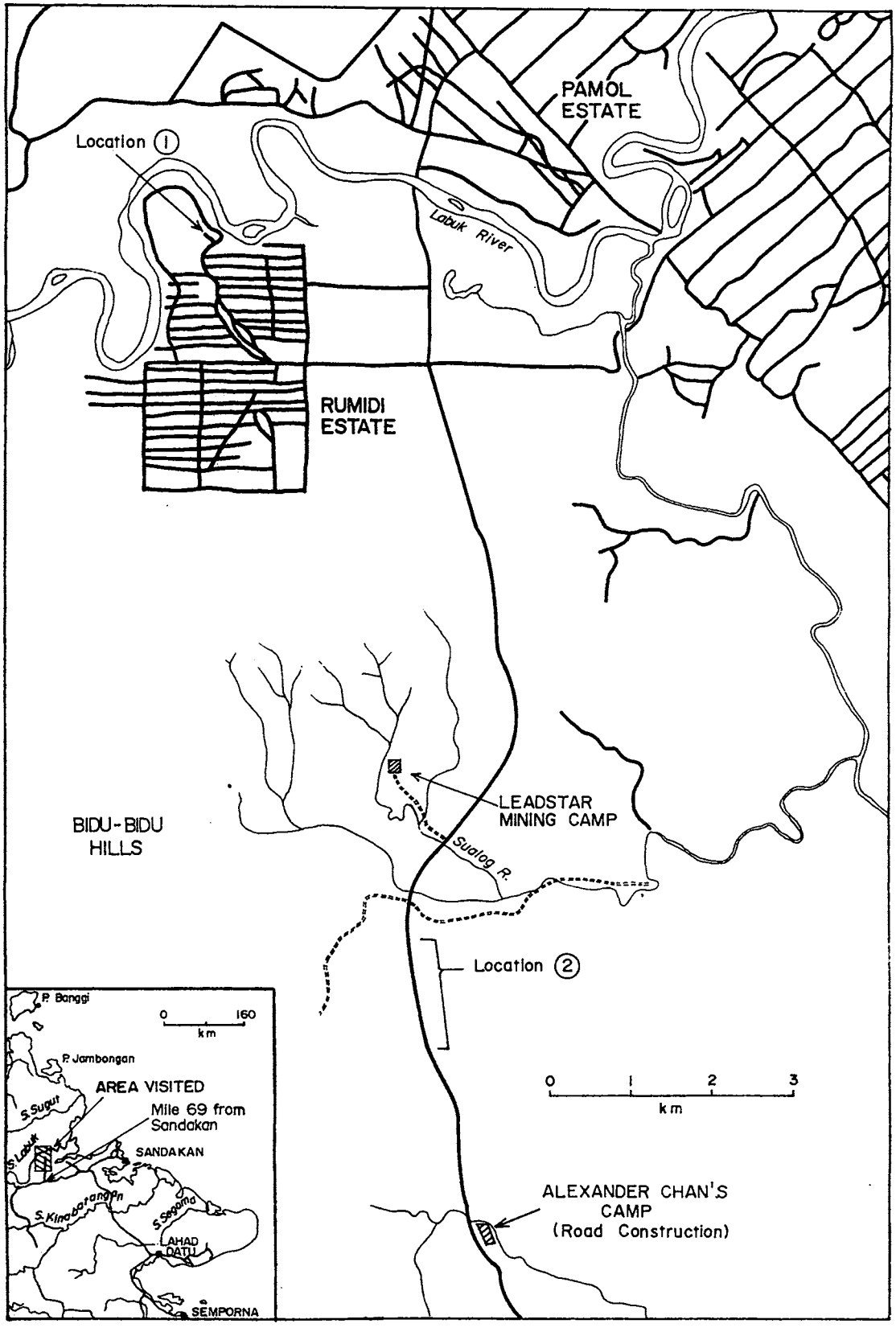


Figure 1. Locality map of the Rumidi Estate and eastern Bidu-Bidu Hills of the Labuk Valley, Sabah.

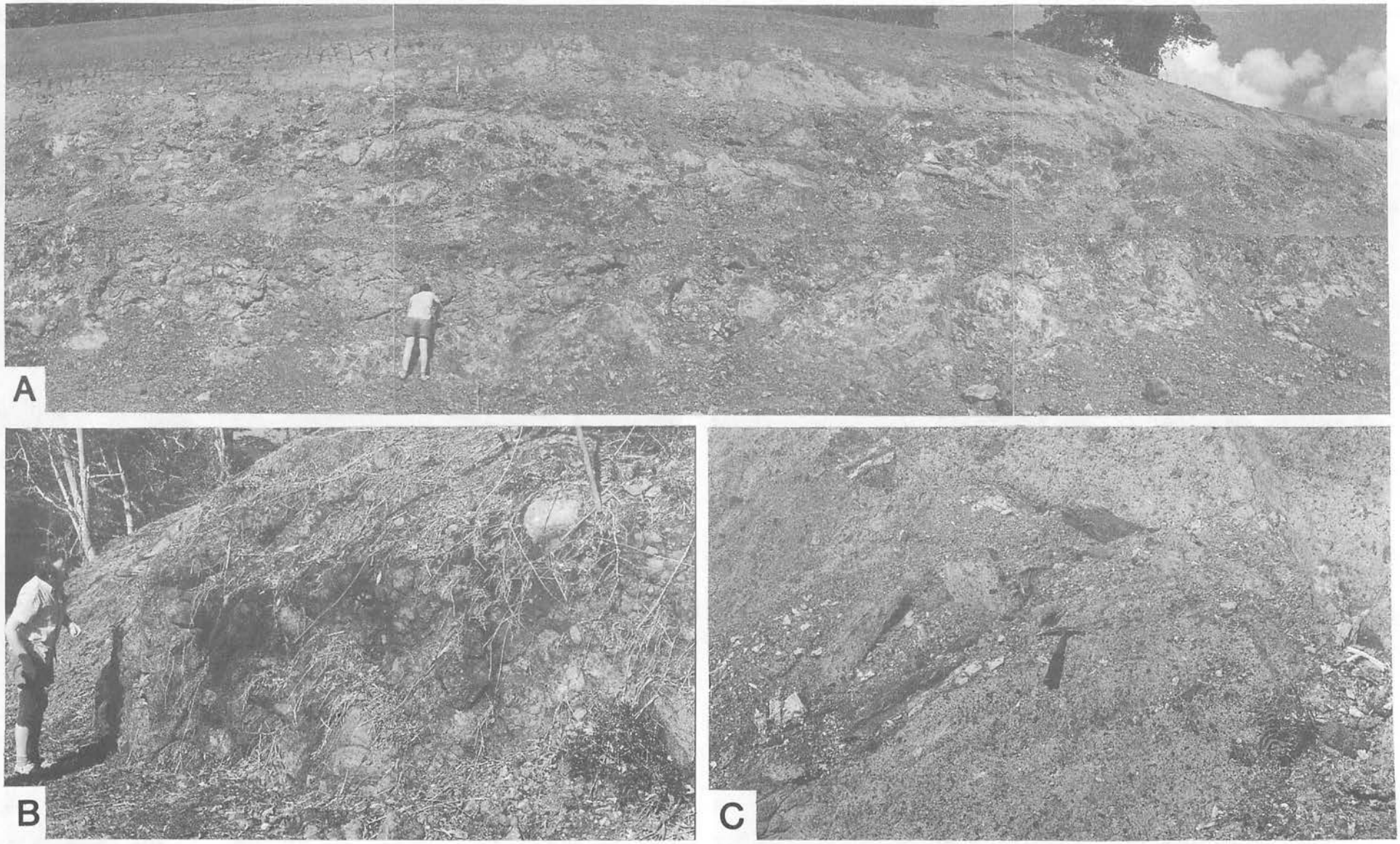


Figure 2. A: Fresh roadcut of serpentinite conglomerate at location 2, camera pointing due west. B: Serpentinite and chert conglomerate near the manager's house at location 1 in the Rumidi Estate. C: Very coarse poorly sorted serpentinite sandstone at locality 2.

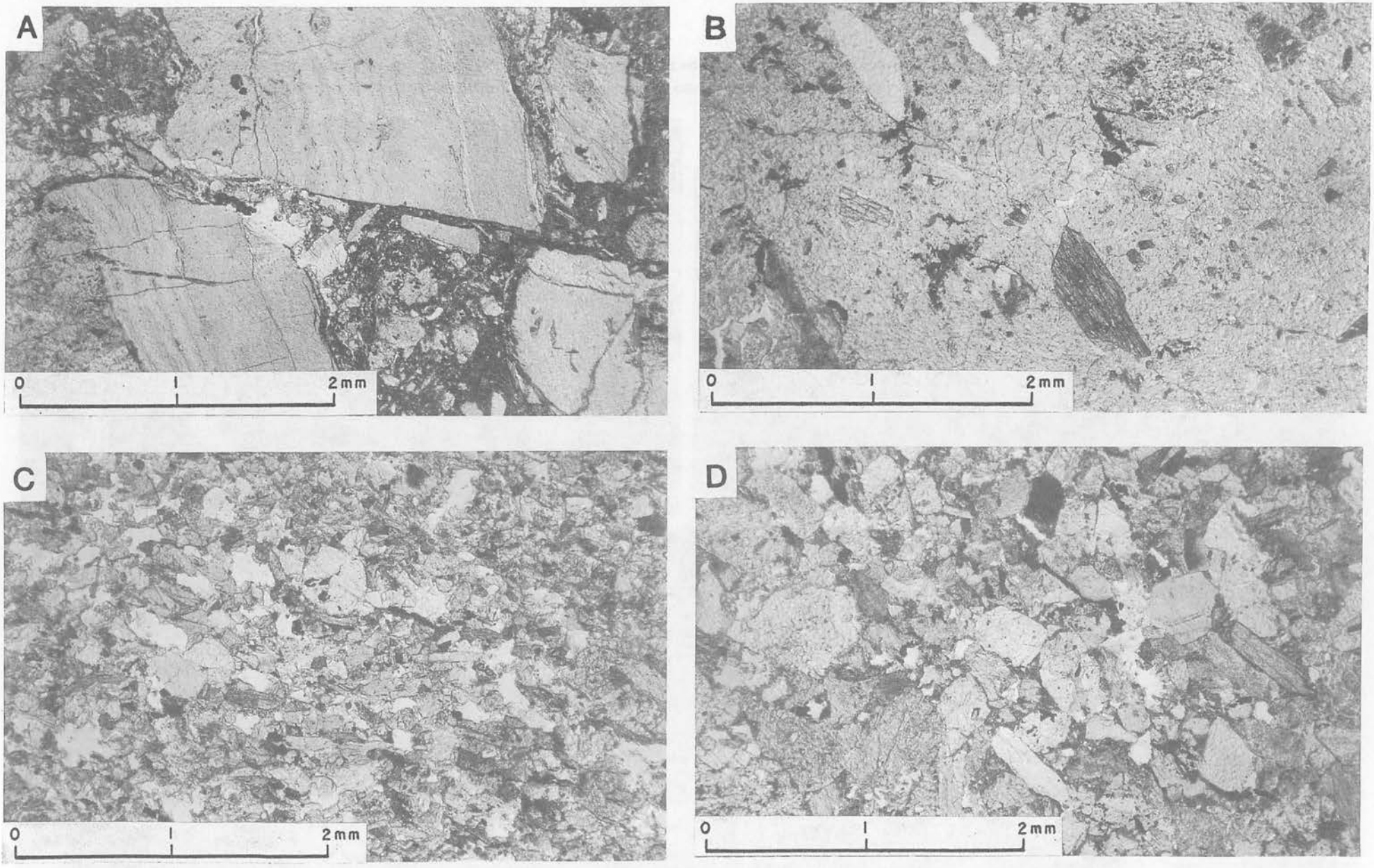


Figure 3. Photomicrographs under linearly polarized light. A: Finer grained part of the ultrabasic conglomerate at locality 1. The clasts are of sub-rounded serpentinized peridotite and angular banded chert in a fine grained serpentinite matrix. B: Serpentinite sandstone from locality 2. The clasts are of fresh angular pyroxene and angular to sub-rounded serpentinized olivine in a fine grained serpentinite matrix. C and D: Fine grained calcite-cemented sandstone at locality 2. The clasts are of serpentinite exhibiting a variety of shapes.

grained serpentinite debris. The rock was originally porous, but it has been cemented by calcite (Fig. 3).

The petrology (Fig. 3) and the outcrop complexity (Fig. 2) suggest that the serpentinite sandstone and conglomerate may have resulted from submarine mass-flow processes. The freshness and angularity of the pyroxene crystals (Fig. 3B) might even suggest a pyroclastic involvement in their origin. A detailed study will be necessary to resolve the origin of these deposits.

Not far from Alexander Chan's Camp (Fig. 1), we found some excellent road cuts of a sub-horizontal interbedded sequence of thin white to grey sandstone and red mudstone. The mudstone is scaly and all surfaces are polished. The interbedded sandstone shows no signs of tectonic deformation. Hence we interpret the scaly and polished appearance of the mudstone to be due to compaction and de-watering. It is very likely that the white sandstone/ red mudstone sequence belongs to the Oligocene Kulapis Formation, but this has not been proved. However, a possibility exists that the serpentinite conglomerate and serpentinite sandstones of locality 2 may represent the base of the Kulapis Formation. This is only a possibility, and detailed mapping of the area will be required to set the ultrabasic sedimentary rocks in their proper stratigraphic frame.

THE NEWTON-SMITH (1967) LOCALITIES

The main occurrences shown on his map are in and around the Rumidi Estate, at approximately 117°18'E and 5°56'N. He included the serpentinite sandstones, grit and conglomerate in the strongly deformed Upper Cretaceous(?) to Palaeocene Chert Spilite Formation. The lithologies included in this formation are listed as *spilite (commonly pillowed), *sodic dolerite, *spilitic tuff, *volcanic breccia, ultrabasic conglomerate and grit, sandstone, chert, shale and mudstone. In modern terminology, we would not utilize the term Chert Spilite Formation, but would rather include those above lithologies marked (*) in the basaltic layer of an ophiolite complex.

The basaltic layer of an ophiolite is immediately overlain by deep water sediments such as pelagic shale and mudstone, chert and micritic limestone. The last two are alternatives depending upon the water depth relative to the carbonate compensation depth (C.C.D.) in the oceanic or marginal basin. In the case of the Bidu-Bidu Hills ophiolite, the basin was deeper than the C.C.D.; chert is abundant and limestone absent. The lithologies of Newton-Smith (1967), which should not have been included within the ophiolitic assemblage, are ultrabasic conglomerate and grit, and sandstone.

The basaltic layer of an ophiolite is underlain by a gabbroic layer, and the Basic Intrusive Rocks of Newton-Smith belong to this. They are listed as dolerite, sodic dolerite, quartz dolerite, diorite, and olivine and hypersthene gabbro. Newton-Smith (1967) maintained that these basic intrusive rocks are younger than the Chert Spilite Formation, but his arguments would need to be carefully re-investigated in view of the modern needs of ophiolite stratigraphy.

The gabbroic layer of an ophiolite is underlain by peridotite of the upper mantle and lower oceanic or marginal basin crust. The Ultrabasic Intrusive Rocks of Newton-Smith (1967) fit this designation. They include serpentinite, lherzolite, harzburgite, dunite, garnet peridotite, feldspathic peridotite, pyroxenite, and associated hornblende-plagioclase pegmatite. These ultrabasic rocks were correctly interpreted as probably contemporaneous with the Chert-Spilite Formation. However the

serpentinized peridotite can subsequently mobilize and protrude into overlying formations as a result of subsequent tectonism.

SANDSTONE

The sandstone which Newton-Smith included in his Chert Spilite Formation, is fine grained and calcite cemented. It commonly consists of more than 30% quartz and 50% clasts of altered basic igneous rock, with sodic plagioclase and chert. The last three components indicate that the sandstone was derived from erosion of the basaltic and sedimentary layer of an uplifted ophiolite, hence the sandstone is younger than the Chert Spilite Formation. The significant quartz content requires an additional as yet unidentified source, perhaps the uplifted Crocker Formation. The age of the sandstone, as yet unknown, is critical in deciphering the geological history of Sabah.

ULTRABASIC CONGLOMERATE AND GRIT

The conglomerate consists of angular clasts of ultrabasic rock, chert, spilite or tremolite schist in a matrix of fine grained ultrabasic rock debris, red calcareous mudstone or white calcite. The conglomerate is interbedded with graded, but generally fine grained angular sandstone (grit). The grey-green carbonate-cemented sandstone contains angular fragments of serpentinite and fresh pyroxene usually ranging up to 2 mm diameter. Grains of chrome-spinel and picotite are also commonly contained.

The serpentinite conglomerate and sandstone (grit) are clearly eroded from the uplifted peridotite and/or gabbroic layer of an ophiolite. They therefore post-date the ophiolite, but unfortunately the age is unknown. There is a complete absence of quartz, so that the eroding provenance was wholly an ophiolite terrain. It would be more realistic to include the serpentinite conglomerate and grit of Newton-Smith (1967) in the Oligocene Kulapis Formation or Kamansi Beds, for their outcrops are contiguous. Careful re-mapping of the area will be necessary to fit these important serpentinite conglomerates and sandstones into their correct age frame.

ACKNOWLEDGEMENT

Permission has been granted by the Director-General of the Geological Survey of Malaysia for Mr. Tungah Surat to publish this joint paper.

REFERENCE

NEWTON-SMITH, J., 1967. Bidu-Bidu Hills area, Sabah, East Malaysia. *Geol. Survey Borneo Region, Malaysia, Report* 4, Kuching. 109p + map.

* * * * *

Manuscript received 20 April 1991

PERTEMUAN PERSATUAN
Meetings of the Society

Minutes of the 24th Annual General Meeting

Minutes of the 24th Annual General Meeting held at the Geology Department, University of Malaya, Kuala Lumpur at 5.30 p.m. on 21 April 1990 (Saturday).

This Annual General Meeting was called by the President of the Society, Dr. Hamzah Mohamad.

Present:

Hamzah Mohamad (Chairman)
Ahmad Said
Raja Kumar
Selvarajah Marimuthu
Hilton MacRae
Gan Ah Sai
Shu Yeoh Khoon
Syed Sheikh Almashoor
Lee Chai Peng
K. Narayanamoorthy
Clive Foss
Jimmy Khoo (Secretary)
C.S. Hutchison
Fateh Chand
Paramaswaran Suppiah
Hila Ludin Abu Hazim
Choo Mun Keong
Tan Boon Kong
K.R. Chakraborty
Ibrahim Komoo
Low Keng Lok
Engku Nasir
Teh Guan Hoe

1. Confirmation of the Minutes of the previous AGM for 1989

The minutes of the 23rd AGM were passed without amendments on the proposal of En. Fateh Chand and seconded by En. Choo Mun Keong.

2. Matters arising

a) The President elaborated on item 3(d) of the previous minutes that those authors who submitted full papers for the Annual Conference will have their papers printed in the proceedings and distributed before the conference.

b) On item 4 that more Society activities be held outside of the University of Malaya, the President mentioned that several activities had been held during the year notably at UKM, Ipoh and Kuching.

c) On the proposal that an Assistant Editor be appointed, the President informed the members that three active members had been assisting the Editor during the past year.

d) The President explained that the Society was unable to carry out its plan to purchase a building due to financial reasons. He revealed that after paying for Bulletin nos. 23, 24 and 25, only about $300,000 was left.

En. Choo Mun Keong said that there is no need to pay in full for a building. He mentioned 50% be paid and the other 50% would be self-generating through rentals, etc. He said that regrettably since the last AGM, the prices of properties in the Petaling Jaya area have increased.

The President said that the incoming Council should pursue the matter of buying a building.

e) En. Choo Mun Keong suggested that the minutes and relevant reports of the AGM should be circulated earlier to all members, one week before the AGM. After much deliberation, it was agreed that a form be attached to the AGM notice that those wishing to have a copy of the minutes and relevant reports prior to the AGM, request so from the Society.

3. President's Report

Dr. Hamzah Mohamad presented his report for the 1989/90 session. He mentioned that:

a) the last Petroleum Geology Seminar attracted more than 400 attendees from an international crowd. He thanked En. Hila Ludin Abu Hazim who was the Organising Chairman.

b) Other activities highlighted by the President are the Geoscientific Writing and Editing Workshop, the short course on Modern and Ancient Deep-sea Fan Sedimentation and the 2-day field trip to Raub-Kuala Lipis gold mines. Twelve technical talks were held.

c) The President mentioned that since the appointments of 3 members to assist the Editor, the backlog of bulletins and newsletters have been cleared up.

Dr. C.S. Hutchison enquired about the GEOSEA conference to be organised by Thailand. The President replied that the Society was informed it is now postponed to 1991. The President explained that the GEOSEA secretariat meets once every 3 years during GEOSEA itself. After much discussion, it was agreed that the Society write to the Thai organisers to offer whatever assistance necessary. Dr. K.R. Chakraborty suggested the Society look into the possibility of setting up a "GEOSEA HQ" in Kuala Lumpur to direct and coordinate the organising of the GEOSEA by the host country.

The President's report was passed on a proposal by En. Tan Boon Kong and seconded by En. Fateh Chand.

4. Secretary's Report

Dr. Ibrahim Komoo presented his report for the 1989/90 session. His report stated that the Council met 9 times during the year. He gave attachments to show the current membership status, the activities of the Society for the year, the stock of publications and the Young Geoscientist Award.

To a question by Dr. C.S. Hutchison, the Secretary replied that there is a slight increase in membership during the 1989/90 session over the previous years. On the activities

or regional representatives, only the Ipoh and Sarawak regions held activities during the year.

En. Choo Mun Keong and En. Fateh Chand briefed those present on the important role of geologists within the framework of the proposed National Mineral Policy, the Institute of Geologists, Malaysia, and the Geologist's Act. In the proposed draft of the National Mineral Policy, there are provisions on the duties and powers of the Geological Survey officers. Geologists will be playing a leading role during the geological exploration stage.

The Secretary's report was passed on the proposal of Dr. K.R. Chakraborty seconded by En. Shu Yeoh Khoon.

5. Editor's Report

The Editor's report presented by Dr. Teh Guan Hoe mentioned that the Society's newsletter, Warta Geologi, has been brought up-to-date and three bulletins have been published during the year. Desktop publishing techniques will be used in the next issue of the newsletter and the first issue will be out very soon. Bulletin 26 containing 14 papers is in the final stages of preparation.

En. Choo Mun Keong expressed his appreciation and thanked the Editor and the Council for bringing up-to-date the Society's publications.

Dr. Ibrahim Komoo proposed that the Editor's report be passed and this was seconded by En. Ahmad Said.

6. Treasurer's and Honorary Auditor's Reports

The Treasurer's report was presented by Dr. Lee Chai Peng who reported that the Society's financial position is still healthy with fixed deposits of $310,501.27. He then presented the Society's Statement of Accounts and thanked En. Peter Chew & Company for auditing the report.

Dr. K.R. Chakraborty suggested that the word "meeting" be added to the item "National Mining Policy" to reflect a truer description.

Dr. C.S. Hutchison suggested that "miscellaneous" and "sundry" expenses be more explicitly expressed and also proposed that both be combined into one item.

A long discussion followed the suggestion by En. Choo Mun Keong that only bulletins relevant to the particular members be sent to them. This will cut down printing and postage costs of sending every member one copy of the bulletin. It was finally decided that the incoming Council study the question of how many copies to print and whether each member be sent every bulletin that is being printed.

The Treasurer's report was passed on the proposal by Dr. C.S. Hutchison and seconded by En. Fateh Chand.

7. Election of Honorary Auditor

The Treasurer, En. Lee Chai Peng, proposed that En. Peter Chew continue as the Society's auditor for the 1990/91 session and this was seconded by En. Choo Mun Keong.

8. Other business

The President invited En. Fateh Chand to brief those present on the "Institut Geologi Malaysia".

En. Fateh Chand said that the Institute has been registered and the Geologists' Act (second draft) based on the style of Engineers' Act will be drafted by En. Chin Lik Suan soon. This 2nd draft will be more simple than the previous one and is expected to be circulated to the working committee in about 2 weeks' time.

En. Low Keng Lok seeked clarification on the position of the Professional Member status of the Society once the Geologists Act is enforced. En. Jimmy Khoo explained that the Society had recently stopped accepting new applications to the Professional member category. This question will be studied by the incoming Council.

9. Announcement of New Council 1990/91

The President announced the new Council for 1990/91 as follows:

President	:	Ahmad Said (Petronas)
Vice President	:	Choo Mun Keong (Nilai Agencies)
Secretary	:	Jimmy Khoo (Geological Survey Malaysia)
Assist. Secretary	:	Tan Boon Kong (UKM)
Treasurer	:	Lee Chai Peng (UM)
Editor	:	Teh Guan Hoe (UM)
Councillors (2 years)	:	Chin Lik Suan
		Teoh Lay Hock (Geological Survey Malaysia)
		Fateh Chand (Geological Survey Malaysia)
		Tan Teong Hing (UKM)
Councillors (1 year)	:	Albert Loh (Malaysia Mining Corp.)
		S. Paramananthan (UPM)
		Nik Ramli Nik Hassan (Forad)
		Noor Azim Ibrahim (Petronas)
Immediate Past President	:	Hamzah Mohamad (UKM)

The President thanked the past Council for a job well done. The meeting also recorded a vote of thanks to the outgoing council members. The 24th AGM of the Society ended at 6.45 p.m.

24 April 1990

PRESIDENT'S REPORT
(April 1990 - March 1991)

During 1990/91 the Society continued to be active in efforts in advancement of the geological sciences, through its publications, conferences, and technical workshops and fieldtrips. The Society also continued to grow in terms of membership and financial strength.

The Society's two main events i.e. the Annual Geological Conference and the Petroleum Geology Seminar were again successfully held with excellent papers and attendances. The Annual Conference was held in Ipoh and had 121 participants. Two (2) fieldtrips were held in conjunction with the conference. Our thanks again go to Dr. Teh Guan Hoe and his organizing committee, who are already working again in the next Conference to be held this time in Kuching from 4th-5th May, 1991.

The traditional big event, the Petroleum Geology Seminar held in November 1990, attracted 350 participants. Our thanks go to Encik Abu Samad Nordin, the Organizing Chairman and his team, and also to all the organizations which provided generous financial support.

Apart from organizing these two main conferences, the Council also commenced preparation for this year's conferences and also 2 major conferences to be hosted by the Society in 1992 and 1994, i.e. the Circum Pacific Energy and Mineral Resources Council Symposium to be held in November 1992 in lieu of the Annual Petroleum Geology Seminar, and also the AAPG International Conference to be held in August/September 1994. These are major events and members of the Society are again strongly urged to continue to lend their full support to ensure their success.

The Society also co-hosted a one-day technical workshop on "Stratigraphic Framework of offshore Malaysian Basins" with Corelab. This was a successful meeting with about 30 participants and our thanks go to Dr. Nik Ramli for the organization.

A total of 12 technical talks were also held during the past year.

The Society also continued its publication efforts with Bulletin 27 being published and 2 other bulletins in final preparation.

The Society is also pleased to report that the Registration of Geologists Act is now being actively finalized by the committee led by Encik Fateh Chand which hopes to complete its work this year.

The Society's financial position continued to improve. The Council is indeed trying its best to optimize the usage of funds and as such decided to shelve for the time being proposals to purchase a building, due to the upturn in the property market last year. It is planned for more funds to be utilized for advancement of geological sciences and members' suggestion are most welcome here.

On behalf of the Society I would like to thank everyone present here today for their kind attendance. I would also like to thank Heads of the Departments of Geology of Universiti Malaya and Universiti Kebangsaan Malaysia and the Director-General of the Geological Survey for all their kind support they have always given the Society and also the many other individuals and organizations who continue to be active supporters of the Society's activities.

Thank you.

HONORARY SECRETARY'S REPORT
(April 1990 - March 1991)

1. The Council

Members of the Council of the Geological Society of Malaysia for the period 21st April 1990 to 30th March 1991 are as follows:

President	:	Ahmad Said (Petronas)
Vice-President	:	Choo Mun Keong (Nilai Agencies Sdn. Bhd.)
Hon. Secretary	:	Jimmy K.K. Khoo (Geol. Surv. Malaysia)
Hon. Assist. Secretary	:	Tan Boon Kong (UKM, up to October 1990)
		Tan Teong Hing (UKM, from November 1990)
Hon. Treasurer	:	Lee Chai Peng (UM)
Hon. Editor	:	Teh Guan Hoe (UM)
Councillors (2 years)	:	Chin Lik Suan (Contractor)
		Teoh Lay Hock (Geol. Surv. Malaysia, up to August 1990)
		Andrew Spykerman (Petronas, from October 1990)
		Fateh Chand (Geol. Surv. Malaysia)
		Tan Teong Hing (UKM, up to November 1990)
		Cheang Kok Keong (Consultant, from December 1990)
Councillors (1 year)	:	Albert Loh (MMC)
		S. Paramananthan (UPM, up to August 1990)
		Abdul Ghani Rafek (UKM, from January 1991)
		Nik Ramli Nik Hassan (Forad)
		Noor Azim Ibrahim (Petronas, up to September 1990)
		Khalid Ngah (PRI, from February 1991)

Immediate Past-President : Hamzah Mohamad (UKM)

2. Council Meetings

Council meetings were held normally on the first Friday of every month throughout the 1990/91 session. A total of 12 Council meetings have been held.

Several committees and working groups were established and have contributed tremendously to the activities of the Society.

3. Membership

The total membership of the Society as at 31st December 1990 is 541. There are 143 foreign memberships as compared to 398 local memberships. Details of the various classes of memberships and their geographical distribution are as shown in Appendix 1.

4. Society Activities

During the year one conference and one seminar were held. The Annual Geological Conference 1990 held at the Royal Casuarina Hotel, Ipoh from 7th to 8th May 1990. It was preceded by a 2-day field meeting along the East-West Highway and followed by a 2-day post-conference field trip in Taiping-Pantai Remis area. The Conference was well attended with 121 registered participants.

The other highlight of the year was the Petroleum Geology Seminar 1990 held at the Putra World Trade Centre, Kuala Lumpur from 27th to 28th November 1990. It was attended by more than 350 participants.

A technical meeting jointly hosted by the Society and Core Lab on "Stratigraphic Framework of Offshore Basins in Malaysia" was held at the Ming Court Hotel on 30th June 1990. It recorded a full-house attendance of over 30 participants.

Twelve technical talks were held during the 1990/91 session. Details of the Society's activities are as shown in Appendix 2.

5. Publication Sales

One bulletin series (No. 27) was published during this 1990/91 session. Publication sales remained steady compared to previous years. A comprehensive stock-checking exercise was carried out in July 1990 and the status of the remaining stock and sales made during 1990 is as shown in Appendix 3. The Society also maintained a publication exchange list with various professional bodies and libraries as shown in Appendix 4.

6. Area Representatives

The Council appointed the following members as Area Representatives of the Society:

a) Mr. Chu Ling Heng (Ipoh)
b) Dr. Leong Lap Sau (Penang)
c) En. Zakaria Hussain (East coast)
d) Mr. Chen Shick Pei (Sarawak)
e) Mr. Lim Peng Siong (Sabah)

7. Young Geoscientist Award

No nominations were received for the year.

8. Acknowledgements

The Society would like to acknowledge with thanks the cooperation received from local and overseas professional societies, universities and institutes; the Head of the Geology Department, University of Malaya where the Society is housed and the numerous individuals who have contributed in one way or another to the Society's activities:

a) Petroleum Geology Group (Chairman: Nik Ramli Nik Hassan)
b) Stratigraphy/Sedimentology Group: (Chairman: Noor Azim Ibrahim, up to Sept. 1990)
c) Engineering Geology Group: (Chairman: Abdul Ghani Rafek, from January 1991).
d) Tectonic/Structural Geology Group: (Chairman: H.D. Tjia)
e) Economic Geology Group: (Chairman: Tan Teong Hing)
f) Petroleum Geology Seminar 1990: (Chairman: Abu Samad Nordin)
g) Annual Geological Conference 1990: (Chairman: Teh Guan Hoe)
h) Nominations Committee 1990: (Chairman: Fateh Chand)
i) Young Geoscientist Award Committee 1990: (Chairman: Lee Chai Peng)
j) Registration of Geologists' Act: (Chairman: Fateh Chand)
k) National Mineral Policy: (Representative: Choo Mun Keong)
l) Honorary Auditor: Peter Chew & Company

APPENDIX I

MEMBERSHIP OF THE SOCIETY

Country	Full	Associate	Student	Institutional	Honorary	Life
Australia	21				4	2
Brunei			1			
Canada	5		1			
Europe	14		1	4	1	3
Hong Kong	2					
Indonesia	7	1		2	1	
Japan	7			2	1	
Kuwait				1		
New Zealand	2					
Philippines						1
Singapore	19				3	2
Sultanate of Oman	1					
Thailand	3			1		1
Turkey	2					
United States of America	23			3		1
Malaysia	266	8	84	17	4	19
TOTAL	372	9	86	37	7	30

APPENDIX 2

GEOLOGICAL SOCIETY OF MALAYSIA
Society Activities 1990/91

DATE	EVENT / VENUE
1. 5-6 May 1990:	East-West Highway Pre-Annual Conference Field Meeting, Ipoh.
2. 7-8 May 1990:	Annual Geological Conference '90. Royal Casuarina Hotel, Ipoh.
3. 9-10 May 1990:	Post-Annual Conference Stratigraphy and Sedimentology Study Group Fieldtrip, Taiping-Pantai Remis area, Ipoh.
4. 31 May 1990:	Technical Talk: Messages In Ancient Carbonates: Decoding Signals In Tertiary Limestones of North Sarawak by Dr. Azahar b. Hj. Hussin @ Geol. Surv. M'sia, Kuching.
5. 30 Jun 1990:	Technical Meeting: Stratigraphic Framework of Offshore Basins in Malaysia: Basis, Applications and Problems, GSM/Core Lab, Ming Court Hotel, Kuala Lumpur.
6. 9 Aug 1990:	Technical Talk: Exploration Applications of Sequence Stratigraphy to Lowstand Deep-water Sands by Dr. John B. Sangree @ University of Malaya, Kuala Lumpur.
7. 20 Aug 1990:	Technical Talk: Surface Engineering Geology – A Review by Dr. David Bell @ University of Malaya, Kuala Lumpur.
8. 12 Sept 1990:	Technical Talk: Aspects of Basin Analysis – Applications to Petroleum Exploration by Dr. N.S. Haile @ University of Malaya, Kuala Lumpur.
9. 20 Sept 1990:	Technical Talk: Industrial Mineral Deposits of Thailand by Mr. Chumpon Kuentag @ University of Malaya, Kuala Lumpur.
10. 3 Oct 1990:	Technical Talk: An Introduction to AVO: Exploration Applications by Dr. A. Easton Wren, GSM/SPAN @ Equatorial Hotel, Kuala Lumpur.
11. 27-28 Nov 1990:	Petroleum Geology Seminar '90, Putra World Trade Centre, Kuala Lumpur.
12. 21 Jan 1991:	Technical Talk: Hydrogeology and Groundwater Resources of Sarawak by Mr. M. Yogeswaran, GSM/Geol. Dept. MU @ University of Malaya, Kuala Lumpur.
13. 30 Jan 1991:	Technical Talk: Palaeomagnetic Research in Southeast Asia With Emphasis on Malaysia by Dr. M. Fuller, GSM/Geol. Dept. MU @ University of Malaya, Kuala Lumpur.
14. 7 Feb 1991:	Technical Talk: Platform Margin Carbonate Sand Bodies Around The Carboniferous Carbonate Platform of Derbyshire, U.K. by Dr. Peter Gutteridge @ University of Malaya, Kuala Lumpur.
15. 20 Feb 1991:	Technical Talk: Survei Ketakselanjaran dan Ragam Kegagalan Cerun Batuan di Lebuh Raya Timur-Barat by En. Tajul Anuar Jamaluddin, GSM/ Geol. Dept. MU @ University of Malaya, Kuala Lumpur.
16. 20 Feb 1991:	Technical Talk: The Use of Wireline Logs and Cuttings for The Prediction of Subsurface Sedimentary Facies: A Case Study From The Northumberland Trough, Northern England by En. Abdul Hadi Abdul Rahman, GSM/Geol. Dept. MU @ University of Malaya, Kuala Lumpur.
17. 11 March 1991:	Technical Talk: Dolomitization in Peritidal Ordovician Carbonates, Tasmania, Australia by Dr. Prasada Rao @ University of Malaya, Kuala Lumpur.

APPENDIX 3

STOCK OF PUBLICATIONS

Bulletin No.	Sales 1990	Stock Remaining
1	8	Out of stock
2	14	344
3	14	355
4	14	213
5	14	18
6	17	702
7	14	423
8	4	69
9	–	Out of stock
10	9	49
11	5	143
12	8	65
13	6	192
14	14	55
15	5	90
16	6	133
17	6	180
18	10	187
19	15	721
20	122	605
21	10	298
22	12	377
23	13	365
24	13	544
25	22	327
27	586*	444
Field Guide 1	14	37
Abstracts (Bulletin 6)	1	6
Stratigraphic Correlation	14	513

* inclusive of free copies distributed to Members

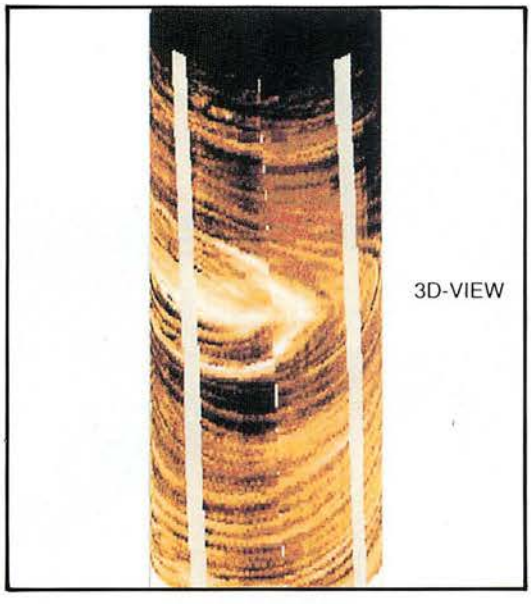
Fullbore Micro Imager*

Formation imaging using microelectrical arrays has benefited the oil industry since its introduction in the mid-80s. The FMI*, Fullbore Formation MicroImager tool, is the latest-generation electrical imaging device. It belongs to the family of imaging services provided by the MAXIS 500* system with its digital telemetry capability.

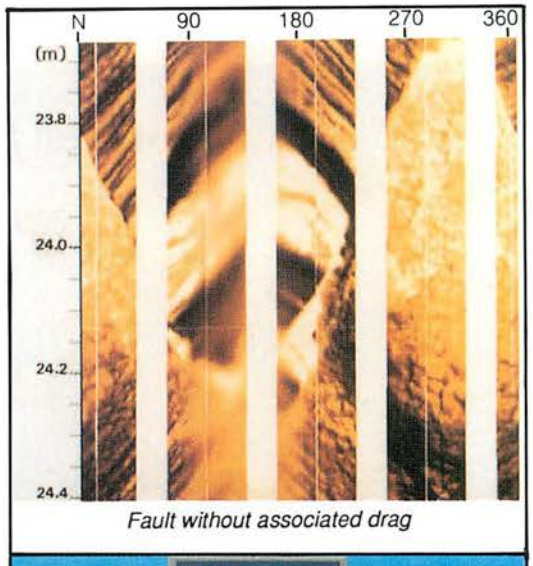
The FMI log, in conductive muds, provides electrical images almost insensitive to borehole conditions and offers quantitative information, in particular for analysis of fractures.

The FMI tool combines high-resolution measurements with almost fullbore coverage in standard diameter boreholes, thus assuring that virtually no features are missed along the borehole wall. Fully processed images and dip data are provided in real time on the MAXIS 500 imaging system.

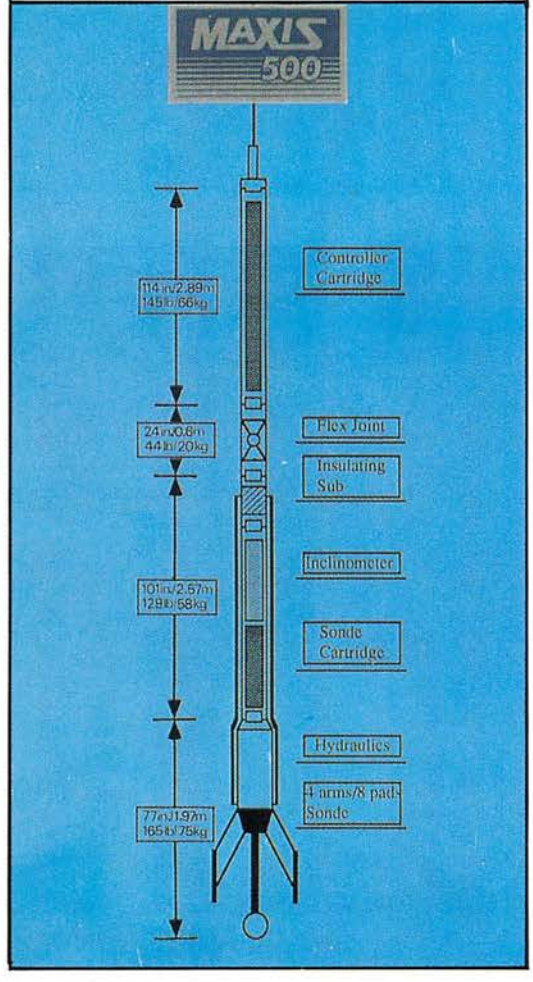
The tool's multiple logging modes allow wellsite customization of results to satisfy client needs without compromising efficiency.



"Bullseye" structure

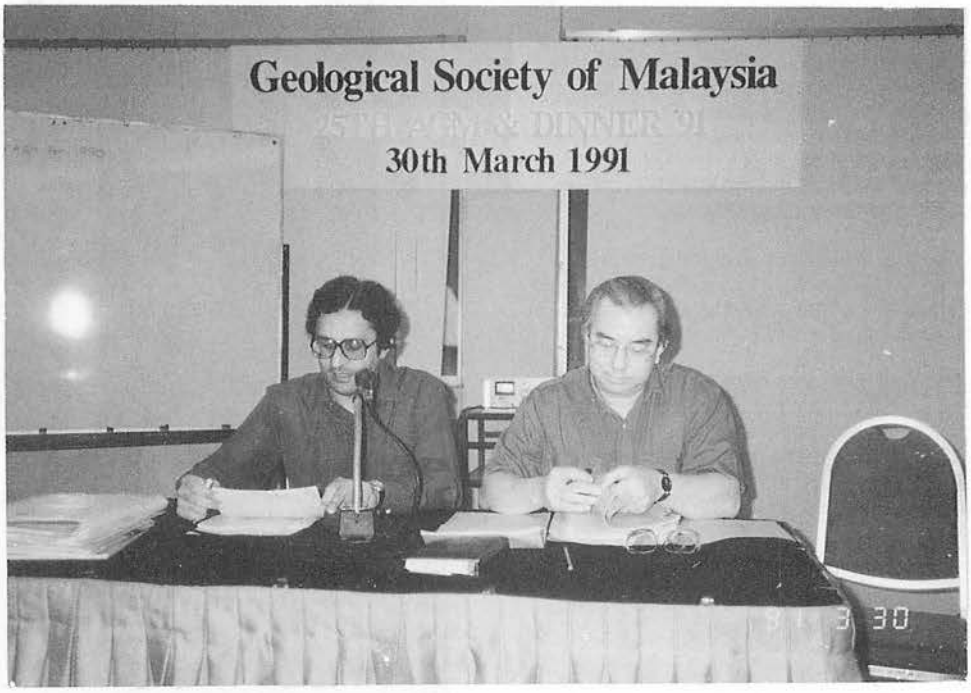


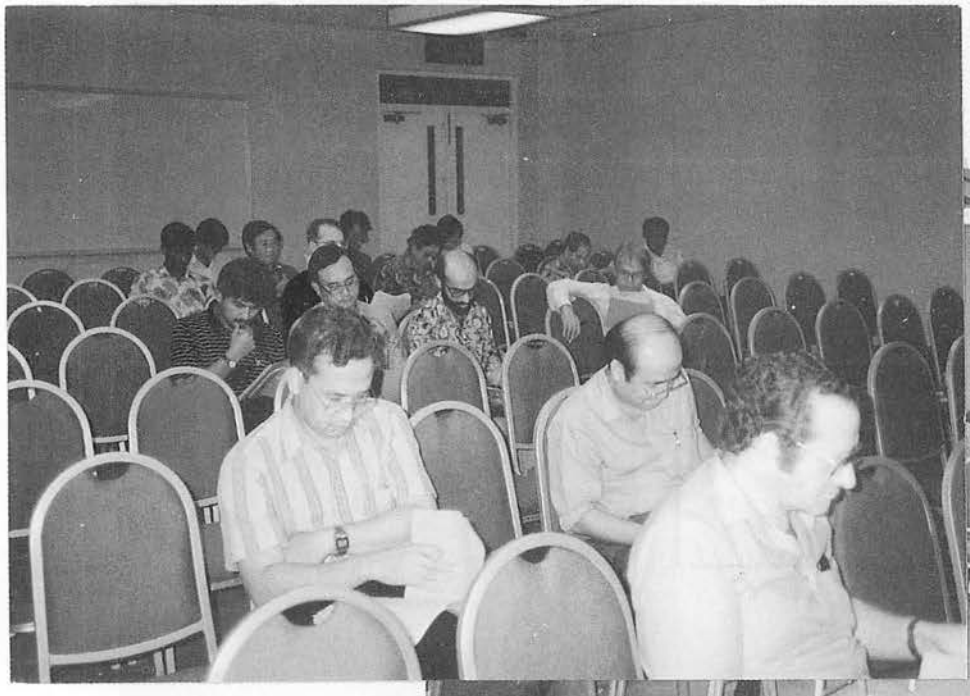
Fault without associated drag



Schlumberger

25th ANNUAL GENERAL MEETING & ANNUAL DINNER 1991





25th ANNUAL GENERAL MEETING & ANNUAL DINNER 1991

GEOLOGICAL SOCIETY OF MALAYSIA PUBLICATIONS

BULLETIN OF THE GEOLOGICAL SOCIETY OF MALAYSIA

WARTA GEOLOGI - NEWSLETTER OF THE GEOLOGICAL SOCIETY OF MALAYSIA

ADVERTISING SPACE ORDER FORM

	WARTA GEOLOGI Format: 20 cm X 28 cm		BULLETIN Format: 18 cm X 25 cm	
RATES:	**Black & White**	**Colour**	**Black & White**	**Colour**
Inside full page per issue	M$300	M$600	M$1000	M$1500
Inside half page per issue	M$200	M$500	M$500	M$800
Inside full page for 6 issues	M$1500	M$3000	–	–
Inside half page for 6 issues	M$1000	M$2500	–	–

Artwork and positive films or slides (for colour or black & white) should be supplied by the advertiser.

Please send the completed form below together with remittance payable to "Geological Society of Malaysia' to

The Editor,
Geological Society of Malaysia
c/o Dept. of Geology,
University of Malaya,
59100 Kuala Lumpur, Malaysia.

For further information, please ring 03-7577036.

The Editor,
Geological Society of Malaysia,
c/o Dept. of Geology,
University of Malaya,
59100 Kuala Lumpur.

We would like to take up advertising space in WARTA GEOLOGI/BULLETIN in the form (please tick as appropriate):

	WARTA GEOLOGI		BULLETIN	
	Black & White	**Colour**	**Black & White**	**Colour**
Inside full page	one issue ☐ six issues ☐	one issue ☐ six issues ☐	one issue ☐ issues ☐	one issue ☐ issues ☐
Inside half page	one issue ☐ six issues ☐	one issue ☐ six issues ☐	one issue ☐ issues ☐	one issue ☐ issues ☐

Artwork/Positive film/slide* enclosed ☐ not enclosed ☐

Company .....

Address .....

.....

Enclosed cheque/money order/bank draft* ..... for M$ .....

Person to be contacted ..... Tel .....

Designation ..... Signature .....

* Please delete as appropriate

APPENDIX 4

LIST OF INSTITUTIONS ON EXCHANGE

1. Akademie der Wissenschaften der DDR, Zentralinstitut fur Physik der Erde, WIB B 689, Telegrafenburg, Postsdam, DDR-1561, East Germany.
2. Director of All Union Geological Library, Sredny pr. 74, 199026 Leningrad V-26, USSR.
3. American Museum of Natural History, Serials Unit, Library, Central Park West at 79th Street, New York, N.Y. 10024-5192, USA.
4. AGID, Attn: The Editor, Dr. D.A.V. Stow, Dept. of Geology, University of Nottingham, Nottingham NG7 2RD, England.
5. Bureau de Recherche Geologique et Minieres, Dept. Documentation, Section echanges, Boite Postale 6009, 45060 Orleans Cedex, France.
6. CICESE Library, Gifts & Exchange Unit, P.O. Box 434803, San Ysidra, Ca. 92143-4803, USA.
7. Commonwealth Science Council, Marlborough House, Pall Mall, London SW1Y 5HX, England.
8. Dewan Bahasa & Pustaka, Ketua Perpustakaan, Peti Surat 10803, Kuala Lumpur.
9. Elf Aquitaine (P), F-31360 Boussens, France.
10. Suomalainen Tiedeakatemia–Academia Scientiarum Fennica, Rauhankatu 15B, 00170 Helsinki 17, Finland.
11. Central Geological Survey, Ministry of Economic Affairs, P.O. Box 968, Taipei, Taiwan, ROC.
12. Freie Universitat Berlin, Geologisch-Palaontologisches Institut, Altensteinstrasse 34a, 1000 Berlin 33, Germany.
13. The Library, Geological Research & Development Centre, Jalan Diponegoro 57, Bandung, Indonesia.
14. Geological Society of Korea, Dr. Yong Ahn Park, Dept. of Geological Sciences, Seoul National University, Seoul 151, Korea.
15. The Secretary, Geological Society of Thailand, c/o Dept. of Mineral Resources, Rama VI Road, Bangkok 10400, Thailand.
16. Geological Survey of Malaysia, P.O. Box 1015, 30820 Ipoh, Perak.
17. Geological Survey of Malaysia, P.O. Box 560, 93712 Kuching, Sarawak.
18. Geological Survey of Malaysia, Locked Bag no. 2042, 88999 Kota Kinabalu, Sabah.
19. Dr. L.A. Goldenberg, Chief of Information Dept., Institute of Geology of Foreign Countries, 2nd Novotikhvinskaya 12/22, Moscow, USSR.
20. Librarian, Institution of Mining and Metallurgy, 44 Portland Place, London W1N 4BR, England.
21. Kementerian Hal Ehwal Dalam Negeri Malaysia (Bahagian Penerbitan), P.O. Box 10382, Kuala Lumpur.
22. The Editor, Malaysian Journal of Tropical Geography, c/o Dept. of Geography, Universiti Malaya, Kuala Lumpur.
23. Prof. Dr. A. Bolewski, Mineralogical Society of Poland, 30-059 Krakow, al. Michiewicza 30, Poland.
24. Nanking Institute of Geology and Palaeontology, Academia Sinica, Chi-Ming-Ssu, Nanking, People's Republic of China.

25. The National Geological Library, Kan Kia Ko, Fu Wai, Peking, People's Republic of China.
26. National Geophysical Research Institute, Uppal Road, Hyderabad 500 007, India.
27. The National Library, Stamford Road, Singapore 0617. Attn: Gifts & Exchange Section (Serials).
28. Library, National Science Museum, Ueno Park, Tokyo, Japan.
29. Editorial Board, Natural History Museum & Institute, Chiba, 955-2 Soba-cho, Chiba 280, Japan.
30. The Librarian, New South Wales Dept. of Mineral Resources, GPO Box 5288, Sydney, NSW 2001, Australia.
31. Acquisitions, Library, Oklahoma Geological Survey. The University of Oklahoma, 830 Van Vleet Oval, Room 163, Norman, Oklahoma 73069, USA.
32. Peking Graduate School, Peking College of Geology, Xueyuan Road, Peking, China.
33. Perpustakaan Negara Malaysia, (Bhg. Penyerahan Akta & Hadiah & Pertukaran), Tkt. Bawah, Lot no. G1 & G2, Blok A, Kompleks Bukit Naga, Damansara Heights, 50572 Kuala Lumpur.
34. The Librarian, Petronas, P.O. Box 12444, 50778 Kuala Lumpur.
35. Library, exchange, Scripta Geologica, P.O. Box 9517, 2300 RA Leiden, The Netherlands.
36. The Director, SEATRAD Centre, Jalan Sultan Azlan Shah, 31400 Ipoh, Perak.
37. Mrs. Molly Lee-Joe, UN Offshore Mineral Prospecting, c/o Mineral Resources Dept. Private Mail Bag, Suva, Fiji.
38. U.S.G.S. Library, Mail Stop 955, 345 Middlefield Road, Menlo Park, Ca. 94025, USA.
39. U.S.G.S. Library (Exchange & Gift), National Center - Mail Stop 950, 12201 Sunrise Valley Drive, Reston, VA. 22092, USA.
40. Cawangan Hadiah & Pertukaran, Perpustakaan Tun Seri Lanang, Universiti Kebangsaan Malaysia, Bangi.
41. Ketua, Jabatan Geologi, Universiti Kebangsaan Malaysia, Bangi.
42. University of Kansas Libraries, Serials/ Exchange, Lawrence, Ka. 66045, USA.
43. The Librarian, University of Malaya, Kuala Lumpur.
44. Perpustakaan, Universiti Sains Malaysia, 31750 Tronoh, Perak.
45. The Librarian, Institute of Geoscience, University of Tsukuba, Tsukuba-City, Ibaraki-Pref 305, Japan.
46. Bahagian Bahan-bahan Bersiri dan Dokumen, Pepustakaan, Universiti Sains Malaysia, P. Pinang.
47. Editor, Episodes, P.O. Box 919, Herndon, Va. 22070, USA.
48. Mr. Peter Chew, Room 2, No. 127-1, Jalan Kampong Pandan, 55100 Kuala Lumpur.
49. Mohd. Sharif Mohd. Said, Maktab Rendah Sains, MARA, Jasin, Melaka.
50. Librarian, AAPG, P.O. Box 979, Tulsa, Okla. 74101, USA.
51. Petromin Pub. Co. 24 Peck Seah Street, 03-00 Nelsons Bldg. Singapore 0207.
52. Gift Section, The Library of Congress, Representative, American Embassy, P.O. Box 10035, Kuala Lumpur.
53. AAPG House of Delegates Representative, 444, 17th St., Suite 728, Denver, Co. 80202, USA.
54. Geological Survey of Japan, Library, 1-3 Higashi 1-chome, Tsukuba-shi, Ibaraki-ken, 305 Japan.
55. Natural History Museum and Institute, China.

HONORARY EDITOR'S REPORT 1990/91

After a slight initial delay, the Society's newsletter Warta Geologi has been brought up to date.

Two volumes in the Society's Bulletin series were scheduled for publication in 1990. Bulletin 27, the Special Issue on Petroleum Geology Vol. V, which contained 13 papers, was distributed at the Annual Petroleum Geology Seminar 1990.

Bulletin 26, which has 14 papers, should be ready by April.

Scheduled for mid 1991 is Bulletin 28.

The help of members of the Editorial Subcommittee in proof-reading and the Editorial Advisory Board in reviewing is greatly appreciated. In addition the Society is grateful to the many authors for their contributions, the donors and advertisers for their valuable contribution to the Society's Publication Fund.

G.H. Teh

14 March 1991

HONORARY TREASURER'S REPORT 1990

The Society's financial position continues to be healthy with a significant growth in its nett assets from $388,224.35 in 1989 to $461,992.20 in 1990. Our fixed deposits have grown from $310,501.27 to $324,693.95 in that period.

Generous donations were again received for our Petroleum Geology Seminar last year. Our main expenditure continues to be on the Society's publications.

On behalf of the Society, I wish to thank all donors and members who have generously supported the Society's activities last year.

The Society would also like to express its grateful thanks to our Honorary Auditor, Mr. Peter Chew for his invaluable help and advice with our accounts.

14 March 1991.

PERSATUAN GEOLOGI MALAYSIA
Geological Society of Malaysia

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 December 1990

INCOME	1990	1989
Entrance fee	$960.00	$1,400.00
Subscriptions	$22,343.63	$19,914.99
Fixed deposits interest	$18,968.03	$12,216.50
Sales of publications	$16,631.93	$13,792.46
PGS '89 - Donations	$29,359.67	$56,927.32
Xerox	$1,112.26	$442.90
Short Course	$3,985.95	–
Stratigraphic Workshop	$87.05	–
	$93,448.52	$104,693.17

LESS EXPENDITURE	1990	1989
Bank charges	$759.58	$679.09
Depreciation of office equipment	$3,355.00	$3,355.00
Honorarium	$4,482.00	$4,432.00
Postage	$6,789.52	$3,613.88
Printing & Stationary:		
Miscellaneous	$2,076.70	$2,011.70
Newsletters	$6,685.90	$3,600.00
Bulletin 20/23	$18,432.00	$44,050.00
Bulletin 22/24	$14,960.00	$22,250.00
Bulletin 25	$14,200.00	–
Refreshments	$430.70	$539.99
Subscription to professional bodies	$272.26	$72.73
Sundry expenses	$687.86	$4,047.34
Annual General Meeting	$18.20	$12.00
Telephone expenses	$474.73	$543.57
Speakers' account	$1,108.58	$747.01
Annual Dinner	$434.50	$495.00
Annual Conference	$2,126.73	$3,961.05
National Mineral Policy	$2,724.60	$1,549.04
Workshop	–	$1,099.43
Study Groups	$716.50	$983.15
	$80,735.36	$98,041.98

EXCESS OF INCOME OVER EXPENDITURE:		
Transfer to capital fund.	$12,713.16	$6,651.19

PERSATUAN GEOLOGI MALAYSIA
Geological Society of Malaysia

BALANCE SHEET AS AT 31 DECEMBER 1990

FIXED ASSETS	1990	1989
Office equipment	$33,559.87	$33,559.87
Less: Accumulated depreciation	$31,759.00	$28,404.00
	$1,800.87	$5,155.87
CURRENT ASSETS		
Fixed Deposits	$324,693.95	$310,501.27
Cash at bank	$134,492.79	$50.593.66
Petty cash	$401.89	$220.22
Expenses prepaid:		
Telephone deposit	$300.00	$300.00
PGS 89 (donations)	–	$3,896.58
Institute Geologist Malaysia	$302.70	$262.70
Short Course	–	$17,294.05
	$460,191.33	$383,068.48
	$461,992.20	$388,224.35

Represented by:

CAPITAL FUND		
Balance as at 1.1.90	$378,729.80	$372,078.61
Add: excess of income over expenditure	$12,713.16	$6,651.19
	$391,442.96	$378,729.80
Student Loan Fund	$6,804.91	$6,404.91
PGS 90 (donations)	$60,477.61	$21.00
Young Geoscientist Award	$3,049.21	$3,068.64
EGITT	$217.51	–
	$461,992.20	$388,224,35

REPORT OF THE AUDITORS TO THE MEMBERS OF THE GEOLOGICAL SOCIETY OF MALAYSIA

To

The Members of the
Geological Society of Malaysia

We have obtained all the information and explanations necessary for the purpose of this audit and in our opinion, the accounts for the year ended 31st December 1990 give a true and fair view of the state of the Society's financial affairs.

Signed

PETER CHEW & CO.
CERTIFIED PUBLIC ACCOUNTANTS
AUDITORS

Kuala Lumpur
1 March 1991

25th Annual General Meeting & Annual Dinner 1991

The AGM 1991 was held on the 30th March 1991 (Saturday) at the National Productivity Centre (NPC) Hotel, Petaling Jaya. 21 members were present for the AGM which lasted for an hour.

The Annual Dinner 1991 was in the form of a "buka puasa" buffet at the same venue. A good turnout af about 75 was recorded and it was heartening to note that besides the Council Members, there were members from the oil industry, the universities and services companies.

G. H. Teh

Ceramah Teknik (Technical Talks)

C. Prasada Rao: Dolomitization in peritidal Ordovician carbonates, Tasmania, Australia.

Laporan (Report)

The talk by Dr. Prasada Rao (Department of Geology, Universiy of Tasmania, G.P.O. Box 252C, Hobart, Tasmania, Australia) was held on 11 March 1991 at 5.00 pm at the Geology Department, University of Malaya, and it attracted about 30 members.

Abstrak (Abstract)

Dolomite, a common mineral in most of the stratigraphic sequences in the Gordon Group, is abundant in intertidal and supratidal carbonates and extends into some subtidal carbonates. Three major types of dolomitization are common, namely a) dolomitized burrows; b) mottled or dispersed dolomite; and c) laminar dolomite. Dolomite is predominantly subhedral, equigranular, fine-grained (submicron to 150 microns) and coarser than associated micrite. It is randomly distributed and replaces micrite extensively, and some oolites, peloids, intraclasts and rarely fossils. Sparry calcite cement and spar in veins are not replaced by dolomite. These features confirm that dolomite formed mainly during early diagenesis before and during spar cementation but prior to development of spar in veins. The former presence of evaporites is indicated in a few samples. Where dolomite is abundant, evidence of former evaporites is lacking, indicating that dolomites formed in normal marine to mixed-marine waters.

The ranges of Sr and Na concentrations are similar to those of marine to mixing zone dolomites. The Mn and Fe concentrations in the dolomite indicate oxidizing to reducing conditions and influence of continental water during dolomitization. The decrease of Sr and increase of Mn with increasingly lighter values of both $\partial^{18}O$ and $\partial^{13}C$ in dolomite and associated micrite indicate meteoric diagenesis during their formation.

Mole Creek dolomites are enriched in both $\partial^{18}O$ ($\pm$ 2‰) and $\partial^{13}C$ ($\pm$ 0.5‰) relative to co-existing calcites. The $\partial^{13}C$ values of dolomites and micrites are mostly parallel to each other in the stratigraphic sequence as a result of inheritance of $\partial^{13}C$ from the micrite replacement. The $\partial^{18}O$ values of dolomites and micrites are generally opposed to each other because $\partial^{18}O$ of dolomite is derived mainly from the dolomitizing fluids.

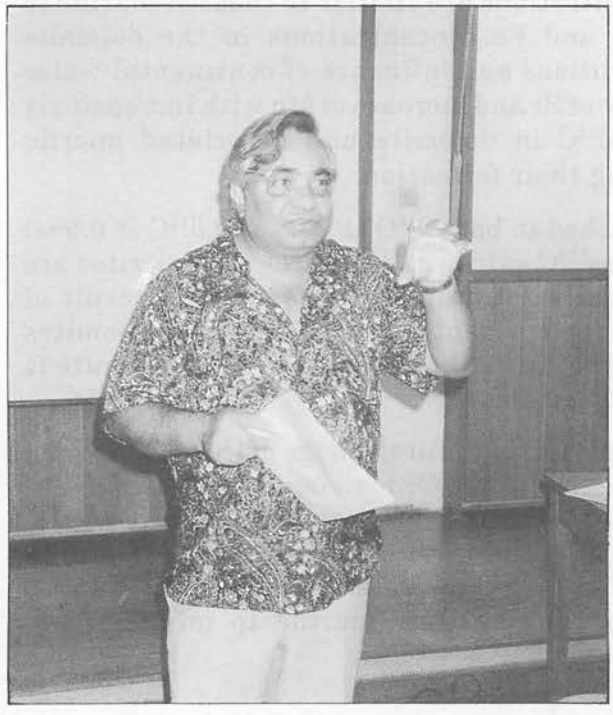
The Mole Creek dolomite isotopic field falls at the edge of the mixing zone dolomite isotope fields and overlaps that of the Ordovician-Silurian dolomite of Nevada because of the light $\partial^{18}O$ of seawater and related meteoric water. The dolomitization is characterized by variable isotopic composition of marine and meteorically altered sediment and variable water composition. For this reason the dolomite isotopic field ranging from marine to mixing zone,

overlaps marine calcite fields, extends toward meteoric calcite fields and is far removed from the burial calcite field. Dolomitization occurred simultaneously with or slightly after the transformation of metastable $CaCO_3$ to calcite during early diagenesis. The major mechanisms of dolomitization are tidal pumping of seawater mixing with continental waters and mixing of seawater by torrential rains, reflux and capillary movements.

Similar slopes of lines connecting $\partial^{18}O$ and $\partial^{13}C$ plots between co-existing micrite and dolomite pairs are due to small inheritance effects on $\partial^{13}C$ from dissolution of $CaCO_3$ and large variations in $\partial^{18}O$ in dolomite due to marine to mixing zone dolomitizing fluids. The $\partial^{13}C$ values of replaced precursor $CaCO_3$ were variable due to early meteoric diagenesis. Dolomites are in equilibrium with marine, mixed-marine and meteoric $CaCO_3$ because dolomitization occurred when $CaCO_3$ was metastable, simultaneously with or slightly after the transformation of metastable $CaCO_3$ to calcite during early diagenesis. Recrystallization of dolomite involved the renewed growth of dolomite on early-formed dolomite and replaced co-existing $CaCO_3$. This involved negligible depletion in $\partial^{13}C$ and a small negative shift in $\partial^{18}O$.

Three conceptual temperature models are proposed to show that similar original isotopic slopes of calcite-dolomite pairs will be retained with little or no modification in Δ(dolomite-calcite) $\partial^{18}O$ and $\partial^{13}C$ values with increasing temperature. The trend of depletion of both $\partial^{13}C$ and $\partial^{18}O$ due to diagenesis of organic matter with increasing temperatures is partly applicable to the calcite-dolomite pairs studied.

The Δ values of $\partial^{18}O$ and $\partial^{13}C$ are related to fluid composition, water/rock interaction, recrystallization of dolomite and some dedolomitization. Most of the $\Delta\partial^{13}C$ and $\Delta\partial^{18}O$ ratios are between 1:3 and 1:>10 indicating less ^{13}C relative to ^{18}O in fluid, due to low to moderate water/rock interaction and slight influx of meteoric and/or continental water into surface to shallowly buried marine sediments that caused most of the dolomitization.



C. Prasada Rao

BERITA-BERITA PERSATUAN
News of the Society

Keahlian (Membership)

The following applications for membership were approved:

Full Members

1. Christopher D. Bates
   Robertson Singapore, 55 Ayer Rajah Crescent 06-16, Ayer Rajah Ind. Estate, S'pore 0513.
2. Ong Guan Bee
   Robertson Singapore, 55 Ayer Rajah Crescent 06-16, Ayer Rajah Ind. Estate, S'pore 0513.
3. Peter Abolins
   Core Lab., Lot 10B, Jalan 51A/223, 46100 Petaling Jaya.
4. P.H. Quah
   BHP Petroleum, 35 Collins Street, Melbourne, Vic. 3000, Australia.
5. Eric Seah
   PRI, Lot 1026, PKNS Ind. Estate, 54200 Ulu Kelang.
6. Azizan Abdul Aza
   134 Jalan Ampang, 50450 Kuala Lumpur.
7. Abd. Hanan Ahmad Nadzeri
   Ret-Ser Engineering Agency, W/D no. 24, 31100, S. Siput (U), Perak.
8. Che Zainudin Che Mohd. Noor
   76B, Block J, Flat PNKS, Jalan 17/1A, 46400 Petaling Jaya.
9. Mohd. Rapi Muhammad Som
   PRI, Lot 1026 PKNS Ind. Estate, 54200 Ulu Kelang.
10. Azlan Mohd. Sabirin
    Bhg. Perjawatan, 43400 UPM, Serdang.
11. R.J. Heller
    Core Lab., Lot 10B, Jalan 51A/223, 46100 Petaling Jaya.
12. Loo Siew Kheng
    Sun Malaysia Petroleum, 9th Floor, Menara Bank Pembangunan, Jalan Sultan Ismail, 50300 Kuala Lumpur.
13. Quek Chau Jing
    Core Lab., Lot 10B, Jalan 51A/223, 46100 Petaling Jaya.
14. Maung Hla Shwe
    Core Lab., Lot 10B, Jalan 51A/223, 46100 Petaling Jaya.
15. Kyi Phay Thant
    Core Lab., Lot 10B, Jalan 51A/223, 46100 Petaling Jaya.
16. Mat Ruzlin Maulud
    MMC, P.O. Box 10300, 50710 Kuala Lumpur.
17. Zulkarnain Abdullah Anas
    EPMI, P.O. Box 10857, 50732 Kuala Lumpur.

Student Members

1. Zarita Hj. Zahur Hussain
   Dept. of Geology, University of Malaya, 59100 Kuala Lumpur.
2. Domenice J. Duncan
   Dept. of Geology, University of Malaya, 59100 Kuala Lumpur.
3. Siti Shamsiah Sh. Bakar
   Dept. of Geology, University of Malaya, 59100 Kuala Lumpur.
4. George P. Menon
   Dept. of Geology, University of Malaya, 59100 Kuala Lumpur.
5. Noor Ilmu Abu Bakar
   Dept. of Geology, University of Malaya, 59100 Kuala Lumpur.
6. Brendawati Ismail
   Dept. of Geology, University of Malaya, 59100 Kuala Lumpur.
7. Joy J. Pereira
   IPT, University of Malaya, 59100 Kuala Lumpur.
8. Fredoline Javino
   Dept. of Geology, University of Malaya, 59100 Kuala Lumpur.
9. Sen Siong Choo
   Dept. of Geology, University of Malaya, 59100 Kuala Lumpur.
10. Radziah Jack
    979 Lorong 4, Jalan Bayor Bukit, Fasa 2, Tabuan Jaya, 93350 Kuching, Sarawak.
11. Sanisah Ahmad
    Dept. of Geology, University of Malaya, 59100 Kuala Lumpur.
12. Norakmah Setapa
    Dept. of Geology, University of Malaya, 59100 Kuala Lumpur.
13. Shari Ismail
    Dept. of Geology, University of Malaya, 59100 Kuala Lumpur.
14. Edward Ak. Muol
    Dept. of Geology, University of Malaya, 59100 Kuala Lumpur.
15. Stephen Moligan
    Dept. of Geology, University of Malaya, 59100 Kuala Lumpur.
16. Mohd. Nasir Sheik Mohammad
    Dept. of Geology, University of Malaya, 59100 Kuala Lumpur.
17. Mohd. Fauzi Abd. Aziz
    Dept. of Geology, University of Malaya, 59100 Kuala Lumpur.

Institutional Member

1. Panjimas Sdn. Bhd.
   Attn: Abdullah Khalid, 30B, Kompleks Damai, Jalan Lumut, 50400 Kuala Lumpur.

Associate Members

1. Thilagavathi Veeriah
   Core Lab., Lot 10B, Jalan 51A/223, 46100 Petaling Jaya.
2. Cheng Kam Leong
   Core Lab., Lot 10B, Jalan 51A/223, 46100 Petaling Jaya.

Pertukaran Alamat (Change of Address)

The following members have informed the Society of their new addresses:

1. Triton Energy Corporation and Triton Oil & Gas Corp.,
   6688 N. Central Expressway, Suite 1400, Dallas, Texas 75206.
2. Sierra Geophysics,
   150 Beach Road, 28-08 Gateway West, S'pore 0718.
3. Tajul Anuar Jamaluddin
   Research Student, Geology Department, Institute of Earth Studies, University College of Wales, Aberystwyth, Dyfed SY23 3DB, Wales, United Kingdom.
4. Mohammad Yamin Ali
   PEG/31X, Sarawak Shell Berhad, Locked Bag No. 1, 98009 Miri, Sarawak.
5. R. Vaeravan
   No. 17, Jalan 4/2A, Taman Wilayah Selayang, 68100 Batu Caves, Selangor.
6. Lionel Tan Tuang
   Petronas Carigali Sdn. Bhd. (Baram Delta Operations), BST/14, Block Orchid, P.O. Box 1452, 98008 Miri, Sarawak.

Pertambahan Baru Perpustakaan (New Library Additions)

The Society has received the following publications:

1. U.S. Geological Survey: Bulletin (1990): 1958, 1741-F, 1744-B, 1737-D, 1702-K.
2. U.S. Geological Survey: Professional Paper (1990): 1076-C, 1200 ND.
3. Annales Academiae Scientiarum, Fennicae, no. 154 & 155, 1990.
4. Bulletin of the Chinese Academy of Geological Sciences, nos. 20 & 21, 1990.
5. Guangdong geology, vol. 5, nos. 3 & 4, 1990.
6. Democratic People's Republic of Korea, no. 414, 1990.
7. IMM Bulletin no. 997, 1990.
8. AAPG Explorer, March & April 1991.
9. Publications of the U.S. Geological Survey, 1989, (1990).
10. Commonwealth Science Council, Nov-Dec 1990.
11. Geological Survey of Japan, Bulletin, vol. 41, nos. 11 & 12, 1990.
12. Journal of the Faculty of Science, The University of Tokyo, vol. 22, no. 2, 1990.
13. Chronique de la Recherche Miniere, no. 502, 1991.
14. AGID News, no. 65, 1991.

SYMPOSIUM ON TECTONIC FRAMEWORK AND ENERGY RESOURCES OF THE WESTERN MARGIN OF THE PACIFIC BASIN

ORGANIZED BY:

CIRCUM-PACIFIC COUNCIL FOR ENERGY AND MINERAL RESOURCES

GEOLOGICAL SOCIETY OF MALAYSIA

Shangri-La Hotel,

Kuala Lumpur, Malaysia

November 29th -

December 2nd 1992

GSM-CPCEMR

TECTONIC FRAMEWORK AND ENERGY RESOURCES OF THE WESTERN MARGIN OF THE PACIFIC BASIN

Kuala Lumpur, Malaysia — 29th November - 2nd December 1992

HIGHLIGHTS

SUNDAY, NOVEMBER 29

11.00 am	-	7.00 pm	Registration
7.00 pm	-	9.00 pm	Exhibition
7.00 pm	-	9.00 pm	'Icebreaker' cocktails

MONDAY, NOVEMBER 30

8.00 am	-	11.00am	Registration
8.30 am	-	9.30 am	Opening session
9.30 am	-	12.30 pm	Technical and poster session
12.30 pm	-	1.30 pm	Symposium buffet luncheon
1.30 pm	-	6.00 pm	Technical and poster session
10.00 am	-	6.00 pm	Exhibition
2.00 pm	-	5.00 pm	Video shows

TUESDAY, DECEMBER 1

8.30 am	-	12.30 pm	Technical and poster session
12.30 pm	-	1.30 pm	Symposium buffet luncheon
1.30 pm	-	6.00 pm	Technical and poster session
2.00 pm	-	5.00 pm	Video shows
10.00 am	-	6.00 pm	Exhibition

WEDNESDAY, DECEMBER 2

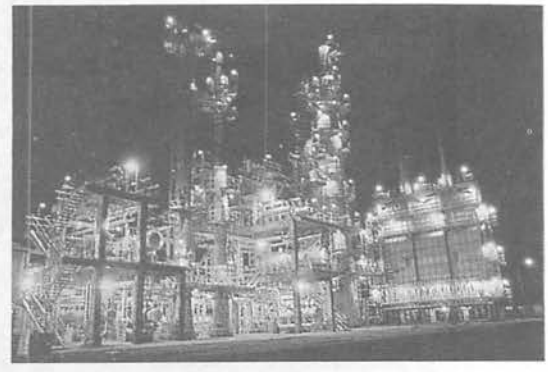
8.30 am	-	12.30 pm	Technical and poster session
12.30 pm	-	1.30 pm	Symposium buffet luncheon
1.30 pm	-	5.30 pm	Technical and poster session
2.00 pm	-	5.00 pm	Video shows
10.00 am	-	5.00 pm	Exhibition
5.30 pm	-	6.00 pm	Closing session

FRIDAY, DECEMBER 4
Golf Tournament

THURSDAY - SATURDAY, DECEMBER 3-5
Post Symposium Fieldtrip #1
(Geology of Sarawak)

SUNDAY - TUESDAY, DECEMBER 6-8
Post-Symposium Fieldtrip #2
(Geology of Sabah)

THURSDAY - FRIDAY, DECEMBER 3-4
Post Symposium Fieldtrip #3
(Transect of Peninsular Malaysia geology/
Visit to petroleum facilities)

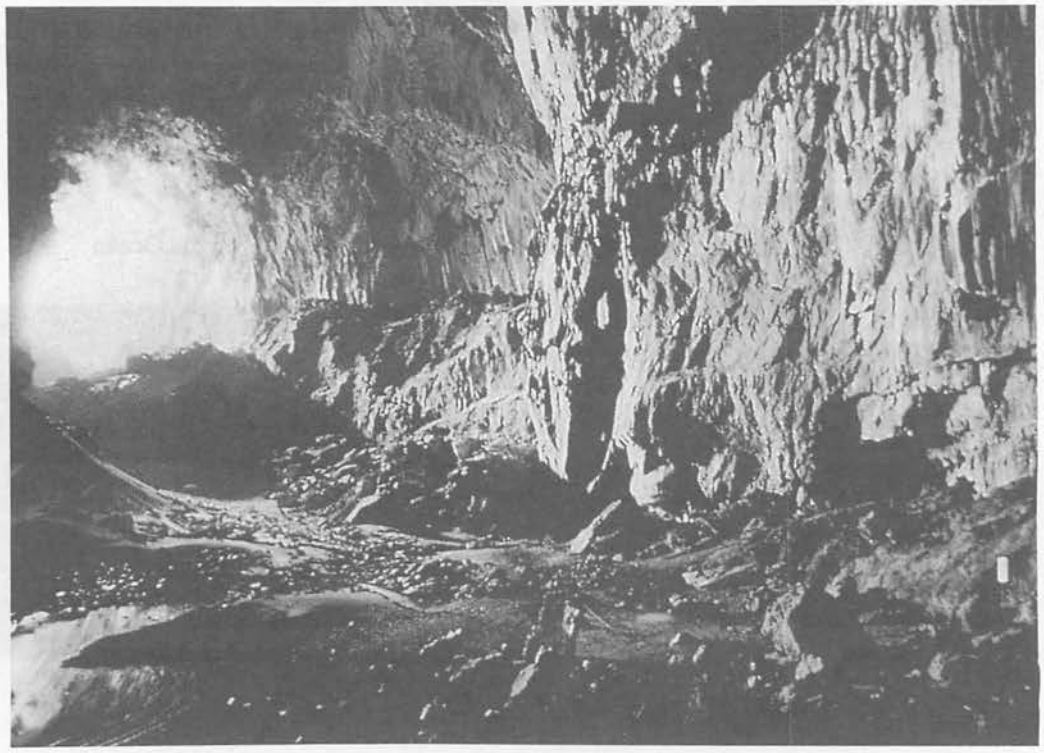


Kerteh Refinery

KEYNOTE ADDRESSES

Five distinguished figures in the Geoscience Community have graciously consented to attend the meeting as Keynote Speakers. The five invited Keynote Speakers and their topics of discussion are as follows:-

Charles Hutchison	:	Tectonic Framework of the Southeast Asian Tertiary Basins.
Charles Masters	:	World Petroleum Resources - Where, Why and How Much?
David Falvey	:	Evolution of the Island Arc and Marginal Basins of the Western Pacific.
David Howell	:	Plate Tectonics and Petroleum Habitats.
Sinding Larsen	:	Regional Data Processing and Analysis as a Basis for Cooperative Resource Assessment.



Deer Cave, Mulu Park (MTPB)

TECHNICAL PAPERS

There has been an overwhelming response to the call for papers. As the duration of the Symposium is only three days, the Organising Committee regrets not being able to accept all papers submitted. Nonetheless, the Organising Committee has ensured that papers presented at this meeting have a good mix of subjects covering the evolution of basins and their relationships to plate tectonics with special emphasis on the western Pacific region. Distributors characteristics and geological controls of petroleum reserves, natural gas reserves, coal and lignite deposits and geothermal reserves wll also be featured. Some thoughts to current and projection distribution of petroleum and natural gas in the Pacific region, coal production, demand and supply outlook, potential development and utilization of renewable energy resources will also be addressed.

The followin¬ papers will be presented at this Symposium. Several additional late arrivals may be incluued in the main programme.

I. GEOLOGY AND TECTONICS OF EAST AND SOUTHEAST ASIA

Regional

Paleomagnetic evidence to define a stable East Asia and Sundaland.
R. McCabe, et al (Texas A & M, et al.)

Tectonic outline of the Sunda Shelf - a satellite gravity study.
K.O. Wannas (Stockholm Univ.) and K.L. Hayling (Petroscan)

The Bouguer gravity variation over Southeast Asia as derived from satellite altimeter data.
C.A. Foss and J. Savage (ARK Geophysics)

Paleogeographic development of the Southwestern Pacific Basin.
G.W. Moore (Oregon State University)

Malaysia

The tectonic significance of transform faults within a portion of the Greater Sarawak Basin.
G.A. Posehn & J. A Genereux (Intera, Canada) and R. M. Monitoring (Idemitsu Oil Expl.)

The timing and tectonic significance of mélange formation in eastern Sabah, Malaysia.
B. Clennell (Univ. of London)

Microplankton biostratigraphy in tropical Tertiary deposits of offshore NW Borneo.
R.E. Besems (Sarawak Shell)

Sequence stratigraphy of Tertiary sediments offshore Sarawak (Balingian and Luconia Provinces).
Idris Mohamed and Ooi Chit Meng (Sarawak Shell)

Tectonic evolution of the NW Sabah continental margin since late Eocene.
D.N.K. Tan, J.M. Lamy and H.P. Hazebroek (Sabah Shell)

Tectonic control on the development of the Neogene basins in Sabah, East Malaysia.
F. Tongkul (Univ. Kebangsaan Malaysia, Sabah)

Sequence stratigraphy of the Middle Miocene-Pliocene, southern offshore Sandakan Basin, Eastern Sabah, Malaysia .
R.H.F. Wong (PETRONAS)

Geology of Spratly Islands and vicinity.
Fan Pow-foong (Univ. of Hawaii)

Indonesia

The Tertiary tectonic evolution of southern Sumatra, Indonesia.
S. Kusnama, S. A. Mangga & S. Sukarna (GRDC, Bandung)

Strike slip duplexes: their role in basin formation and evolution with reference to the North Sumatra Back Arc, Ombilin Intermontane and West Sumatra fore arc basins.
B. Situmorang, et al. (Lemigas, Jakarta)

Geology of the Bayah area: implications for Tertiary evolution of West Java,Indonesia.
D. Sukarna, Kusama & S. A. Mangga (GRDC, Bandung)

Hydrocarbon prospects in the collison complex in Eastern Sulawesi, Indonesia.
T. O. Simandjuntak (GRDC, Bandung)

Tectonic evolution of the Banda Arc, E. Indonesia: Southern Tethyan crust, obduction, metamorphism and fragmentation of eastern Gondwanaland.
J. Sopaheluwakan (Indonesian Inst. of Sciences)

Lithosphere structure and dynamics of the Banda Arc collision zone, eastern Indonesia.
A. Richardson (Univ. London)

Development of the Sorong fault region, eastern Indonesia.
R. Hall (Univ. College London), J. Ali. (Southampton Univ.) & C. Anderson (UC Santa Barbara)

Philippines

Evolution from a marginal basin crust to a mature island arc: example from the Baguio mining district, Luzon, Philippines.
G.P. Yumul, Jr. (Univ. of the Philippines)

Zambales ophiolite complex, Luzon, Philippines: a proto- Eocene South China Sea Basin crust?
G.P. Yumul, Jr. (Univ. of the Philippines)

Sedimentology of the Miocene Semirara Formation, Philippines.
C.S. Bristow and P.R. Bird (Birkbeck College, London)

Indochina, Thailand, China and Japan

Preliminary research into the plate collision, rotation and divergence pattern of China and its perihery since Mesozoic.
Fei Qi (China Univ. of Geosciences)

Fission track analyis of Khorat Group sediments, Khorat Plateau, Thailand.
C. Bristow (Birkbeck College, London)

A single mechanism for Cenozoic extension in and around Indochina.
S. Harder & R. McCabe (Texas A & M Univ.) & M. Flower (Univ. Illinois)

Cenozoic structure and stratigraphy of the eastern continental shelf and upper slope of Vietnam.
S. Wirasantosa (Texas A & M Univ.) and J.S. Watkins & G. White (Halliburton)

Sedimentological and mineralogical analysis of the turbidite sandstone beds at the eastern margin of the Niigata Neogene backarc oil basin, Northwest Japan; with special reference to the coexistence of shallow marine and deep-marine turbidite sandstone beds.
S. Tokuhashi (Geol. Surv. of Japan)

Statistical analysis of the structural evolution of western Qaidam Basin.
Zhang Qi Rui, et al. (Academia Sinica, Beijing)

The nonlinear inversion of paleogeothermal evolution: example from the north part South China Sea.
Xue Aimin (Chinese Academy of Sciences, Beijing)

Terrane analysis and tectonics of the Nan- Chantha Buri Suture Zone.
S. Hada (Kochi Univ.) & S. Bunopas (Geol. Surv. Thailand)

II. PETROLEUM-BEARING BASINS AND POTENTIAL OF SOUTHEAST ASIA

Regional

The sedimentary basins of SE Asia and their petroleum potential.
V.Vysotskyu, R. Rodnikova & A. Titkov(Institute of Foreign Geology, Moscow)

Main characteristics of hydrocarbon basins in Western Pacific Ocean Margins.
Chen Guowei and Zhao Naimiao (Ministry of Geology and Mineral Resources China)

Estimates of offshore hydrocarbon resource potential in Tertiary sedimentary basins and areas along the western rim of the Pacific Basin.
K. Robinson (U.S. Geological Survey, Denver)

Hydrocarbon habitat in offshore Southeast Asia: comparison between the Mekong, South Con Son, Natuna and Malay basins.
P. Cullen, D.J. Lucas, H.G.A Mackay, J.J. McGucklin & I.R. Wilson (Enterprise Oil Expl. Ltd)

The Tertiary megasequence stratigraphy of the South China Sea petroleum basins.
A.G. Lodge (BHP Petroleum, Australia)

Giant oil accumulations and their areal concentration efficiency.
K. Magara (United Arab Emirates Univ.)

Malaysia and Philippines

Oil, geology and changing concepts in the Southwest Philippines (Palawan and the Sulu Sea).
E.F. Durkee (Aladdin Middle East, Ankara)

The role of advanced seismic interpretation in development planning for the Kinabalu Main Field, offshore NW Borneo.
C.F.W. Hocker (Sabah Shell)

Hydrocarbon potential of the southern Sandakan Basin, eastern Sabah, Malaysia.
T.R. Walker, et al. (WMC Petroleum, et al.)

Australia-Philippines cooperative marine seismic and Sniffer survey in four Philippine offshore sedimentary basins.
C.S. Lee D. Ramsey & M. Galloway (Bureau of Mineral Res., Aust.) and F. Rellira & D. Baladad (OEA, Philippines)

Indonesia and Andaman Sea

Tarakan Basin, N.E. Kalimantan: a century of exploration and future hydrocarbon potential.
A.W.R. Wight , L. Hare & J. R. Reynolds(Sceptre Recources, Jakarta)

Untapped hydrocarbon potential of the eastern Andaman Sea, *Myanmar (Burma).*
J. Begg (Premier Oil, Singapore)

Thermal studies in oil basinal areas of Indonesia.
S. Subono and Siswoyo (Lemigas)

Petroleum generation in the West Aceh Basin, Sumatra.
Hadiyanto (Univ. of Wollongong, Aust.)

III. AUSTRALIA, NEW ZEALAND AND THE PACIFIC

Hydrocarbon occurrences in the Cooper and Eromanga basins in Central Australia.
J. Paran (Sagasco Resources, Adelaide)

Basin reactivation associated with the mid-Cenozoic initiation of the subduction, Taranaki, New Zealand.
P.R. King, et al. (DSIR, Lower Hutt)

Tectonism, magmatism and sedimentary basin development in the Mesozoic-Early Tertiary period, New Caledonia.
P.M. Black (Auckland Univ., New Zealand)

New targets for oil and gas exploration in Fiji, Solomon Islands and Vanuatu.
J.A. Rodd (SOPAC, Fiji)

Structural evolution of the Sydney Basin, Eastern Australia.
E.M. Lohe and T.P.T. McLennan (CSIRO, Brisbane)

Accretionary history of an allochthonous terrane at a plate boundary traced from tectono-sedimentary facies.
Keyu Liu (Australian Nat. Univ.)

IV. GEOTHERMAL ENERGY

Geothermal systems within a 'pulled-apart' segment of the Philippines Fault (Central Leyte): their characteristics and relations to volcanism and strike-slip tectonics.
H.J. Tebar (PNOC)

Deep, slim hole, diamond core drilling program proves effective for geothermal assessment in Hawaii.
H.J. Olson (Univ. Of Hawaii) and J.E. Deymonaz (Consultant, Oregon)

Geothermal energy and uranium mineralization potential of the Main Range granite province, Peninsular Malaysia.
K.R. Chakraborty (University of Malaya)

V. COAL

Tertiary coal measures as source sequences for oil.
A.C. Cook & M.M. Faiz (Keiraville Konsultants, Australia)

Hydrocarbon generation form peat? Comparison of rock - eval pyrolysis data from cold-temperate and tropical peats and coal.
J.S. Esterle (CSIRO, Brisbane) & M. Bustin (Univ. of British Columbia, Vancouver)

Coal as an energy resource in Malaysia.
Chen Shick Pei (Geol. Survey Malaysia, Kuching)

BERITA-BERITA LAIN
Other News

International Symposium on Biostratigraphy of Mainland Southeast Asia: Facies and Paleontology (BIOSEA)

Organized by Chiang Mai University in collaboration with Department of Mineral Resources, and AGID
31 January - 5 February 1993
Chiang Mai, Thailand.

Aims:

Because of the active exploration and development of fossil fuels in Thailand, Malaysia, Myanmar, Vietnam, Kampuchea, Laos, and Southern China, extensive studies and research activities in paleontology, stratigraphy, biostratigraphy and facies analysis are carried out. The main objective of this symposium is to set up a state of the art of research in paleontological and stratigraphic studies, facies analysis and topics on fossil fuels studies pertaining to biostratigraphy in Mainland Southeast Asia and neighbouring region.

Who should attend:

The organizers warmly invite geoscientists from a wide range of disciplines including stratigraphy, paleontology, structural geology and basin analysis, sedimentary geology, petroleum and coal geology in what we hope to be an informative and simulating meeting.

Call for Papers:

The Organizing Committee invites the submission of papers to be considered for presentation at the Symposium. All papers accepted for presentation will be printed in the proceedings.

Themes:

The following themes will be considered:

- Biostratigraphic records in Mainland Southeast Asia
- Historical biogeography, plate tectonics and the changing environment in Mainland Southeast Asia
- Stratigraphic correlation and basin analysis in Mainland Southeast Asia
- Biostratigraphic zones and key beds in fossil fuels exploration
- Palynological studies and correlation in Mainland Southeast Asia
- Vertebrate, Invertebrate and Microfossils of Mainland Southeast Asia

Keynote Lectures:

The following keynote lectures will be held (tentative):

- Biostratigraphy of Mainland Southeast Asia
- State of the Art on Paleontological Studies
- State of the Art on Stratigraphic Studies
- State of Art on Facies Analysis
- Biostratigraphy of Thailand
- Potentials petroleum source rocks of Mainland Southeast Asia

Deadline for Completed Papers:
(30 September 1992)

The organizing committee will notify all persons submitting for presentation in writing. The decision of acceptance of papers is at the discretion of the committee. All papers accepted for presentation will be printed and presented to delegates at the meeting. For this reason we require a copy of the completed paper by 30 September 1992.

Main Announcement:

The main announcement brochure containing full details of the Symposium will be distributed during October 1992.

Date and Venue:

31 January - 5 February 1993
Chiang Mai, Thailand.

Official Language:

The official language of the meeting will be ENGLISH.

Excursions:

3 days pre-conference excursions on Biostratigraphy of Tertiary and Marine Triassic of Northern Thailand will be offered.

Further Information:

The BIOSEA Symposium Secretary
Department of Geological Sciences
Faculty of Science
Chiang Mai University
Chiang Mai 50002 Thailand
Telephone: (053) 221699 Ext. 3361, 3362
Fax: 66-53-222268

CLAIM

22nd Computer Simulated Mineral Exploration workshop

April 1st to 30th, 1993
Fontainebleau (France)

OBJECTIVES AND METHODS

The aim of the workshop is to train participants in all phases of a one year mineral exploration program in a period squeezed to one month with the help of computer simulation.

The number of participants is limited to some twenty people grouped into teams of three. A printer equipped personal computer is provided to each team along with necessary instructions. Using personal knowledge or individual experience, each team must manage a budget, select targets, methods and tools, make decisions and reach a balanced conclusion on the interest of mineralized bodies.

The computer model concerns a 320 sq. miles exploration area for "Kupferschiefer" type of mineralizations.

Initially, teams are given geological, geo-economic and technical data, as well as a fixed amount of money. They establish then an exploration program (appraisal of the various prospecting methods, choice of a strategy ...) and a corresponding budget. Subsequently, they carry out and manage their geochemical prospecting, various types of drilling, sample analysis, etc. Results and costs are provided by the computer. As prospecting progresses and new results are obtained, the exploration strategy is to be adjusted step by step. Tonnage reserves are worked out by each team at the end of the workshop.

Simulation plays the role of an experimental laboratory allowing time to be squeezed, costs to be optimized and strategies to be multiplied and diversified. At the end of the workshop, the results can be compared with the computerized geological model. From this comparison, it is possible to assess the success factor of mineral prospecting, which usually remains largely unknown in a true exploration program.

PROGRAM

The workshop consists of the following phases:

- Preparation: definition of the problem in its economic, geographical and geological setting; understanding of the training method and procedures used (rules of the game, computer

use); study of the proposed area and its characteristics; general discussion.

- Selection: fields survey, detection, evaluation and choice of occurrences in terms of selected criteria (mining geology, mining processing, economic geology).
- Systematic prospection: selection of geochemical prospects; grid drilling; 3-D representation; exploration results interpretation; understanding of the geometry and evaluation of a potential orebody.
- Report writing: synthesis and conclusions.
- Final discussion and comparison of results.

INFORMATION

Workshop languages: written and spoken knowledge of French or English is necessary. An understanding of both is welcome.

Periodicity: annual (April)

Participation: the Simulated Mineral Exploration Workshop has been attended since its beginning in 1972 by more than 320 participants from 65 countries around the world.

Location: at the Ecole des Mines in Fontainebleau (60 km South of Paris)

Teaching Director: Ch. BAUCHAU, Institut de Mineralogie, Lausanne University, Switzerland.

Computerized model designer: M. VANNIER, Ecole des Mines de Paris, IGM.

Workshop coordinator: L. ZANONE, Ecole des Mines de Paris, IGM.

ADMISSION AND REGISTRATION

Candidates must be graduate geologists, mining engineers or hold diplomas which will be considered equivalent by the Committee. A professional experience is welcome, but recent graduates may register as well. This workshop is not aimed at computer experts.

The enrollment form or its xerox (see overleaf) must be correctly filled. Any inadequately filled form will not be considered. All necessary relevant papers must be attached to this form. Means of payment (travel, living, tuition) must be indicated. This record should be sent as soon as possible at the given address.

A selection committee will nominate the candidates who fulfill the necessary requirements.

Tuition fees amount to **20 000 FF.**

A 10 000 FF grant covering half of the above tuition fees may be allotted by UNESCO and Ecole des Mines. The number of grants is limited. **Grant request deadline: January 1st, 1993.**

Tuition fees (total or partial in case of a grant) **must be received before March 1st,** 1993. Without early enough payment, candidates will not be accepted.

Living expenses (hotel, means, ...) are borne by the participants. After agreement of the candidates, different kinds of hotel accommodation will be proposed.

The participant insurance is not under the responsibility of the workshop organizers.

The number of participants being limited, it is advisable to send back the enrollment form without delay (deadline: February 1st, 1993) to:

L. ZANONE
Ecole des Mines de Paris
CGGM-IGM
35, rue Saint-Honore • 77305
Fontainebleau Cedex • France
Phone: (33 1) 64 69 49 30
Telex: 694 736 F
Fax: (33 1) 64 69 47 01

Kursus-kursus latihan & bengkel-bengkel (Training Courses & Workshops)

1992

August 1992–July 1993
AEROSPACE SURVEYS FOR: GEOLOGICAL SURVEY; WATER-RESOURCES SURVEY; AND APPLIED GEOMORPHOLOGY (Delft, The Netherlands). Annual postgraduate diploma and MSc degree courses organized by the International Institute for Aerospace Survey and Earth Sciences (ITC). Language: English. For Information: ITC Student Registration Office, P.O. Box 6, 7500 AA, Enschede, The Netherlands.

September 22–24
GROUND-WATER GEOCHEMISTRY (San Antonio, Texas). Short course. For Information: National Ground Water Association, Education Department, 6375 Riverside Drive, Dublin, Ohio 43017. Phone: 614/761-1711. Fax: 614/761-3446)

September 28–October 2
SAFETY AT HAZARDOUS MATERIALS SITES (Valhalla, N.Y.). Short course by National Ground Water Association, and USGS. For Information: NGWA, Dept. 17, Box 182039, Columbus, Ohio 43218-2039. Phone: 614/761-1711)

October 20–22
GROUND-WATER HYDROLOGY (Clearwater, Fla.). Short course. For Information: National Ground Water Association, Education Department, 6375 Riverside Drive, Dublin, Ohio 43017. Phone: 614/761-1711. Fax: 614/761-3446)

November 1992–December 1993
REMOTE SENSING APPLICATIONS FOR EARTH SCIENCES (Enschede, The Netherlands). Annual short course organized by the International Institute for Aerospace Survey and Earth Sciences (ITC). Language: English. For Information: ITC Student Registration Office, P.O. Box 6, 7500 AA, Enschede, The Netherlands.

GEOLOGICAL TECHNIQUES (London, UK). Course designed to teach modern techniques to those technicians or trainee technicians who are or wish to become engaged in the geoscientific industry. Course aimed at those from the developing countries. For Information: J.R. Blount, Department of Geology, Royal School of Mines, Imperial College, Prince Consort Road, London SW7 2BP, UK.

HYDROLOGY (Brussels, Belgium). One-year diploma course and two-year Master's degree course under Inter-university Postgraduate program. Fellowships available. Language: English. For Information: Prof. A. Van DerBeken. Programs in Hydrology, Free University, Pleinlaan 2, B-1050 Brussels, Belgium.

CONTINUING EDUCATION SEMINARS FOR ENGINEERS, MANAGERS, AND TECHNICIANS OF OIL, OIL-CONCERNED, AND RELATED INDUSTRIES. Conducted by the Petroleum Exploration Center, ENSPM-Formation Industries. For Information: ENSPM Centre d'Exploration Petroliere, ENSPM-Formation Industries, 4 Avenue de Bois-Preau, 92500 Rueil-Malmaison, France.

October 14–18
GEOLOGY OF SANDSTONE FORMATIONS (Spanish Pyrenees). Language: French.

October 21–25
CASED HOLE LOGGING (Rueil-Malmaison). Language: French (English, if number of participants allows).

November 4–8
INTRODUCTION TO THE PRACTICE OF FORMATION EVALUATION (Rueil-Malmaison). Language: French (English, if number of participants allows).

November 18–22

GEOLOGY AND GEOPHYSICS FOR THE RESERVOIR ENGINEER (Rueil-Malmaison). Language: French (English, if number of participants allows).

December 2–13

WELL LOG ANALYSIS (Rueil-Malmaison). Language: French (English, if number of participants allows).

MINING MANAGEMENT (Kensington, New South Wales, Australia). Master's and graduate diploma degrees in Mining Management, as well as individual short courses. (Courses may be presented at other locations by arrangement.) For Information: Dr. Mike Katz, Associate Director, International Key Center for Mines, University of New South Wales, P.O. Box 1, Kensington NSW 2033, Australia.

PROFESSIONAL DEVELOPMENT SEMINARS IN MINERAL ENGINEERING AND MINERAL ECONOMICS. Conducted by the Department of Mining and Metallurgical Engineering, McGill University. Language: English. For Information: Lorna McFadden, Department of Mining and Metallurgical Engineering, McGill University, 3480 University Street, Montreal, Quebec H3A 2A7, Canada.

SHORT COURSES IN PETROLEUM GEOLOGY AND RELATED DISCIPLINES. Conducted by IHRDC. Language: English. For Information: IHRDC Instructional Programs, 535 Boylston Street, Boston, MA 02116, USA.

SWEDISH INTERNATIONAL UNIVERSITY CONSORTIUM (Stockholm, Sweden). Master's degree programs lasting three semesters, including a Master's thesis project. Courses in applied Geophysics and Geochemistry at Lulea. Language: English. For Information: Dr. Bjorn Ohlander, Economic Geology, Lulea University of Technology, S-951 Lulea, Sweden.

TWAS ITALIAN AWARDS SCHEME. A series of grants for developing-country geoscientists of proven ability to work and study for periods up to 10 months at the following Italian universities: Florence, Milan, Padua, Pisa, Rome, Trieste, Turin, and CNR Pisa. For Information: Executive Secretary, Third World Academy of Sciences, International Centre for Theoretical Physics, P.O. Box 586, Strada Costiera 11, I-34100 Trieste, Italy.

WEDC (Water, Engineering and Development Centre). Concerned with urbanization and urban infrastructure. Courses offered range in duration from 6 weeks to 12 months, deal with a wide variety of water, engineering, developmental, environmental, and management topics, and lead to certificates, diplomas, or MSc degrees. For Information: Professor John Pickford, WEDC, Loughborough University of Technology, Leicestershire LE11 3TU, UK. Phone: 0(44) 509 222390; telex: 34319 UNITECG; fax: 0(44) 509 610231.

THE ROBERTSON GROUP plc, Llandudno, Gwynedd, UK, attention: Dr. C.J. Burgess, Manager, Petroleum Training Centre. Phone: 44(0) 492 581811; fax: 44(0) 492 583416; telex; 61216 ROBRES G.

U.S. GEOLOGICAL SURVEY, Office of International Geology, Training Section, 917 National Center, Reston, Virginia 22092. USA.

KALENDAR (CALENDAR)

1992

August 24–September 3
INTERNATIONAL GEOLOGICAL CONGRESS (29th), Kyoto, Japan. (Dr. Tadasahi Sato, Chairman, Japanese National Committee on Geology, Inst. of Geoscience, The University of Tsukuba, Ibaraki 305, Japan

August 31–September 2
LARGE METEORITE IMPACTS AND PLANETARY EVOLUTION (International Conference), Sudbury, Ontario, Canada. (Sudbury 1992, c/o B. Dressler, Ontario Geological Survey, 77 Grenville St., Toronto, Ontario M7A 1W4, Canada. Phone: (416) 965-4817; telefax: (416) 324-4933)

September 11-20
GERMAN MINERALOGICAL SOCIETY, anniversary meeting, Tubingen, Germany. (P. Metz, Petrographisches Institut der Universitat Tubingen, Wilhelmstrasse 56, 7400 Tubingen, Germany)

September 12–15
ASSOCIATION OF EARTH SCIENCE EDITORS, ann. mtg., Glacier National Park, Whitefish, Mont. (H.L. James, Montana Bureau of Mines and Geology, Butte, 59701. Phone: 406/496-4175)

September 13–18
DOLOMITES, mtg., Banff, Alberta, by University of Alberta and Canadian Society of Petroleum Geologists. (Pat Larlham, Faculty of Extension, University of Alberta, Edmonton, Alberta T6G 2G4. Phone: 403/492-5038. Fax: 403/492-1857)

September 13–18
GEOSTATISTICS, mtg., Troia, Portugal. (Amilcar Soares, Centro de Valorizacao de Recursos Minerais, IST Av. Rovisco Pais, 1096 Lisbon, Portugal. Fax: 351/1-8486935)

September 21–25
PALEOCEANOGRAPHY-GLOBAL CHANGE (4th International Conference), Kiel, FRG. (ICP IV Organizing Committee, c/o GEOMAR, Wischhof-strasse 1-3/Bldg., 4, D-2300 Kiel 14, FRG)

September 22–28
MODERN CLASTIC DEPOSITIONAL ENVIRONMENTS, field mtg., Columbia, S.C., Charleston, S.C., and Wilmington, N.C. (American Association of Petroleum Geologists, Education Department, Box 879. Tulsa, Okla. 74101-0979. Phone: 918/584-2555. Fax: 918/584-0469) Fee: $1,685 (includes guidebook, transportation, and some meals).

September 25–30
LOW-K SILICIC MAGMAS IN SUBDUCTION SETTINGS, a GSA Penrose Conference, Chelan, Wash. Games S. Beard, Virginia Museum of Natural History, Martinsville, Va. 24112. Phone: 703/666-8611)

September 27–October 1
AMERICAN INSTITUTE OF PROFESSIONAL GEOLOGISTS, ann. mtg., Lake Tahoe, Nev. (Jon Price, MPG, Box 665, Carson City, Nev. 89702. Phone: 702/784-6691)

September 28–30
PETROLEUM-INDUSTRY DATA EXCHANGE, mtg., New Orleans. (American Petroleum Institute, 1220 L St. N.W., Washington D.C. 20005. Phone: 202/682/8000)

October 2–6
SUDBURY-NORIL'SK NICKEL CAMPS, symposium, Sudbury, Ontario (A.J. Naldrett, Dept. of Geology, University of Toronto, Toronto, Ontario, M5S 3B1. Fax: 416/978-3938)

October 2–9
ASSOCIATION OF ENGINEERING GEOLOGISTS, ann. mtg., Long Beach, Calif. (John W. Beyer, 444-A E. Broadway, Glendale, Calif. 91205. Phone: 818/549-9959. Fax: 818/242-2442)

October 4–7
SOCIETY OF PETROLEUM ENGINEERS, ann. mtg., Washington, D.C. (SPE, Box 833836, Richardon, Texas 75083-3836. Phone: 214/669-3377. Fax: 214/669-0135

October 4–9
FLUID/VOLCANO INTERACTIONS, GSA Penrose Conference, Warm Springs, Ore. (Steve Ingebritsen, USGS, MS 439,345 Middlefield Road, Menlo Park, Calif. 94025. Phone: 415/329-4422. Fax: 415/329-4463)

October 14–30
DAM SAFETY, int'l. seminar and tour, Denver, Las Vegas, Nev., and Phoenix, Ariz., by American Water Foundation, and U.S. Bureau of Reclamation. (AWF, 1616 17th St. Denver, 80202. Phone: 303/628-5516. Fax: 303/628-5469) Fee: members, $1,700; non-members, $1,800.

October 17–22
HYDROLOGY AND HYDROGEOLOGY, mtg., Portland, Ore. (American Institute of Hydrology, 3416 University Ave. S.E., Minneapolis, 55414-3328. Phone: 612/279-1030)

October 18–23
LATE PRECAMBRIAN TECTONICS AND THE DAWN OF THE PHANEROZOIC, GSA Penrose Conference, Death Valley, Calif. (Ian W.D. Dalziel, Institute for Geophysics, University of Texas, Austin, 78759-8345. Phone: 512/471-6156. Fax: 512/471-8844)

October 19–21
BIO-LEACHING MINERALS AND MINERAL-LAND RECLAMATION, mtg. and workshop, Sacramento, Calif. (Yung Sam Kim, Nevada Institute of Technology, Box 8894, Campus Station, Reno, Nev. 89507. Phone :702/673-4466)

October 25–30
IN-SITU MINERALS RECOVERY, mtg., Santa Barbara, Calif. (Engineering Foundation, 345 E. 47th St., New York, 10117. Phone : 212/705-7835. Fax: 212/705-7441)

October 26–28
EXTRACTIVE METALLURGY OF GOLD AND BASE METALS, int'l. mtg., Kalgoorlie, Western Australia. (V.N. Misra, Kalgoorlie Metallurgical Laboratory, Box 881, Kalgoorlie, 6430, Australia. Phone: (090) 220 120. Fax: (090) 912 762) Papers invited.

October 26–29
GEOLOGICAL SOCIETY OF AMERICA (Annual Meeting), Cincinnati, Ohio, USA. (Jean Kinney, GSA Headquarters, P.O. Box 9140, Boulder, Colo. 80301, USA. Phone: (303) 447-2020).

November 8–13
WATER RESOURCES AND ENVIRONMENTAL ENGINEERING, mtg., Santa Barbara. Calif. (C.V. Freiman, Engineering Foundation, 345 E. 47th St., New York, 10017. Phone: 212/705-7835. Fax: 212/705-7441)

November 29–December 2
TECTONIC FRAMEWORK AND ENERGY RESOURCES, mtg., Kuala Lumpur, Malaysia. (Secretariat, c/o Dept. of Geology, University of Malaya, 59100 Kuala Lumpur, Malaysia)

November 30–December 3
OFFSHORE SOUTHEAST ASIA, mtg., Singapore. (Society of Petroleum Engineers, Box 833836, Richardson, Texas 75083-3836. Phone: 214/669-3377. Fax: 214/669-0135)

December 28–31
GEODYNAMICS OF THE ARABIAN LITHOSPHERE, int'l. mtg., Baghdad. (Sahil Alsinawi, Dept. of Geology, College of Science, University of Baghdad, Jadiryah, Iraq)

1993

April 17–20
EXPLORATION AND DISCOVERY, mtg., Denver, by Society of Economic Geoloiists, Society of Exploration Geophysicists, and others. (J. Alan Coope, SEG Conference '93, Box 571, Golden, Colo. 80402. Phone: 303/837-5819. Fax: 303/837-5851)

April 25–28
AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, ann. mtg., New Orleans. (AAPG, Box 979, Tulsa, Okla. 74101-0979. Phone: 918/584-2555. Fax: 918/584-0469)

May 16–20
ENVIRONMENTAL HYDROLOGY AND HYDROGEOLOGY, mtg., Washington, D.C. (Secretariat, Americal Institute of Hydrology, Second USA/USSR Conference, 3416 University Ave. S.E., Minneapolis, 55414-3328. Phone: 612/379-1030. Fax: 612/379-0169)

May 17–19
GEOLOGICAL ASSOCIATION OF CANADA/ MINERALOGICAL ASSOCIATION OF CANADA (Joint Annual Meeting), Edmonton, Alberta, Canada. (J.W. Kramers, Alberta Geological Survey, P.O. box 8330, Station F, Edmonton, Alberta T6H 5X2, Canada. Phone: (403) 438-7644; telefax: (403) 438-3644)

May 25–June 15
BASIN TECTONIC AND HYDROCARBON ACCUMULATION, mtg., Nanjing, People's Republic of China, by Nanjing University. USGS, Society of Petroleum Geology of China, and others. (David G. Howell, MS902, USGS, 345 Middlefield Road, Menlo Park, Calif. 94025. Phone: 415/329-5430. Fax: 415/354-3224)

June 1–5
GEOTECHNICAL ENGINEERING, int'l. mtg., St. Louis. (Norma R.Fleming, 119 ME Annex, University of Missouri, Rolla, 65401-0249. Phone: 314/341-6061; 800/752-5057. Fax: 314/341-4992)

June 7–11
EUROPEAN ASSOCIATION OF EXPLORATION GEOPHYSICISTS (55th Annual Meeting and Exhibition), Forum, Stavanger, Norway. (Evert van der Gaag, Business Manager, European Association of Exploration Geophysicists, Utrechtseweg 62, NL-3704 HE Zeist, The Netherlands. Phone: (03404) 56997)

June 20–27
ZEOLITES, int'l. mtg., Boise, Idaho, by International Committee on Natural Zeolites. (F.A. Mumpton, Dept. of Earth Sciences, State University of New York, Brockport, 14420. Phone: 716/395-2635; 716/637-2324. Fax: 716/395-2416)

June 21–25
ROCK ENGINEERING, mtg. and workshop, Lisbon, Portugal, by International Society for Rock Mechanics. (Luis Ribeiro e Sousa, Portuguese Society for Geotechnique, Laboratorio Nacional de Engenharia Civil, Av. do Brasil, 101, 1799 Lisboa Codex Portugal. Phone: 848 21 31. Fax: 89 76 60)

July
ENVIRONMENTAL CONTEXT OF HUMAN EVOLUTION (International Scientific Congress and Exhibition), The Netherlands and Indonesia. (Dr. Hans Beijer, Geological Survey of The Netherlands, P.O. Box 157, NL-2000 AD Haarlem, The Netherlands. Telefax: 31 23 351614

July 18–23
CLAY CONFERENCE (10th International Conference in conjunction with Commission VII of the International Soil Science Society), Adelaide, South Australia. (Dr. Tony Eggleton, Geology Department, ANU, GPO Box 4, Canberra, ACT 2601, Australia)

August 23–29
GEOMORPHOLOGY (3rd International Conference), Hamilton, Ontario, Canada. (3rd International Conference on Geomorphology, McMaster University, Hamilton, Ontario L8S 4Kl, Canada. Phone: (416) 525-9140, ext. 4535; telefax: (416) 546-0463; telex: 061-8347)

August 23–29
COASTAL SEDIMENTOLOGY, mtg., Hamilton, Ontario. (William F. Tanner, Dept. of Geology B-160, Florida State University, Tallahassee, 32306. Phone: 904/644-3208)

September 25–October 1
INTERNATIONAL ASSOCIATION OF VOLCANOLOGY AND CHEMISTRY OF THE EARTH'S INTERIOR, mtg., Canberra, Australia. (IAVCEI ACTS, GPO Box 2200, Canberra ACT 2601, Australia. Phone: 61/6/257-3299. Fax: 61/6/257-3256)

1994

June 6–10
EUROPEAN ASSOCIATION OF EXPLORATION GEOPHYSICISTS (56th) Annual Meeting and Exhibition), Austria Center, Vienna, Australia. (Evert Van der Gaag, Business Manager, European Association of Exploration Geophysicists, Utrechtseweg 62, NL-3704 HE Zeist, the Netherlands. Phone: (03404) 56997; telefax (03404) 62640; telex:33480)

1995

May 29–June 2
EUROPEAN ASSOCIATION OF EXPLORATION GEOPHYSICISTS (57th Annual Meeting and Exhibition), Glasgow, UK. (Evert van der Gaag, European Association of Exploration Geophysicists, Utrechtseweg 62, NL-3704 HE Zeist, The Netherlands. Phone: (03404) 56997; telefax: (03404) 62640; telex: 33480)

GEOLOGICAL SOCIETY OF MALAYSIA PUBLICATIONS

General Information

The Society publishes the *Buletin Geologi Malaysia* (Bulletin of the Geological Society of Malaysia) and the bimonthly *Warta Geologi* (Newsletter of the Geological Society of Malaysia).

Papers of general interest or on the geology of the Southeast Asian region (South China, Burma, Thailand, Indochina, Malaysia, Singapore, Indonesia, Brunei and the Philippines) and also marine areas within the region are welcome for publication in the *Buletin*. Short notes, progress reports and general items of information are best submitted to the *Warta Geologi*.

Papers should be as concise as possible. However, there is no fixed limit as to the length and number of illustrations. Therefore, papers of monograph length are also welcome. Normally, the whole paper should not exceed 30 printed pages and it is advisable that authors of papers longer than 30 printed pages should obtain the consent of the Editor before submission of the papers.

The final decision of any paper submitted for publication rests with the Editor who is aided by an Editorial Advisory Board. The Editor may send any paper submitted for review by one or more reviewers. Scripts of papers found to be unsuitable for publication may not be returned to the authors but reasons for the rejection will be given. The authors of papers found to be unsuitable for publication may appeal only to the Editor for re-consideration if they do not agree with the reasons for rejection. The Editor will consider the appeal together with the Editorial Advisory Board.

Unless with the consent of the Editor, papers which have been published before should not be submitted for consideration.

Authors must agree not to publish elsewhere a paper submitted to and accepted by the Society.

Authors alone are responsible for the facts and opinions given in their papers and for the correctness of references etc.

Twenty-five reprints of each paper are free-of-charge. Contributors should notify the Editor of extra reprints (which are of non-profit costs) required.

All papers should be submitted to the Editor, Geological Society of Malaysia, c/o Department of Geology, University of Malaya, 59100 Kuala Lumpur, MALAYSIA.

Script Requirements

Scripts must be written in Bahasa Malaysia (Malay) or English.

Two copies of the text and illustrations must be submitted. The scripts must be typewritten double-spaced on papers not exceeding 21 × 33 cm. One side of the page must only be typed on.

Figure captions must be typed on a separate sheet of paper. The captions must not be drafted on the figures.

Original maps and illustrations or as glossy prints should ideally be submitted with sufficiently bold and large lettering to permit reduction to 15 × 22 cm: fold-outs and large maps will be considered only under special circumstances.

Photographs should be of good quality, sharp and with contrast. For each photograph, submit two glossy prints, at least 8 × 12 cm and preferably larger. Use of metric system of measurements (ISU) is strongly urged wherever possible.

Reference cited in the text should be listed at the end of the paper and arranged in alphabetical order and typed double-spaced. The references should be quoted in the following manner:

Suntharalingam,T., 1968. Upper Palaezoic stratigraphy of the area west of Kampar, Perak. *Geol. Soc. Malaysia Bull.*, 1, 1 – 15.

Hosking, K.F.G., 1973. Primary mineral deposits. *In* Gobbett, D.J. and Hutchison, C.S. (Eds), *"Geology of the Malay Peninsula (West Malaysia and Singapore)"*. Wiley-Interscience, New York, 335 – 390.

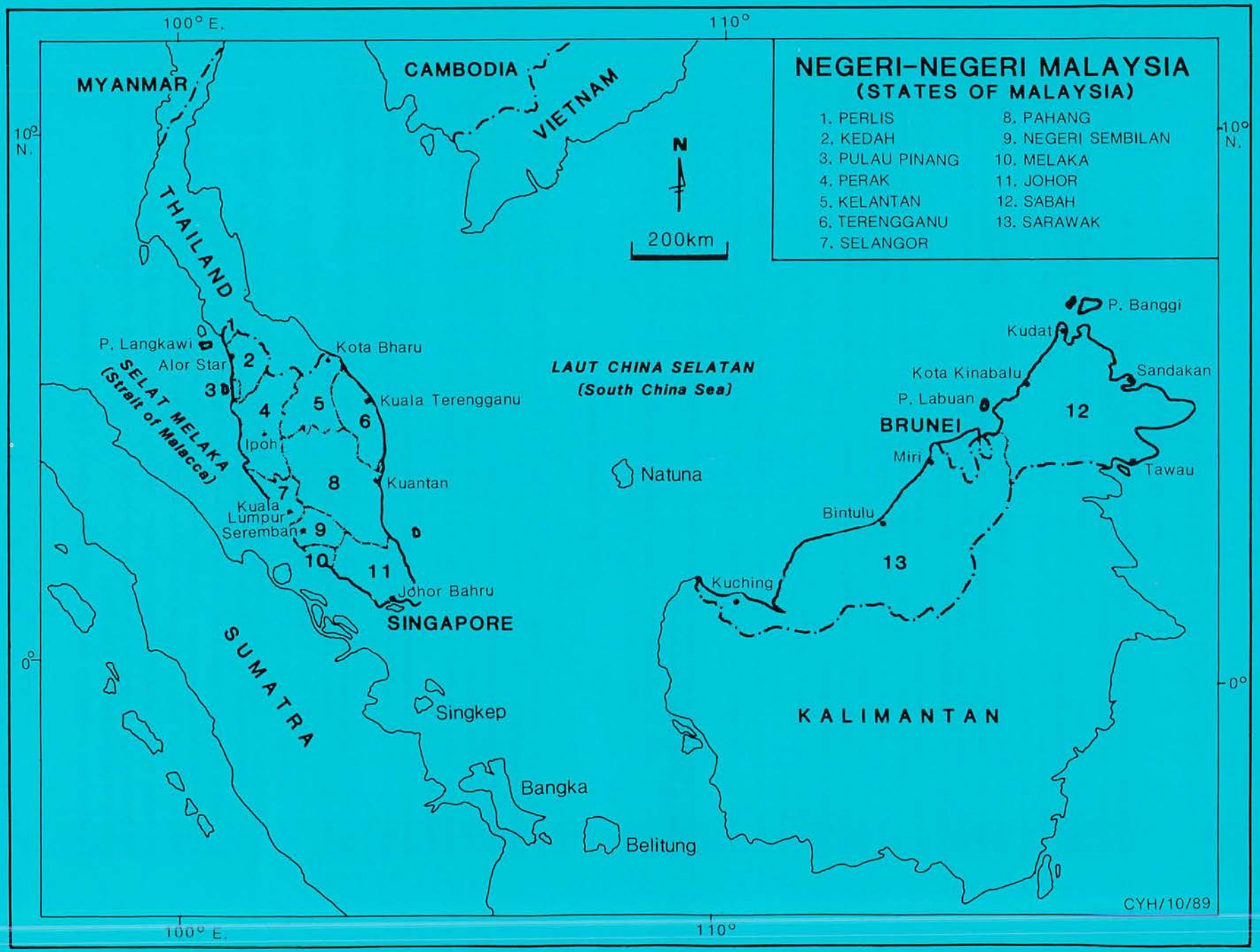
The name of the book or publication must be *underlined* and will be later printed in italics.

A concise and informative *abstract* in English is required for each paper written in Bahasa Malaysia or English. A paper written in Bahasa Malaysia must have an abstract in Bahasa Malaysia as well.

For format, kinds of subheadings and general style, use this and the previous *Buletins* as a guide.

The final decision regarding the size of the illustrations, sections of the text to be in small type and other matters relating to printing rests with the Editor.

If authors have trouble over the script requirements, please write in to the Editor.


NEGERI-NEGERI MALAYSIA
(STATES OF MALAYSIA)
1. PERLIS
2. KEDAH
3. PULAU PINANG
4. PERAK
5. KELANTAN
6. TERENGGANU
7. SELANGOR
8. PAHANG
9. NEGERI SEMBILAN
10. MELAKA
11. JOHOR
12. SABAH
13. SARAWAK
100° E.
110°
10° N.
0°
MYANMAR
CAMBODIA
VIETNAM
THAILAND
N
200km
P. Langkawi
Alor Star
Kota Bharu
Kuala Terengganu
Ipoh
Kuala Lumpur
Seremban
Kuantan
Johor Bahru
SINGAPORE
SELAT MELAKA
(Strait of Malacca)
LAUT CHINA SELATAN
(South China Sea)
Natuna
SUMATRA
Singkep
Bangka
Belitung
P. Banggi
Kudat
Kota Kinabalu
Sandakan
P. Labuan
BRUNEI
Miri
Tawau
Bintulu
Kuching
KALIMANTAN
CYH/10/89