ISSN 0126-5539
PP2509/2/2008

WARTA GEOLOGI

PERSATUAN GEOLOGI MALAYSIA

Newsletter
of the

Geological Society of Malaysia

Title: : *Cliff resisting storms and tidal wear & tear*
Description : *Massive shallow-marine sandstone unit, Mid-Late Miocene Lambir Formation.*
Locality : *Headland II, near Tanjung Batu, NW Sarawak, Malaysia*
By : *Dr Franz L Kessler*
Shell Sarawak Bhd

Jilid /Volume 33, No 4. July - August 2007

IDEAS PEOPLE WANTED

EXPLORATION GEOSCIENTISTS
MIRI, SARAWAK

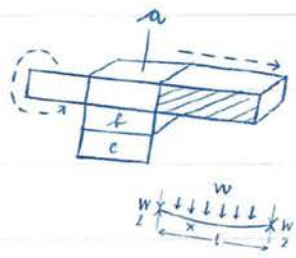
At Sarawak Shell Berhad (71978-W), we are continuously looking to the future and for people who will make it happen. Take now for instance. We are looking for the world's top Exploration & Production talent to join us in building a business capable of real and sustainable growth. If that's you, then come and explore your potential in an environment characterised by opportunity, flexibility and reward.

Shell Exploration & Production Asia Pacific's technical hub is based in Miri, Sarawak. Shell's compensation package is designed to recognise the experience and expertise of top-calibre professionals, and we now have opportunities for:

- **Reservoir Geophysicist**
- **Seismic Processing Geophysicist**
- **Production Geologists**
- **Seismic Interpreters**

Can you apply a creative mind to some of the world's biggest energy challenges? To find out more about each opportunity and to apply online, please visit **www.shell.com/careers/technical** and quote reference XMY080S when you apply.

Shell is an Equal Opportunity Employer



CATATAN GEOLOGI (Geological Notes)

POINT LOAD STRENGTHS OF CONTACT METAMORPHIC ROCKS FROM THE BATU MELINTANG AREA, KELANTAN DARUL NAIM

J. K. Raj & Ahmad Nazmi Mohamed Ali,
Department of Geology,
University of Malaya

ABSTRACT

In the Batu Melintang area of north-west Kelantan Darul Naim are found regionally metamorphosed sedimentary rocks that have, in places close to granitic intrusions, been subject to a later, superimposed phase of contact metamorphism. At an outcrop close to Kg. Gunong, these contact metamorphic rocks comprise a banded sequence of light greenish grey, very fine grained (<0.1 mm size) quartz-biotite hornfels alternating with dark greenish grey, fine grained (<0.2 mm size) quartz-biotite hornfels, and light brown to cream coloured, medium grained (<0.3 mm size) calc-silicate hornfels. Point load tests on air dried blocks of the very fine, and fine, grained quartz-biotite hornfelses yield strength indices [$Is_{(50)}$] of 16.70 MPa, and 11.52 MPa, respectively, whilst similar tests on the medium grained, calc-silicate hornfelses yield a strength index [$Is_{(50)}$] of 9.30 MPa. It is concluded that inherent variations in texture give rise to differences in the point load strength indices; the very fine grained hornfels showing higher strengths than the fine and medium gained varieties.

INTRODUCTION

The Point Load Strength, as described by Broch and Franklin (1972), has gained widespread acceptance as an index test for the strength classification of rock material and as a means of estimating other strength parameters as the uniaxial compressive strength (ISRM, 1985; Brook, 1985). Little or no specimen preparation is needed for this test which involves the splitting of rock samples by application of a concentrated load through a pair of spherically truncated, conical platens; the samples being in the form of cores, cut blocks or irregular lumps. The most widely known version of this test involves the diametral testing of rock cores and determination of the point load strength index [$Is_{(50)}$] which is related to a reference core diameter of 50 mm.

Where specimens with shapes other than cores are tested, both shape and size correction factors need to be introduced. The shape correction factor is based on the minimum cross-sectional area of the tested specimen and involves calculation of an "equivalent core diameter" (Brook, 1985), whilst the size correction factor is best determined from the log-log plots of the loads at failure (P) versus the squares of the equivalent core diameters (De^2) of a range of specimen sizes as this allows interpolation (or extrapolation) of the load corresponding to an equivalent core diameter of 50 mm (ISRM, 1985).

POINT LOAD STRENGTHS OF CONTACT METAMORPHIC ROCKS FROM THE BATU MELINTANG AREA, KELANTAN DARUL NAIM

In this paper are presented the results of point load tests that were carried out on cut blocks of contact metamorphic rocks outcropping near Kg. Gunong in the Batu Melintang area of north-west Kelantan Darul Naim. Conclusions are reached on the main factor *giving* rise to variations in the corrected point load strength indices [$Is_{(50)}$] of the different contact metamorphic rocks present.

GEOLOGICAL SETTING OF SAMPLING SITE

In the Batu Melintang area of north-west Kelantan Darul Iman are found regionally metamorphosed rocks that have been derived from a suite of Palaeozoic pelitic, psammitic and calareous sediments as well as pyroclastic and basic igneous rocks. The pelitic assemblage comprises muscovite schist, biotite schist, garnet schist, andalusite schist, andalusite-garnet schist and gneisses of the same composition, whilst the basic rocks have yielded hornblende schists asnd gneisses. The calcareous assemblage comprises marble and calcareous schists and the metavolcanics consist mainly of meta-agglomerate with minor meta-tuff. These metamorphic rocks have also been locally subject to thermal metamorphism brought about by later Cretaceous igneous intrusions (Wong, 1974).

At the junction of the East-West Highway with Jalan FELCRA Bechah Pulai, near Kg. Gunong (Fig. 1) is exposed a sequence of such contact metamorphic rocks consisting of alternating bands of dark greenish grey, light greenish grey, and light brown to cream coloured hornfelses (Ahmad Nazmi,1993). These bands, which appear to reflect compositional and textural variations, strike about 25° and dip 50° towards the west-northwest. The bands are of variable thicknesses; the greenish grey bands being about 0.5 to 10 cm thick and the light brown to cream coloured bands, some 0.5 to 20 cm thick.

METHOD OF STUDY

Several large, fresh blocks of the banded hornfelses of about 0.1 m^3 in size were collected in the field and then sawn into smaller tetrahedral blocks of various sizes. The visible, textural and structural features of each of these smaller blocks were then described before they were air dried and tested with an ELE Point Load Test Apparatus. Thin-sections of representative samples were also prepared from the large blocks in order to classify the rock material, whilst the densities, unit weights and porosities of selected samples were determined according to the suggested saturation and bouyancy technique of ISRM (1979).

PETROGRAPHY OF INVESTIGATED ROCK MATERIALS

Thin-sections of the light greenish grey bands show them to have equigranular, granoblastic textures with abundant biotite and quartz and minor chlorite. The mostly anhedral quartz and biotite grains are up to some 0.10 mm in size and show no preferred orientation. Thin calcite veins (<0.2 cm wide) also cut the rock material which is best termed a very fine grained, quartz-biotite hornfels.

Thin-sections of the dark greenish grey bands also show them to have equigranular, granoblastic textures with abundant bioite and quartz as well as minor epidote and plagioclase feldspar. The mostly anhedral quartz and biotite grains also show no preferred mineral orientation, but are relatively coarser grained with grains of up to 0.20 mm size (Plate 1). The rock is best called a fine grained, quartz-biotite hornfels.

Thin-sections of the light brown to cream coloured, bands show them to have equigranular, granoblastic textures with the main minerals being quartz, diopside, calcite and plagioclase feldpar, and minor diopside. No preferred mineral orientation is seen with the grains being up to some 0.30 mm in size (Plate 2). The rock is best called a medium grained, calc-silicate hornfels.

RESULTS AND DISCUSSION

Although there are textural and some mineralogical differences between the three varities of hornfelses, they do not show much variation in physical properties (Table 1). Their high densities and unit weights as well as low apparent porosities furthermore, indicate that these hornfelses have high strengths.

Results of point load tests on blocks of the light greenish grey, very fine grained quartz-biotite hornfels (Table 2) show a range of loads at failure, though this is to be expected in view of the different sizes of the tested blocks. A regression analysis of the results, however, allows for determination of the corrected point load strength index [$Is_{(50)}$] as this method takes into consideration both the shape and size corrections needed in the point load testing of block samples (ISRM, 1985). The regression analysis, with the intercept at the origin, yields a point load strength Index [$Is_{(50)}$] of 16.70 MPa for the light greenish grey, very fine grained quartz-biotite hornfels.

Results of point load tests on blocks of the dark greenish grey, fine grained quartz-biotite hornfels (Table 3) also show the expected range of loads at failure due to the different sizes of the tested blocks. A regression analysis of the results, with the intercept at the origin, yields a corrected point load strength index [$Is_{(50)}$] of 11.52 MPa for the dark greenish grey, fine grained quartz-biotite hornfels.

Results of point load tests on blocks of the light brown to cream coloured, medium grained calc-silicate hornfels (Table 4) again show the expected range in values of the loads at failure due to the different sizes of the tested blocks. A regression analysis of the results, with the intercept at the origin, yields a corrected point load strength index [$Is_{(50)}$] of 9.30 MPa for the light brown to cream coloured, calc silicate hornfels.

From the results, it is clear that there is a variation in the point load strength indices with grain size, the medium and fine grained hornfelses showing lower strengths than the very fine grained hornfels. There is, however, an absence of published literature with which to compare these results, except for Lama and Vutukuri (1978) who quote a tensile strength of 14.48 MPa for a massive, hornblende hornfels (with grain sizes from 0.08 to 0.23 mm) from the Bridge Canyon Dam in Arizona.

CONCLUSION

It is concluded that the contact metamorphic rocks of the Batu Melintang area show point load strength indices [$Is_{(50)}$] that are influenced by inherent textures. Very fine grained, quartz-biotite hornfels has a point load strength index [$Is_{(50)}$] of 16.70 MPa, whilst fine grained, quartz-biotite hornfels has an index [$Is_{(50)}$] of 11.52 MPa, and medium grained, calc-silicate hornfels, an index [$Is_{(50)}$] of 9.30 MPa.

REFERENCES

Ahmad Nazmi Mohamed Ali (1993): Geologi am dan geomorfologi kawasan Pergau dengan penekanan terhadap kestabilan cerun potongan di Jalan Felcra Bechah Pulai, Pergau, Kelantan. *(Unpubl) B.Sc. (Hons) Thesis, Jab. Geol., Univ. Malaya*, 131 p.

Broch, E. and Franklin, J.A. (1972): The point load strength test. *Int. J. Rock Mech. Min. Sci. & Geomech. Abstr.*, V. 6, p. 669-697.

Brook, N. (1985): The equivalent core diameter method of size and shape correction in point load testing. *Int. J. Rock Mech. Min. Sci. & Geomech. Abstr.*, V. 22, No. 2, p. 61-70.

ISRM (1985): Suggested method for determining point load strength. *Int. J. Rock Mech. Min. Sci. & Geomech. Abstr.*, V. 22, No. 2, p. 51-60.

ISRM (1979): Suggested methods for determining water content, porosity, density, absorption and related properties and swelling and slake durability index properties. *Int. J. Rock Mech. Min. Sci. & Geomech. Abstr.*, V. 16, p. 141-156.

Lama, R.D. and Vutukuri, V.S. (1978): *Handbook On Mechanical Properties Of Rocks – Vol.II - Testing Techniques And Results*. Trans Tech Publications, Germany. 481 p.

Wong, L.C. (1974): Geology of the Kampong Batu Melintang area, North West Kelantan, West Malaysia. *(Unpubl) B.Sc. (Hons) Thesis, Jab. Geol., Univ. Malaya*, 88 p.

Table 1: Physical properties of the different hornfelses

Variety	Bulk Unit Weight (kN/m^3)	Dry Unit Weight (kN/m^3)	Bulk Density (kg/m^3)	Dry Unit Weight (kg/m^3)	Apparent Porosity (%)
Light greenish grey, very fine grained, quartz-bitote hornfels	26.77	26.75	2,729	2,727	0.20
Dark greenish grey, fine grained, quartz-bitote hornfels	26.83	26.80	2,736	2,732	0.34
Light brown to cream, medium grained, calc-silicate hornfels	26.03	26.00	2,654	2,651	0.29

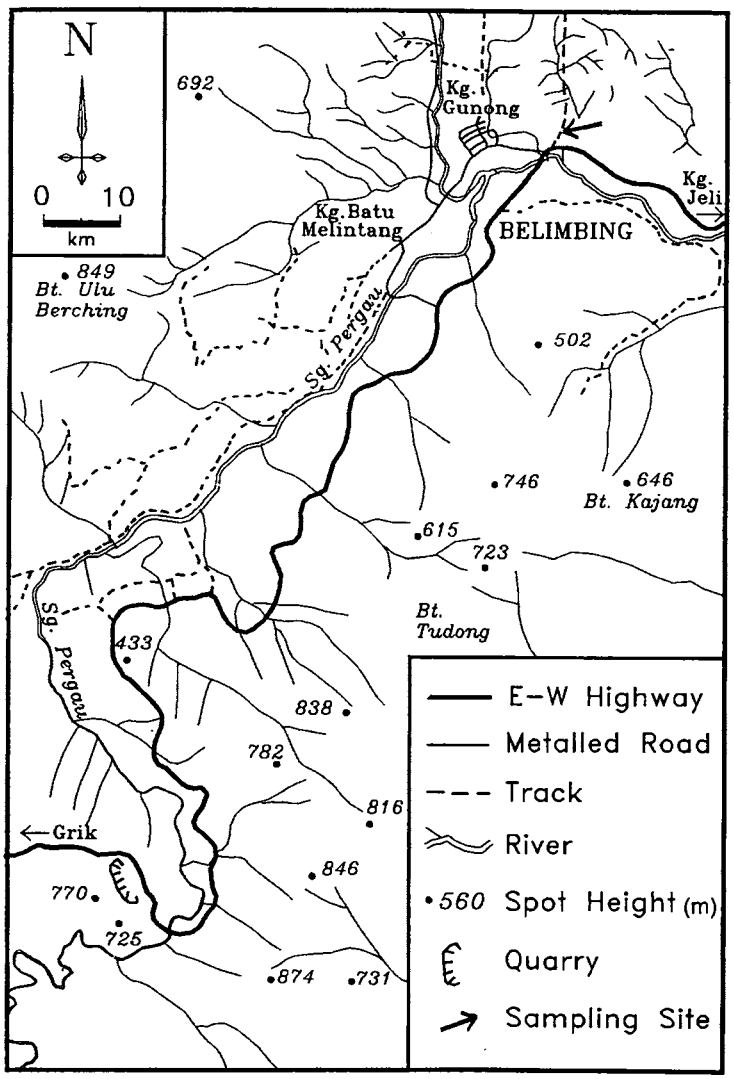


FIG. 1: LOCATION OF SAMPLING SITE

Plate 1: Photomicrograph of fine grained, quartz-biotite hornfels

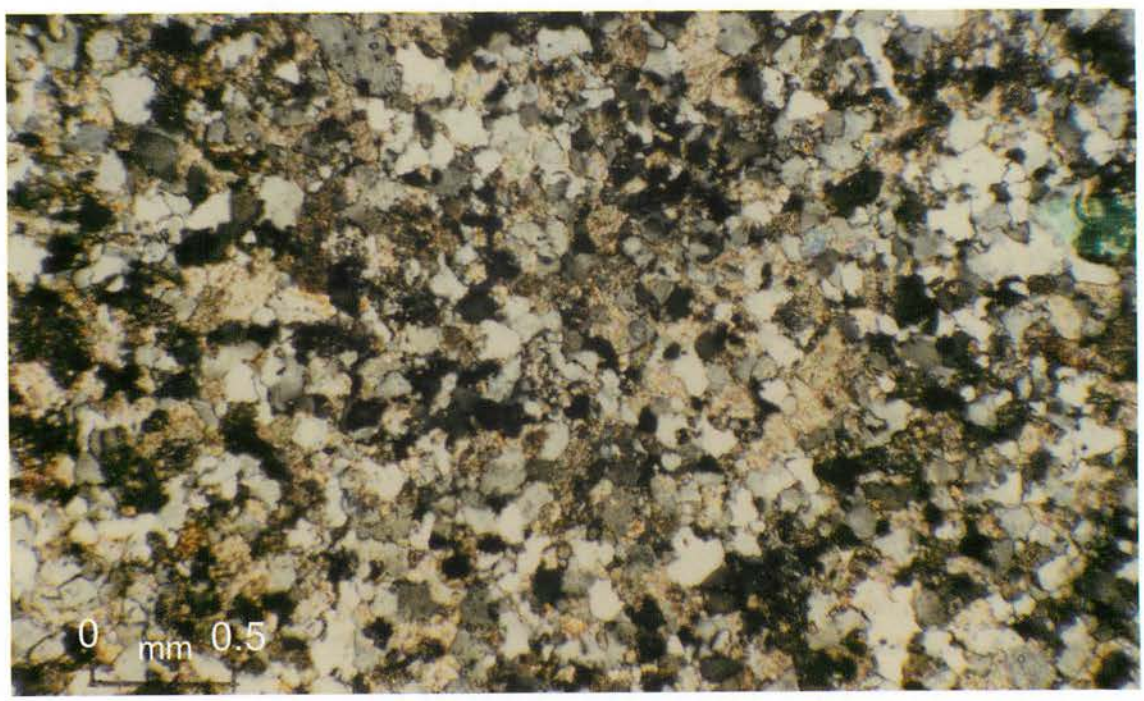


Plate 2: Photomicrograph of medium grained, calc-silicate hornfels

Table 2: Results of Point Load Tests on blocks of light greenish grey, very fine grained quartz-biotite hornfels

Sample Number	Height (mm)	Width (mm)	Length (mm)	Equiva-lent Core Diameter^2 (sq. mm)	Load At Failure (kN)	Description of Test
BP I - 1	71.88	40.21	38.05	1,948	31.5	Block split into 2 approx. equal halves along irregular surface
BP I - 2	70.76	39.70	37.13	2,007	33.0	Block split into 2 approx. equal halves along irregular surface
BP I - 3	70.31	41.07	31.70	1,658	30.0	Block split diagonally into 2 parts along irregular surface
BP I - 4	70.31	43.69	28.85	1,605	26.5	Block split diagonally into 2 parts along irregular surface
No. 29	50.83	28.32	27.99	1,009	17.0	Block split into 2 approx. equal halves along irregular surface
No. 33	51.66	30.99	24.82	979	16.5	Block split into 2 approx. equal halves along irregular surface
No. 34	48.03	26.47	23.70	1,449	24.5	Block split diagonally into 2 parts along irregular surface
No. 37	51.79	26.62	25.35	859	17.0	Block split into 3 parts along irregular surfaces
No. 39	50.98	26.52	22.00	1,721	26.0	Block split into 3 parts along irregular surfaces
No. 40	41.81	25.88	25.12	1,337	23.0	Block split into 3 parts along irregular surfaces
No. 44	46.99	26.59	23.37	791	14.5	Block split into 2 approx. equal halves along irregular surface
No. 45	51.89	25.17	21.31	1,408	24.0	Block split into 2 approx. equal halves along irregular surface

Table 3: Results of Point Load Tests on blocks of dark greenish grey, fine grained quartz-biotite hornfels

Sample Number	Height (mm)	Width (mm)	Length (mm)	Equivalent Core Diameter^2 (sq. mm)	Load At Failure (kN)	Description of Test
BP I - 5	33.96	33.32	29.82	1,265	12.0	Block split diagonally into 2 parts along irregular surface
BP I - 6	54.23	26.82	24.84	848	10.0	Block split into 2 approx. equal halves along irregular surface
BP I - 7	49.02	28.91	25.60	942	9.5	Block split into 2 approx. equal halves along irregular surface
BP I - 9	47.78	29.97	23.01	1,400	18.0	Block split into 3 approx. equal parts along irregular surfaces
No. 23	47.29	25.73	23.27	1,401	18.0	Block split into 3 approx. equal parts along irregular surfaces
No. 25	47.78	26.52	24.43	1,487	18.0	Block split into 2 approx. equal halves along irregular surface
No. 27	46.00	25.25	24.10	1,412	15.0	Block split diagonally into 2 parts along irregular surface
No. 28	38.71	26.49	23.70	1,306	18.0	Block split into 3 parts along irregular surfaces
No. 30	53.98	24.33	23.16	1,592	17.0	Block split diagonally into 2 parts along irregular surface
No. 41	45.75	29.54	23.16	1,349	17.5	Block split diagonally into 2 parts along irregular surface
No. 42	47.63	24.49	23.14	1,403	16.2	Block split into 3 parts along irregular surfaces
No. 46	51.94	24.36	23.11	1,529	19.5	Block split into 2 approx. equal halves along irregular surface
No. 50	51.51	26.67	24.43	1,603	18.0	Block split into 4 parts along irregular surfaces
No. 51	51.61	26.70	24.79	1,629	18.5	Block split diagonally into 2 parts along irregular surface
No. 52	48.36	28.14	27.00	1,663	18.0	Block split into 3 parts along irregular surfaces
No. 53	44.42	27.03	26.19	1,481	14.0	Block split into 2 approx. equal halves along irregular surface

Table 4: Results of Point Load Tests on blocks of light brown to cream coloured, medium grained calc-silicate hornfels

Sample Number	Height (mm)	Width (mm)	Length (mm)	Equiva-lent Core Diameter^2 (sq. mm)	Load At Failure (kN)	Description of Test
BP II - 1	56.85	31.09	27.05	1,071	13.0	Block split into 4 parts along irregular surfaces
BP II - 3	51.33	37.41	33.48	2,188	19.0	Block split into 4 parts along irregular surfaces
BP II - 5	52.58	31.98	28.17	1,886	17.5	Block split into 4 parts along irregular surfaces
BP II - 6	53.95	33.53	25.88	1,778	19.0	Block split into 4 parts along irregular surfaces
BP II - 7	50.65	35.46	29.97	1,933	20.0	Block split into 5 parts along irregular surfaces
BP II - 8	61.39	38.99	24.00	3,048	28.5	Block split into 2 approx. equal halves along irregular surface
BP II - 9	50.50	34.98	30.99	1,993	18.5	Block split into 4 parts along irregular surfaces
BP II - 10	60.27	38.56	23.80	2,959	24.0	Block split into 3 parts along irregular surfaces

PERTEMUAN PERSATUAN (Meeting of the Society)

Ceramah Teknik (Technical Talk)

Malam Jurutera 2007

31st July 2007,
Geology Department
University of Malaya
(in collaboration with the Dept of Geology, University of Malaya)

Continuing the annual series of this event, Malam Jurutera 2007 was held on Tues 31st July, at the Dept. of Geology, Univ. Malaya, KL. It featured 2 speakers, namely: Ir. Liew S.S. (Gue & Partners) and Ir. Chua C.G. (Keller). A 3rd speaker had some last minute, urgent business meeting to attend to in Terengganu, and unfortunately could not make it to this event.

Ir. Liew spoke on the performance of soil nailing as an effective stabilization measure for soil slopes. He presented the theory, construction procedure of soil nailing work, and illustrated with actual local case studies, both success and failures.

Ir. Chua gave a rather theoretical work on the correlation of undrained shear strength with other soil parameters such as plasticity, etc. Coming from a very practical, contracting company, this theoretical presentation came as quite a bit of a surprise.

As usual, some discussions followed the presentations.

Tan Boon Kong
Chairman, Working Group
Engineering Geology & Hydrogeology.

Malam Jurutera 2007

The Working Group Chairman, BK Tan introducing the speakers

Part of the audience at the talk show

Ir Liew S.S of Gue & Partners presenting his talk

Ir Chua C.G. of Keller presenting his talk

Ir Liew making a point during his presentation

B.K.Tan presenting mementos to both the speakers

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS STUDENT CHAPTER UNIVERSITY OF MALAYA

Geotechnical Frontline
25th August 2007
Geology Department, University of Malaya

Petroleum in Egypt
Dr. Mohamed Ragab Shalaby (UM)

Petrel: Seismic to Simulation Workflow
Nurfarhan Rahim @ Othman (Schlumberger)

Integrating Subsurface Regional Geological Data
Dr. Mark Koh (Core Laboratories)

Acknowledging the need of cutting edge technology to support a geoscientist's work, the American Association of Petroleum Geologists (AAPG) Student Chapter University of Malaya had organized a talk entitled "**Geotechnical Frontline**" on Saturday, 25th August 2007 at the Geology Department, University of Malaya.

The event started with a welcoming speech by Mr. Ong Hock Kim, President of the AAPG Student Chapter University of Malaya. Mr. Ong welcomed the participants, thanked the organizing committee and gave a brief overview on the activities conducted by the Student Chapter.

Professor Dr Wan Hasiah Abdullah, Head of Department of Geology then gave a short speech encouraging the students to actively participate in this student chapter as it will enhance their organizational skills and also add their value to future employers. She also urged the students to join the department's alumni, so there is a continuous relationship between the would-be geologists and the department. She then officiated the event with three rousing cheers of 'Merdeka!'

Dr Shalaby gave a talk entitled "Petroleum in Egypt" which covered quite a broad spectrum of topics namely reservoir characterization, petrophysics and log interpretation, petroleum system analysis and source rock characterization. He also touched on reservoir pressure, fluid properties and distribution. His engaging talk raised the students' interest in signing up for the Petroleum Geology course which he will be teaching at post-graduate level in this university.

Ms Nurfarhan Rahim@ Othman, an Application Support Geoscientist from Schlumberger Information Solutions gave the participants an idea on how the Petrel software works. The Petrel Core module includes tools for 2D and 3D visualization, mapping and plotting, 3D grid building, workflow editing, well log calculations, and stereo imaging. Petrel software keeps the geological and simulation in step with one another and provides for smooth and efficient fluid flow using the simulators found in ECLIPSE® reservoir simulation software. The event stopped for lunch break at 11.45am. Food and beverages were sponsored by AAPG funding to this student chapter.

The event continued at 12.45 with a talk by Dr Mark Koh. The participants were indeed awed and inspired by Dr Koh as he was a graduate from the department and now the Regional Business Development Manager (S.E.A) for the Integrated Reservoir Studies Division. Before getting to the technical part of the speech, Dr Koh talked about his days at the department fondly. He then made a quick introduction on Core Laboratories (Core Lab). Integrated Reservoir Solutions was created to conduct specialized Reservoir Optimization projects to help the company's customers meet the challenges of oil and gas exploration programs. Dr Koh emphasized on RAPID™ (Reservoirs Applied Petrophysical Integrated Data), an Oracle™ database application for sharing exploration and production data among asset team members. Over thirty major, independent and national oil and gas companies are licensed to use RAPID™. Dr Koh also briefly discussed Rock-Based Petrophysics and Seal Rock Analysis.

A lot of questions were answered after the presentations, mostly how to the get the software and programs and how to optimize its application. The event came to an end at 2.00pm.

The program was another success for the AAPG Student Chapter University of Malaya. We would like to express our gratitude to all members, non-members, participants, staff and lecturers, especially Professor Denis Tan Ngoh Kiat and Professor Dr Wan Hasiah Abdullah for their assistance. We would also like to thank Schlumberger and Core Laboratories who had given much help and cooperation towards this event. We hope that the participants gained insightful knowledge that broadened their horizons.

ZAA'ELEEZIA HANIFF JULIAN
Secretary
Geotechnical Frontline
American Association of Petroleum Geologists
Student Chapter, University of Malaya

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS
STUDENT CHAPTER
UNIVERSITY OF MALAYA

President of AAPG Student Chapter, UM Ong Hock Kim welcoming the participants

Prof Dr Wan Hasiah, Head of Geology Dept, University Malaya giving her speech

AAPG Student Chapter, UM at a group photo shoot

Dr Mark Koh of Core Laboratories receiving a momento from President AAPG Student Chapter UM Ong Hock Kim

Dr Mohamed Ragab Shalaby of UM receiving a memento from President AAPG Student Chapter UM Ong Hock Kim

Nurfarhan Rahim of Schlumberger receiving a memento from President AAPG Student Chapter UM Ong Hock Kim

Ceramah Teknik (Technical Talk)

Mineral Deposit Types and Metallogenic Relations of South China and Adjacent Areas of Mainland SE Asia: Implications for Mineral Exploration

28 August 2007
Geology Lecture Hall, University of Malaya
(in collaboration with Department of Geology, University of Malaya)

Dr. Khin Zaw.
Senior Research Fellow in Economic Geology, Centre of excellence in Ore Deposits.
University of Tasmania, Hobart, Tasmania, Australia.
E-mail: Khin.Zaw@utas.edu.au.

A mixed audience of academics, miners and students was present in the Geology Lecture Hall to listen to the technical talk by Dr. Khin Zaw at 5.30 pm on Tuesday 28 August 07. Dr. Khin Zaw, who was originally from Myanmar and who is now actively working on mineral deposits in Australia and abroad, especially in China, gave a comprehensive survey of those deposits in relation to their geological setting and tectonics of the region. It was an interesting session with active participation from those present in the discussion following the talk. The abstract of his talk is given below.

Abstract

The South China terrane is rich in mineral resources and has a diversity of deposit types. The region has undergone multiple tectonic and magmatic events and related metallogenic processes throughout the earth's history. These tectonic and metallogenic processes were responsible for the formation of the diverse styles of base and precious metal deposits (VHMS, SEDEX, MVT, porphyry, epithermal and skarn deposits) in South China, making it one of the resource-rich regions in the world. The adjacent mainland SE Asia Region is characterised by an assembly of major crustal terranes of Gondwana affinities involving Shan-Thai, Indochina and west Myanmar terranes. These crustal terranes host major mineralised Fold Belts (e.g., Palaeozoic to Cenozoic Loei Fold Belt in Thailand and Laos, Palaeozoic Troungson Fold Belt in Laos and Vietnam and Cenozoic Monywa-Wuntho belt in Myanmar). The SE Asia Region also has a variety of deposit types and styles from VHMS deposits (e.g., Bawdwin, Myanmar), MVT deposits (e.g., Theingon Mine, Myanmar), orogenic gold deposits (world-class pre-War Raub Australian gold Mine, Malaysia) to sedimentary-rock hosted gold deposit (Sepon, Lao PDR), porphyry related skarn copper-gold deposit (Phu Kham, Lao and Puthep, Thailand), low-sulphidation epithermal gold deposit (Chatree, Thailand), and high-sulphidation copper deposit (Monywa, Myanmar). Further research is required not only to understand the genesis of the individual ore deposits or districts, but also to constrain the age of magmatic-volcanic events and mineralisation to establish the time-space relations for mineralisation in the entire region and to apply these results for better targeting the potentials and prospective grounds for mineral exploration.

Report by Prof Dr Lee Chai Peng

Mineral Deposit Types and Metallogenic Relations of South China and Adjacent Areas of Mainland SE Asia: Implications for Mineral Exploration

Dr Khin Zaw delivering his talk

GSM Immed Past President Prof Dr Lee Chai Peng introducing the speaker

Tea break before the talk

Part of the audience at the talk by Dr Khin Zaw

Getting to know each other at the end of the talk

Dr Khin Zaw receiving a memento from GSM Immediate Past President Prof Dr Lee Chai Peng

BERITA-BERITA PERSATUAN (News of the Society)

COUNCIL MEMBERS WANTED

Our Council is looking for suitable candidates to head the following Groups as Chairman:

1. **Working Group on Structural Geology & Tectonic**
2. **Working Group on Petroleum Geology**
3. **Working Group on Sedimentology, Stratigraphy & Paleontology**

Interested candidate please write to GSM or call the Editor, Mr Lau YinLeong at 012-2093098.

Keahlian (Membership)

1. Leong Lai Cheong
2. Michael Lim Beng Hock

Pertukaran Alamat (Change of Address)

1. Abd Rasid Jaapar, 34, Jalan 6A/1, Seksyen 16, 43650 Bandar Baru Bangi

BERITA-BERITA LAIN (Other News)

Pertambahan Baharu Perpustakaan (New Library Additions)

1. Earth Science Frontiers, vol. 14, nos. 1 & 2, 2007
2. Journal of Shijiazhuang University of Economics, vol. 29, no. 6, 2006
3. Acta Geoscientica Sinica, vol. 27: no. 6, 2006 & vol. 28: nos. 1 & 2, 2007
4. Natural History Research, Special issue no. 8, 2005 & no. 9, 2006
5. Journal of the Natural History Museum & Institute, Chiba, vol. 9, no. 2, 2007
6. Natural History Research, vol. 9, no. 2, 2007
7. Journal of the Natural History Museum & Institute, Chiba, Special issue no. 8, 2007
8. The University of Kansas, Paleontological contributions, no. 15, 2007
9. Bulletin of the National Science Museum, vol. 32, 2006
10. Bulletin of the Geological Survey of Japan, vol. 57, nos. 7/8 & 9/10, 2006
11. Episodes, vol. 30, no. 2, 2007
12. Geological Survey of New South Wales, Quarterly Notes, no. 124, 2007

Proceedings for Sale

1. Forum on groundwater, 1994 (3 copies)
2. Forum on environmental geology & geotechnics, 1995 (4 copies)
3. Dynamic stratigraphy & tectonics of Peninsular Malaysia, 3rd seminar – The Mesozoic of Peninsular Malaysia (2 copies)
4. GSM-IEM forum: the roles of engineering geology and geotechnical engineering in construction works: proceedings (10 copies)

BERITA-BERITA LAIN (Other News)

Miri-Brunei Fieldwork

AAPG (American Association of Petroleum Geologists) Student Chapter University of Malaya

AAPG (American Association of Petroleum Geologists) Student Chapter University of Malaya organized a fieldtrip to Sarawak and Brunei from 4th to 6th of May 2007, which was fully sponsored by Shell Malaysia Berhad. A total of 30 students joined this fieldtrip including two professors from the Department of Geology, namely Professor Dr. Wan Hasiah Abdullah (the Head of Department) and Professor Denis Tan Ngoh Kiat (advisor of AAPG Student Chapter University of Malaya). Mr. Herman Darman, the President of AAPG of Asia Pacific Region also joined the fieldtrip, together with Mr. Govan Gangatharan and Mr. Navpreet Singh of Shell Sarawak Berhad.

The primary aim of this fieldtrip was to provide students a chance to see new geological formations that were different from those usually seen Peninsular Malaysia's formations. During this fieldtrip, students witnessed several distinct rock outcrops and some oil and gas industry operations, such as Airport Road outcrop and Hospital Road outcrop in Miri; the canyon formation at Berakas Forestry Recreational Park in Brunei; the onshore and offshore drilling rig at Seria; and visited the Billionth Barrel Monument, also in Seria. Students were taught on how to produce stratigraphic logs based on the outcrops at Hospital Road in Miri. They were also educated on the sedimentary process occurred in the locality as well as this influence the potential of these rocks to be source rocks and reservoirs for petroleum. Although the fieldtrip was rather short, but it was highly successful and largely benefit the students.

Report by Zaa'eleezia Haniff Julian

Miri-Brunei Fieldwork

AAPG (American Association of Petroleum Geologists) Student Chapter University of Malaya

A group photo shoot

Examining an outcrop

Examining an outcrop

Students gathered to listen to Mr Govan of Shell Malaysia explaining an outcrop

A group photo with Mr Herman Darman and Mr Navpreet Singh

Prof Dr Wan Hasiah, head of Geologi Dept, UM with Mr Herman Darman, President of AAPG of Asia Pacific Region

BERITA-BERITA LAIN (Other News)

Up Coming Events

October 16-19, 2007: Sixth Asian Regional Conference on Geohazards in Engineering Geology, Seoul, Korea. Contact: email: iaeg@plaza.snu.ac.kr; website: www.iaeg2007.org/

October 18-19, 2007: The 2nd International Workshop on Opto-Electronic Sensor-based Monitoring in Geo-Engineering, Nanjing, China. Contact: Dr. Zhang Dan, Center for Engineering Monitoring with Opto-Electronic Sensing (CEMOES), Dept. of Earth Sciences, Nanjing University, Nanjing 210093, China. Tel: +86-25-83596220/83597888/83596194; Fax: +86-25-83596220; email: osmg2007@nju.edu.cn; website: http://www.acei.cn

October 29-November 2, 2007: Coring and core analysis, Kuala Lumpur. Contact: PetroSkills, P.O. Box 35448, Tulsa, Ok. 74153-0448, USA. Tel: 800 821 5933/918 828 2500; Fax: 918 828 2580; email: registrations@petroskills.com

October 31-November 3, 2007: Oil & Gas Technology, Jakarta, Indonesia. Contact: website: www.pamerindo.com/2007/ogti/ogi07exh.htm

November 5-9, 2007: Introduction to offshore oil and gas systems, Kuala Lumpur. Contact: PetroSkills, P.O. Box 35448, Tulsa, Ok. 74153-0448, USA. Tel: 800 821 5933/918 828 2500; Fax: 918 828 2580; email: registrations@petroskills.com

November 6-7, 2007: Cities and Conservation – International Symposium, Putrajaya, Kuala Lumpur, Malaysia. Contact: Joy Pereira, email: joy@pkrisc.cc.ukm.my

November 8-12, 2007: International Symposium on Gondwana to Asia and 2007 IAGR Annual Convention, Kyushu University, Kyushu, Japan. Contact: Dr. Nobuhiko Nakano, Symposium Secretariat, International Symposium on Gondwana to Asia, Division of Evolution of Earth Environment, Kyushu University, Fukuoka 810-8560, Japan. Fax: +81-92-726-4843; email: good-asia@scs.kyushu-u-ac.jp

November 12-16, 2007: Seismic interpretation, Kuala Lumpur. Contact: PetroSkills, P.O. Box 35448, Tulsa, Ok. 74153-0448, USA. Tel: 800 821 5933/918 828 2500; Fax: 918 828 2580; email: registrations@petroskills.com

November 18-21, 2007: Challenge our Myths: Energy Conference & Exhibition. Presented by AAPG & AAPG European Region. Venue: Megaron – Athens International Conference Centre. Contact: Marvetta McNeel, Tel: 1 888 945 2274 ext. 692 (toll free USA & Canada only); 1 918 560 2692 (direct); email: marvetta@aapg.org; website: www.aapg.org/athens

November 28-30, 2007: 2nd International Conference on Geotechnical Engineering – "New Developments in Geotechnics", Central South University, Changsha, Hunan, China – call for papers. Contact: Tel: 065 67332922; Fax: 065 62353530; email: cipremie@singnet.com.sg

GEOLOGICAL SOCIETY OF MALAYSIA PUBLICATIONS

Bulletin 2 (Dec 1968). 152 p. Bibliography and Index of the Geology of West Malaysia and Singapore by D.J. Gobbett. Price: RM5.00.

Bulletin 3 (Mar 1970). 146 p. Papers in Geomorphology and Stratigraphy (with Bibliography supplement). Edited by P.H. Stauffer. Price: RM5.00.

Bulletin 4 (Jun 1971). 100 p. Papers in Petrology, Structure and Economic Geology. Edited by P.H. Stauffer. Price: RM5.00.

Bulletin 5 (Feb 1973). 70 p. The Search for Tungsten Deposits by K.F.G. Hosking. Price: RM5.00.

Bulletin 6 (Jul 1973). 334 p. Proceedings, Regional Conference on the Geology of Southeast Asia. A Collection of papers, Kuala Lumpur, March, 1972. Edited by B.K. Tan. Price: RM5.00.

Bulletin 7 (Jun 1974). 138 p. A collection of papers on geology. Edited by B.K. Tan. Price RM5.00.

Bulletin 13 (Dec 1980). 111 p. A collection of papers on geology of Malaysia and Thailand. Edited by G.H. Teh. Price RM5.00.

Bulletin 17 (Dec 1984). 371 p. A collection of papers on geology. Edited by G.H. Teh. Price: RM10.00.

Bulletin 18 (Nov 1985) 209 p. Special issue on Petroleum Geology. Edited by G.H. Teh. & S. Paramanathan. Price: RM15.00.

Bulletins 19 (Apr 1986) & **20** (Aug 1986). GEOSEA V Proceedings Vols. 1 & 11. Fifth Regional Congress on Geology, Mineral and Energy Resources of SE Asia. Kuala Lumpur, 9-13 April 1984. Edited by G.H. Teh & S. Paramanathan. Price for both bulletins 19 & 20: Members: RM30.00: Non-members: RM60.00

Bulletin 21 (Dec 1987). 271 p. Special issue on Petroleum Geology Vol. 11. Edited by G.H. Teh. Price: RM20.00.

Bulletin 22 (Dec 1988). 272 p. Special issue on Petroleum Geology Vol. 111. Edited by G.H. Teh. Price: RM20.00.

Bulletin 23 (Aug 1989). 215 p. A collection of papers on the geology of Malaysia, Thailand and Burma. Edited by G.H. Teh. Price: RM10.00.

Bulletin 24 (Oct 1989). 199 p. A collection of papers presented at GSM Annual Geological Conference 1987 & 1988. Edited by G.H. Teh. Price: RM10.00 .

Bulletin 25 (Dec 1989). 161 p. Special issue on Petroleum Geology Vol. IV. Edited by G.H. Teh. Price: RM20.00.

Bulletin 26 (Apr 1990). 223 p. A collection of papers presented at GSM Annual Geological Conference 1989 and others. Edited by G.H. Teh. Price: RM10.00

Bulletin 27 (Nov 1990). 292 p. Special issue on Petroleum Geology Vol. V. Edited by G.H. Teh. Price: RM20.00.

Bulletin 28 (Nov 1991). 292 p. Special issue on Petroleum Geology Vol. VI. Edited by G.H. Teh. Price: RM20.00.

Bulletin 29 (Jul 1991). 255 p. A collection of papers presented at GSM Annual Geological Conference 1990 and others. Edited by G.H. Teh. Price: RM10.00

Bulletin 30 (Apr 1992). 90 p. Annotated bibliography of the geology of the South China Sea and adjacent parts of Borneo by N.S. Haile. Edited by G.H. Teh. Price: RM10.00.

Bulletin 31 (Jul 1992). 176 p. A collection of papers presented at GSM Annual Geological Conference 1991 and others. Edited by G.H. Teh. Price: RM10.00

Bulletin 32 (Nov 1992). 283 p. Special issue on Petroleum Geology Vol. VII. Edited by G.H. Teh. Price: RM30.00 .

Bulletin 33 (Nov 1993). 419 p. Proceedings Symposium on Tectonic Framework and Energy Resources of the Western Margin of the Pacific Basin. Edited by G.H. Teh. Price: RM40.00.

Bulletin 34 (Dec 1993). 181 p. Bibliography and Index – Publications of the Geological Society of Malaysia 1967-1993. Compiled by T.F. Ng. Edited by G.H. Teh. Price: RM20.00.

Bulletin 36 (Dec 1994). 186 p. Special issue on Petroleum Geology Vol. VIII. Edited by G.H. Teh. Price: RM50.00.

Bulletin 37 (Jul 1995). 506 p. Proceedings AAPG-GSM International Conference 1994. Southeast Asian Basins: Oil and Gas for the 21st Century. Edited by G.H. Teh. Price: RM60.00.

Bulletin 38 (Dec 1995). 190 p. A collection of papers presented at GSM Annual Geological Conference 1994 and others. Edited by G.H. Teh. Price: RM30.00

Bulletin 39 (Jul 1996). 258 p. Papers from Petroleum Geology Conference 1995. Annual Geological Conference and others. Edited by G.H. Teh. Price: RM50.00

Bulletin 40 (Jul 1997). 247 p. A collection of papers presented at GSM Annual Geological Conference 1996 and others. Edited by G.H. Teh. Price: RM30.00

Bulletin 42 (Dec 1998). 268 p. Papers from Petroleum Geology Conference 1997, Seminar on Tertiary Basins of Peninsular Malaysia and others. Edited by G.H. Teh. Price: RM50.00.

Bulletin 43 (Dec 1999). 698 p. Papers from GEOSEA '98 (Ninth Regional Congress on Geology, Mineral and Energy Resources of Southeast Asia). Edited by G.H. Teh. Price: RM70.00.

Bulletin 44 (July 2000). 178 p. A collection of papers from Annual Geological Conference 1999. Western Belt & Paleozoic of Peninsular Malaysia Seminar 1999 & others. Edited by G.H. Teh. Price: RM30.00.

Bulletin 45 (May 2002). 375 p. Annual Geological Conference 2002. Conference Issue. Edited by G.H.Teh, Ismail Yusoff, Azman Abdul Ghani & T.F. Ng. Price: RM50.00.

Bulletin 46 (May 2003) 489 p. Annual Geological Conference 2003. Conference Issue. Edited by G.H. Teh, Alex Unya Ambun, Askury Abdul Kadir & T.F. Ng. Price: RM60.00 .

Bulletin 47 (Dec 2003). 179 p. Papers from Petroleum Geology Conference 2002, Petroleum Geology Conference 1999 and others. Edited by G.H. Teh. Price: RM60.00.

Bulletin 48 (May 2004). 130 p. Annual Geological Conference 2004 Conference Issue. Edited by Lee Chai Peng, Mohd. Shafeea Leman, Joy J. Pereira & T.F. Ng. Price: RM30.00.

Bulletin 49 (April 2006). 167p. A Collection of Geological Papers. Edited by K.K. Liew, Nur Iskandar & T.F.Ng Price: RM30.00.

Bulletin 50 (May 2007). 160p. Bibiography and Index of the GSM Bulletin 1994-2004. Compiled by Robert Tate Price : Rm30.00

Bulletin 51 (2005). 199 p. Annual Geological Conference 2005 Conference Issue. Edited by Nur Iskandar Taib. Price: RM30.00.

Bulletin 52 (June 2006).135p A Collection of Geological Papers. Edited by Nur Iskandar Taib. Price : Rm30.00

Bulletin 53 (June 2007). 128p.A Collection of Geological Papers. Edited by T.F.Ng, Nur Iskandar Taib & Joy J. Pereira. Price : Rm30.00

Abstracts of papers (1972). Regional Conference on the Geology of Southeast Asia. Kuala Lumpur, 1972. 64 p. 8 figs. 3 tables, many extended abstracts. Edited by N.S. Haile. Price: RM2.00.

Proceedings of the Workshop on Stratigraphic Correlation of Thailand Malaysia Vol. 1. (1983). 383 p. Technical Papers. Price: Member: RM5.00; Non-Member: RM15.00.

Warta Geologi (Newsletter of the Geological Society of Malaysia). Price: RM5.00 per bimonthly issue from July 1966.

Geological Evolution of Southeast Asia (1996) (Reprinted Edition) by C. S. Hutchison. 368 p. Price: Member :RM50.00; Non-Member :RM100.00; Student :RM30.00.

Common Rocks of Malaysia (Colour Poster). Price: Member: RM8.00; Non-Member: RM10.00; Student: RM7.00 .

Malaysian Stratigraphic Guide (Dec 1997). 30 p. Price: Member: RM5.00; Non-member :RM10.00; Student Member: RM2.00 .

Proceedings Annual Geological Conference 2000. 435 p. Edited by G.H. Teh, Joy J. Pereira and T.F. Ng. Price: RM60.00 .

Proceedings Annual Geological Conference 2001. 320 p. Edited by G.H. Teh, Mohd. Shafeea Leman and T.F. Ng. Price: RM50.00 .

Geology of Borneo Island (2001) CD-Rom & Map (Hard copy 2 sheets) with explanatory notes. Compiled by Robert B. Tate. Price: RM60.00.

Stratigraphic Lexicon of Malaysia (2004). 162 p. Edited by Lee Chai Peng, Mohd. Shafeea Leman, Kamaludin Hassan, Bahari Md. Nasib & Roshidah Karim. Price: RM30.00 .

PACKAGE DEAL A: General Geology / Malaysian Geology
Bulletins 3, 4, 7, 17, 24, 26, 29, 31, 38 (9 books)
Member: RM50.00 — Student Member: RM30.00
Non-member: RM70.00 — Student Non-member: RM40.00

PACKAGE DEAL B : Bibliography
Bulletins 2, 30, 34 (3 books)
Member: RM20.00 — Student Member: RM10.00
Non-member: RM25.00 — Student Non-member: RM15.00

PACKAGE DEAL C : Southeast Asia
Bulletins 6, 13, 19 & 20, 23, 33, Strati. Correl (7 books)
Member: RM60.00 — Student Member: RM40.00
Non-member: Rm100.00 — Student Non-member: RM50.00

PACKAGE DEAL D : Petroleum Geology
Bulletins 18, 21, 22, 25, 27, 28, 32 (7 books)
Member: RM120.00 — Student Member: RM80.00
Non-member: RM150.00 — Student Non-member: RM100.00

PACKAGE DEAL E : Economic Geology
Bulletins 5 (1 book)
Member: RM3.00 — Student Member: RM1.00
Non-member: RM8.00 — StudentNon-member: RM2.00

PACKAGE DEAL 1 : Bulletins 2, 3, 4, 5, 6, 7, 13 (7 books)
Member: RM30.00 — Student Member: RM15.00
Non-member: RM40.00 — Student Non-member: RM25.00

PACKAGE DEAL 2 : Bulletins 17, 18, 21, 22 (4 books)
Member: RM25.00 — Student Member: RM10.00
Non-member: RM35.00 — Student Non-member: RM20.00

PACKAGE DEAL 3 : Bulletins 19, 20, Strati Correl (3 books)
Member: RM30.00 — Student Member: RM20.00
Non-member: RM60.00 — Student Non-member: RM30.00

PACKAGE DEAL 4 : Bulletins 23, 24, 25, 26, 27 (5 books)
Member: RM40.00 — Student Member: RM20.00
Non-member: RM60.00 — Student Non-member: RM30.00

PACKAGE DEAL 5 : Bulletins 28, 29, 30, 31, 32 (5 books)
Member: RM40.00 — Student Member: RM20.00
Non-member: RM60.00 — Student Non-member: RM30.00

PACKAGE DEAL 6 : Bulletins 33, 34, 36, 37 (4 books)
Member: RM60.00 — Student Member: RM30.00
Non-member: RM100.00 — Student Non-member: RM40.00

All prices quoted are not inclusive of postage. Please write in for details on postage. Allow 8-10 weeks for delivery. For orders, please write to the Society and you will be invoiced. Cheques, money orders and bank drafs must accompany all orders.

Orders should be addressed to:

The Hon. Assistant Secretary,
Geological Society of Malaysia,
c/o Dept. of Geology, University of Malaya,
50603 Kuala Lumpur, MALAYSIA
Tel: 603-79577036, Fax: 603-79563900, E-mail: geologi@po.jaring.my

PERSATUAN GEOLOGI MALAYSIA
(GEOLOGICAL SOCIETY OF MALAYSIA)

MAJLIS (COUNCIL) 2007/08

The Society was founded in 1967 with the aim of promoting the advancement of earth sciences particularly in Malaysia and the Asian region. The Society has a membership of about 600 earth scientists and is worldwide in distribution.

The Warta Geologi (Newsletter of the Geological Society of Malaysia) is published bimonthly by the Geological Society of Malaysia. The Warta Geologi is available free to members of the Geological Society of Malaysia

Geological Society of Malaysia,
Department of Geology,
University of Malaya,
50603 Kuala Lumpur, Malaysia
Tel : 603-7957 7036
Fax: 603-7956 3900
e-mail : geologi@po.jaring.my
Editor email : jadeitejade@gmail.com
URL : www.gsm.org.my

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

ISSN 0126-5539/PP2509/2/2008

Mr Tan Boon Kong

AAPG Student Chapter UM

Dr Khin Zaw

WARTA GEOLOGI

Newsletter of the

PERSATUAN GEOLOGI MALAYSIA
Geological Society of Malaysia

Kandungan (Contents)

Jilid /Volume 33, No 4. July - August 2007