

PERSATUAN GEOLOGI MALAYSIA

WARTA GEOLOGI

NEWSLETTER OF THE GEOLOGICAL SOCIETY OF MALAYSIA

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KANDUNGAN (Contents)

CATATAN GEOLOGI (Geological Notes)

Kadderi Md. Desa, Ibrahim Komoo & Che Aziz Ali:

The occurrence of various types of secondary iron in the Semantan Formation
(Kehadiran pelbagai jenis besi sekunder dalam Formasi Semantan)

1

PERTEMUAN PERSATUAN (Meetings of the Society)Sriyane de Silva: Diagenesis of the Old Red Sandstone – an example
from the Orcadian Basin, SE Shetland Islands

11

Hamzah Mohamad: Rare earth elements distribution in some *in situ* Malaysian granitic soils

12

BERITA-BERITA PERSATUAN (News of the Society)

Keahlian (Membership)

13

Wanted: Current address of 2 members

14

Pertukaran Alamat (Change of Address)

14

Pertambahan Baru Perpustakaan (New Library Additions)

15

BERITA-BERITA LAIN (Other News)

Katalog buku-buku bermutu DBP

16

Postponement of GEOSEA VII Thailand

18

Proceedings GEOSEA VI – list of papers

19

IGCP Malaysia – Newsletter I (January, 1990)

23

Persidangan Sains Bumi dan Masyarakat

27

Comparative Systems Tracts Analysis in Carbonate and Siliciclastic Depositional Systems

29

IGCP Project 274 – Coastal evolution in the Quaternary

30

International Conference of Rare Earth Minerals and Minerals for Electronic Uses

33

International Geology Conference – Basin modelling: Advances and applications

34

Regional Training Course on Groundwater Exploration and Assessment

35

1991 AAPG 75th Anniversary Annual Meeting

37

Kursus-kursus Latihan & Bengkel-bengkel (Courses & Workshops)

38

Kalendar (Calendar)

39



DIKELUARKAN DWIBULANAN
ISSUED BIMONTHLY

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(GEOLOGICAL SOCIETY OF MALAYSIA)

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CATATAN GEOLOGI (GEOLOGICAL NOTES)

THE OCCURRENCE OF VARIOUS TYPES OF SECONDARY IRON IN THE SEMANTAN FORMATION (KEHADIRAN PELBAGAI JENIS BESI SEKUNDER DALAM FORMASI SEMANTAN)

Kadderi Md. Desa, Ibrahim Komoo and Che Aziz Ali,
Jabatan Geologi, Universiti Kebangsaan Malaysia, Bangi.

Abstract

The nature of occurrence of secondary iron over a stratigraphic column of the Semantan Formation has been studied. The iron layer ranges from about several cm to about 0.4 meter thick, and developed conformably within, in between and across the beddings. The tuffaceous sediment, with relatively high iron content is believed to have been involved in the mobilization and leaching of iron. Later, the leached iron is impeded by the impervious sediments, thus forming a small reservoir for iron to accumulate and eventually, depending on the prevailing Eh and pH conditions, solidify or harden. Three types of secondary iron can be recognised, they are conformable iron, fracture-filling iron and structure enhancement iron. The development of the latter type enhanced and preserved some of the important primary and secondary structures, rendering them to be observable in highly weathered rock exposures.

Abstrak

Kehadiran lapisan besi sekunder yang terbentuk di dalam batuan Formasi Semantan telah dikaji. Lapisan besi sekunder ini yang berketebalan antara beberapa cm hingga mencapai 0.4 m terbentuk secara selaras, di antara atau menyilang perlapisan. Sifat batuan bertuf yang tinggi kandungan besi dipercayai menggalakkan mobilisasi dan nyahlarut besi dan kemudiannya tertahan oleh lapisan sedimen tidak telap air, menghasilkan pengumpulan besi sekunder ini. Tiga jenis besi sekunder dapat dikenali iaitu: besi selaras, besi pengisi retakan dan besi memperjelaskan struktur.

Introduction

The occurrence of iron nodules, concretions and iron sheets and secondary iron beds are quite common as a result of chemical weathering in tropical climate. The occurrences, however, are rather sporadic, pedological in nature, either being limited to low lying hill caps, as a diffused intermittent layer several cm below topographic surfaces, or as a rather thick horizon which characterises lateritic soils. The other type occurs as significant sedimentary iron ore. All these occurrences have been well documented by several authors, including Eyles (1970), Lepp (1975), Maynard (1983) and Ibrahim Komoo and Mogana (1988). The occurrence of various types of secondary iron is believed to be dictated

by a number of factors, namely high iron content in the source rock; favourable drainage, pH and Eh conditions which control redox processes, leaching and subsequent enrichment of iron in the protocore to take place (either by forming amorphous solids or minerals). In many cases, with the exception of sedimentary iron ore, they occur as thin layers and the bulk volume percentage is not significantly large.

In the field at some localities of the Semantan Formation, we noticed the occurrence of significant secondary iron that has developed over tuffaceous sediments. It occupies much larger bulk volume percentage. This occurrence merits a more thorough investigation, for it provides the insight to the role of tropical iron weathering in applied geological investigation. This paper characterizes the nature of these occurrences as well as to document preliminary descriptions of some of the features.

Brief geology

The Semantan Formation, which is of Triassic age, was first described by Jaafar Ahmad (1976) and later studied in detail by Kamal Roslan (1989). The Formation covers large portions of the Central part of Peninsular Malaysia and consists of tuffaceous sandstones, mudstones with minor silica, rich argillaceous materials and conglomerates. All these lithologies form at least three distinct facies associations. Facies A is made up of mudstone with minor alternations of thinly bedded fine-grained sandstone or siltstone. Facies B consists mainly of sandstone beds interbedding with thinly bedded mudstones whilst facies C consists mainly of sandstone with minor occurrence of conglomerate. Field observations on the various facies indicate some differences in the nature of the iron occurrence.

Field observation

The significant and widespread secondary iron occurrences in Semantan Formation are believed to have been formed as a result of chemical weathering of the tuffaceous beds. Field observations recognised at least three types of secondary irons: conformable iron, fracture-filling iron, and structure enhancement iron. The development of the various types of secondary iron seem to depend primarily on the availability of iron rich weathering fluid, nature and thickness of sedimentary beds, orientation and size of gaps or fracture openings and, to a lesser extent, the effect of water table at the time of formation.

Conformable iron

The conformable secondary iron, as the name suggests, lies conformably with the sedimentary beds, which consist of sandstone, mudstone, and tuffaceous sandstone. Various degree of thickness of the conformable iron can be observed depending on the original thickness of the tuffaceous sandstone. The development of this type of iron involves alteration of weatherable material within the 'lattice' of the tuffaceous bed that is it does not involve significant volume changes. The source of iron might have come mainly from the bed itself or flushed into the 'lattice' from the adjacent beds. Later, it is irreversibly hardened into solid conformable secondary iron beds. Closer observation of the nature of the beds indicate that they originated from tuffaceous sandstone, inherently rich in iron.

There are no clear cut evidences, however, to suggest the actual events of alteration. Nonetheless, observation of some of the sedimentary beds, supposed to be in the process of alteration, suggests that the alteration can be on single (from top to bottom) or on both sides of the beds. In the case of double-sided alteration, the weathering front progressively moves inward towards the center of the bed. This inference is suggested by the relatively fresh center, slightly yellowish in colour and still retaining the tuffaceous sand texture. On the other hand the top and bottom parts of the beds which have had altered first are rather hard and reddish in colour. Complete alteration will transform the tuffaceous bed into hardened conformable secondary iron.

Further observation along the stratigraphic column indicates that the development of conformable secondary iron within a particular bed is very much influenced by the nature of stratigraphic succession, particularly the nature of the underlying bed. In most observations the presence of the underlying impervious argillaceous layer normally suggests an impeded downward drainage, this scales down the rate of downward leaching to a much lower magnitude. The downward leaching is most likely to occur within the relatively more porous tuffaceous sandstone beds. Presumably, under suitable Eh and pH conditions, accumulation of iron occurs within the pervious beds itself, thus forming an *in situ* iron rich fluid reservoir and later hardened into conformable secondary iron beds of various characters. Detail descriptions of some of the observed conformable secondary irons are illustrated in Plate 1.

Fracture-filling iron

The fracture-filling iron fills various types of fracture openings which vary in width from several mm (hairline fracture-filling iron) to a few cm. This type of iron normally cuts across the primary sedimentary beds. It's formation depends on the initial development of rock structures which provide veinlet spaces or fracture cleavages which are subsequently filled in by iron rich weathering fluid. Though the dominant factors which control the iron ionic activity are not yet clear, some field evidences, however, suggest that at one stage much of the iron solidifies within the veinlet spaces and fracture cleavages. The solid iron just formed adheres to both sides of the fracture walls. The solidifying process continues to form layer after layer of iron on both sides of the wall until the fracture spaces become narrower, and eventually completely filled with solid iron.

In some other cases observed, the mechanism of iron accumulation takes place within relatively tight fractures (hairline fractures) resulting in the development of the hairline secondary iron, thus further blocking or reducing liquid flow within it. Further accumulation of liquid iron will force it to flow within the porous beds parallel or alongside the hairline secondary iron. This will result in the thickening of the fracture filling iron outwards from the tight fracture into the adjacent porous beds. Some examples of this type is illustrated in Plate 2.

Structure enhancement iron

The nature of structure enhancement iron takes the form similar to conformable iron, fracture-filling iron or a more complex pattern of combined features, which enhanced the existing primary and secondary structures. The mechanism of its formation is rather similar to both of the conformable and of fracture-filling type.

Water movement in many sedimentary rocks, which consist of pervious and impervious beds, is dictated by the availability of porous beds and fracture openings. The flow direction changes course when it reaches the impervious bed along the bedding plane interfaces. During the process, the water which is being gradually enriched with leached ions become saturated. Under suitable conditions, iron starts to solidify conformably within the bedding plane interfaces, probably in a manner similar to that of the fracture-filling iron type.

This type of iron is normally thin and irregular in shape depending on the nature of the bedding interface and in some other cases are controlled by the fracture patterns. This type of secondary iron formation is very important, geologically, because it enhances some of the important imprints of primary sedimentary structures such as lode marks, groove marks, lode casts, burrows or sole marks, as well as the secondary structures like joints and faults. The nature of some occurrences are illustrated in Plate 3.

Geological controlling factors

Three geological factors are believed to be the fundamental controlling factors in the formation of various types of secondary irons. They are iron rich source, flow hydraulic parameters and stratigraphic setting of pervious and impervious layerings.

Garrels and Mackenzie (1971) recognised that a few percent of total iron in the rock is all that is necessary to impart strong reddish colouration to a soil (weathered product) that contrasts sharply with the fresh

Plate 1. Photographs of conformable iron. (A) A typical conformable iron beds in Semantan Formation, mostly developed within or at the base of the tuffaceous sandstone overlying impervious beds. (B) The development of conformable iron in tuffaceous sandstone shows that iron concentration is more pronounced toward the bottom of the bed. (C) A close up of conformable iron bed showing fresh center, slightly yellowish in colour and still retain the tuffaceous sand texture. On the other hand the top and bottom parts of the beds which have had altered first are rather hard and reddish in colour. (D) Iron formation in the form of conformable iron film, which develop along the planes separating sedimentary beds.

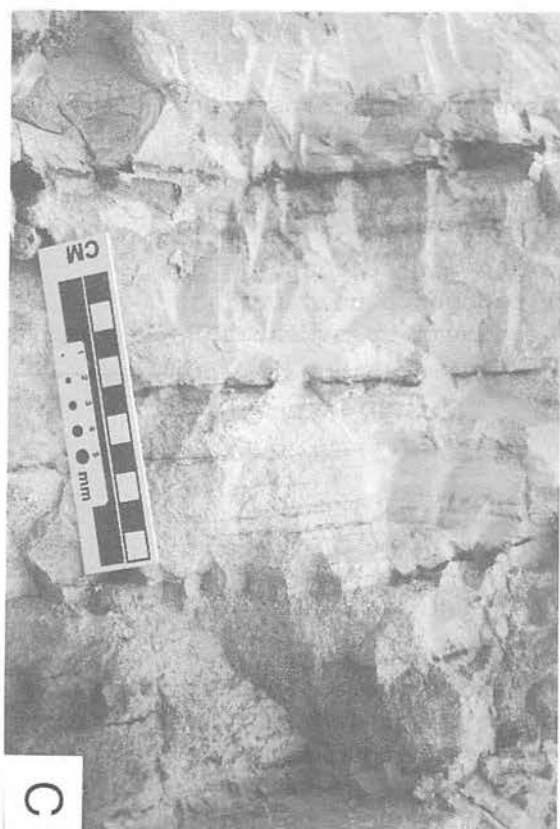
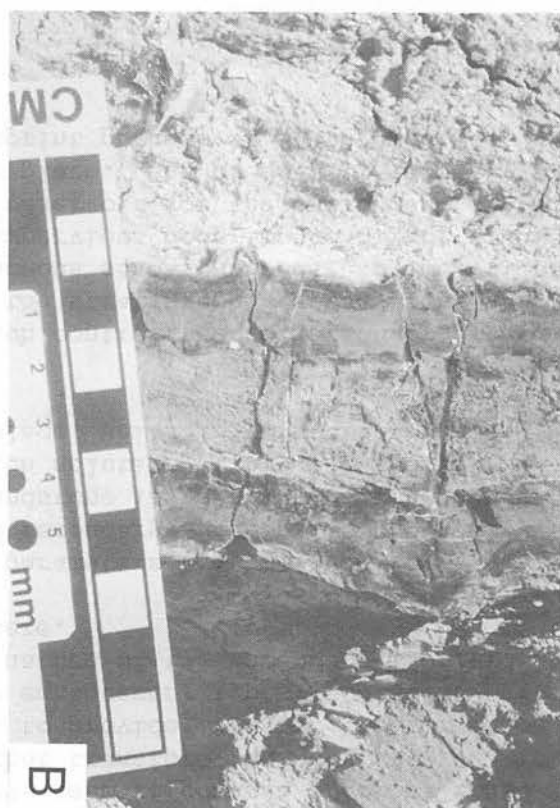
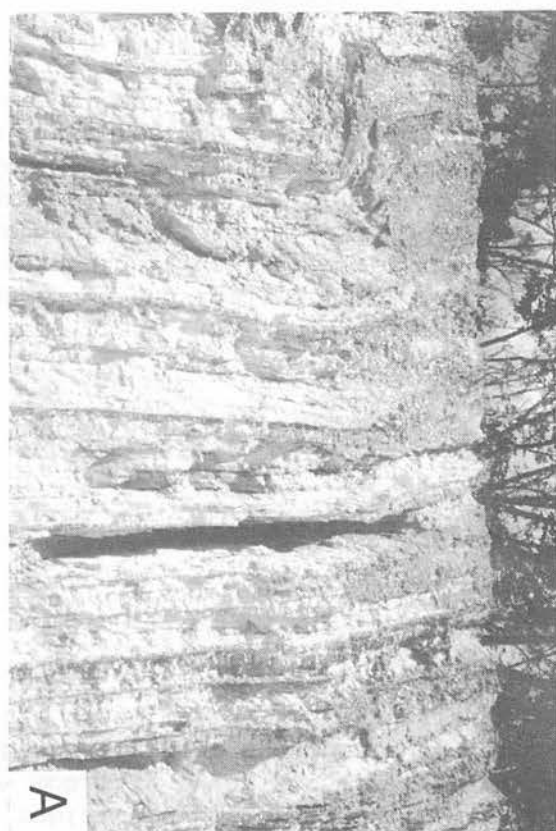


Plate 1

rocks. Nevertheless, as illustrated in the aforementioned discussions, the tuffaceous nature of sandstone beds seem to contain a lot of iron. This is probably the source of iron that transform the bed, *in situ*, into hardened conformable iron, as well as to provide iron for the formation of the fracture-filling and structure enhancement types. Detailed works on the geochemical and mineralogical nature of the secondary iron are in progress and will be published elsewhere.

The significant flow hydraulic parameters are believed to be permeability and porosity, both primary and secondary. The primary porosity and permeability of the tuffaceous sandstone is relatively higher thus promoting greater mobility of iron rich solution within the bed for alteration of some minerals to take place, which in turn creates secondary porosity.

The other geological factor which control the formation of iron, particularly the conformable type is the stratigraphic successions or alternate layerings of pervious tuffaceous sandstone beds and impervious argillaceous beds. The presence of impervious beds impede direct downward leaching, thus providing a temporary reservoir for the enrichment of iron and subsequent solidification to take place. The presence of this impervious beds also 'cushion' the imprint process of enhancement of primary and secondary structures.

Conclusion

The chemical weathering involves decomposition of rock, thus releasing elements of various mobility. Most of these elements are leached into the surrounding liquid. Some of the high mobility types are flushed off from the system, whereas the relatively low mobility types such as iron, with restricted mobility under prevailing Eh-pH regimes, accumulate as secondary forms. The three most notable forms are conformable, fracture filling and structure enhancement irons.

Plate 2. Photographs of fracture-filling iron. (A) An example fracture-filling iron developed along fault and fault drag openings. It illustrates how a fault in a highly weathered rock is still observable. (B) The development of fracture-filling iron along fracture cleavages perpendicular to the bedding plane. (C) Regularly spaced fracture-filling iron developed along rectangular fractures. The fractures are well preserved at the base of the tuffaceous sandstone.

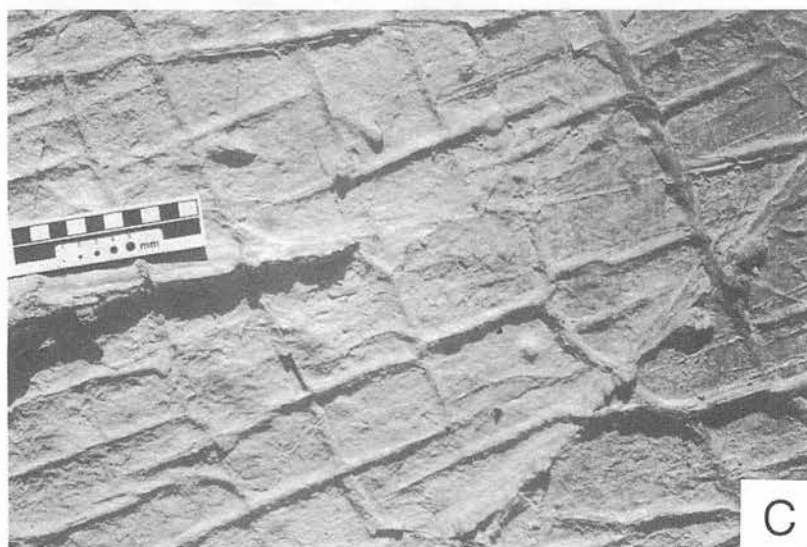


Plate 2

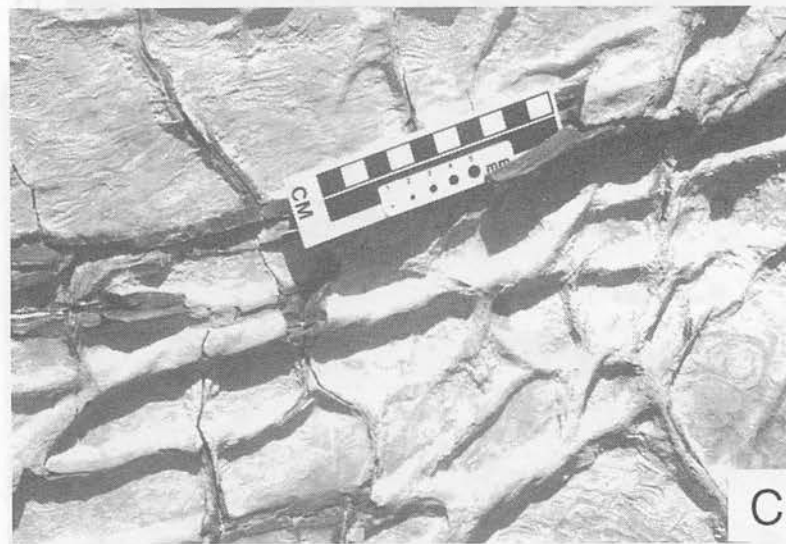


Plate 3

Plate 2

References

- Eyles, R.J., 1970. Physiographic implications of laterites in West Malaysia. *Bull. Geol. Soc. Malaysia*, 3, 1-7.
- Garrels, R.M. and Mackenzie, F.T., 1971. Evolution of sedimentary Rocks. In Lepp, H. (Ed), *Geochemistry of iron, Benchmark papers on geology* No. 18, Halsted Press, 140-145.
- Ibrahim Komoo and Mogana, S.N., 1988. Physical characterization of weathering profile of clastic metasediments in Peninsular Malaysia. *Proc. 2nd. Int. Conf. on Geomechanics in Tropical Soils*, Singapore, 1, 37-42.
- Jaafar Ahmad, 1976. *Geology and Mineral Resources of the Karak and Temerloh Areas, Pahang*. Geological Survey Malaysia District Memoir 15, Kuala Lumpur, 138 pp.
- Kamal Roslan, 1989. *Stratigraphy and Sedimentology of the Triassic Rocks of Peninsular Malaysia*. Ph.D. Thesis, University College London, pp. 186-227.
- Lepp, H (Ed), 1971. *Geochemistry of Iron. Benchmark papers on geology* no. 18. Halsted Press.

Manuscript received 30 October, 1989.

Plate 3. Photographs of the structure enhancement iron. (A) Ripple marks are preserved and enhanced due to the accumulation of iron at the base of weathered tuffaceous sandstone. (B) The preservation and enhancement of flute cast in highly weathered tuffaceous rock. (C) The enhancement of the polygonal fractures and primary structures as a result of iron accumulation at the base of a sedimentary bed. Note that the actual morphology of ripples, flute cast and other primary structures is further enhanced, but the actual shape might be slightly exaggerated.

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**BULETIN PERSATUAN
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BULLETIN OF THE GEOLOGICAL SOCIETY OF MALAYSIA

SPECIAL ISSUE ON PETROLEUM GEOLOGY VOL IV

KANDUNGAN (CONTENTS)

- 1 C-GC-MS and its application to crude oil analysis**
Paul A. Comet, Ooi Siew Tin & Yap Ai Bee
- 27 Estimating reserves in thinly-laminated sands with the help of Petrographic Image Analysis (PIA)**
T. Kennaird, D. Bowen & J.W. Bruinsma
- 39 DMO and NMO as applied in seismic data processing**
Jiunnyih Chen
- 53 Seismic processing applications on a personal computer**
Geophysical Service Malaysia Sdn. Bhd.
- 65 The hydrocarbon potential and tectonics of Indochina**
Masao Hayashi
- 79 Structural and stratigraphic configuration of the Late Miocene Stage IVC reservoirs in the St. Joseph Field, offshore Sabah, NW Borneo**
H.D. Johnson, J.W. Chapman & J. Ranggon
- 119 Sedimentology and reservoir geology of the Betty Field, Baram Delta Province, offshore Sarawak, NW Borneo**
H.D. Johnson, T. Kuud & A. Dundang

Editor
G.H. Teh



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PERTEMUAN PERSATUAN
(MEETINGS OF THE SOCIETY)

CERAMAH TEKNIK (TECHNICAL TALKS)

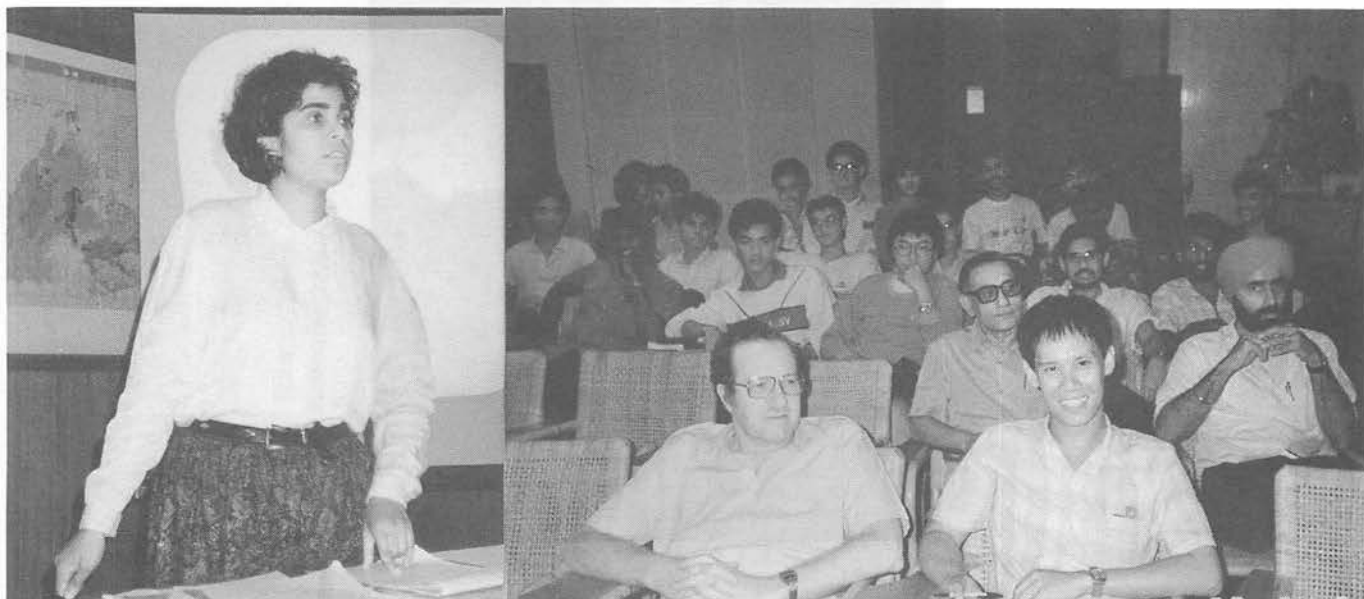
Sriyanee de Silva: Diagenesis of the Old Red Sandstone - an example from the Orcadian Basin, SE Shetland Islands

Laporan (Report)

Sriyanee de Silva gave the above talk on the 6 February 1990. The contents, results from her Ph.D. thesis, proved to be very interesting and informative.

Abstrak (Abstract)

The Givetian SE Shetland Basin, the youngest of the three Devonian continental molasse-type basins found in the Shetland Islands, formed as a result of anorogenic processes compensating for the thickened Caledonian crust. The clastic sediments, despite being deposited in different environments and by different processes, show that beyond the surficial features, the paragenetic sequence of authigenesis is the same for all clastic depositional facies; quartz and feldspar authigenesis followed by carbonate mineralization and culminating with mica authigenesis. The authigenic phases, especially that of the cogenetic and mesogenetic, define the palaeohydrology and provide compelling evidence that the palaeoclimate was tropical and humid. The high temperatures which produced and presumably accelerated, the last phases of authigenesis were not due to increased depths of burial but magnetic processes in the underlying basement.



SRIYANEE DE SILVA

A section of the happy audience.

Hamzah Mohamad: Rare earth elements distribution in some *in situ* Malaysia granitic soils.

Dr. Hamzah Mohamad, the Society's President, gave the above talk at the Geology Dept., University of Malaya, on Friday 23 February 1990.

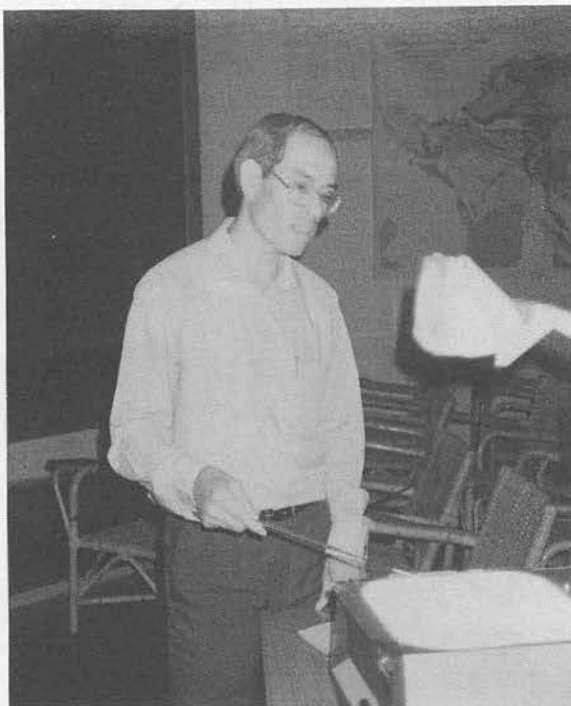
In starting off his talk, Dr. Hamzah briefly outlined the method of REE analysis, namely by induced neutron activation analysis (INAA). A total of 93 samples were collected along the Karak Highway for the study. The grade of the weathering of the granite material was plotted by computer giving rise to a weathering index map. The rocks are essentially a coarse-grained 2 mica granite.

In general the study showed a depletion in REE from fresh rock to the weathered material, a typical Eu negative anomaly, Ce positive anomaly and enrichment of HREE. REE was seen to decrease with weathering index.

Next Dr. Hamzah discussed the possible minerals responsible for carrying REEs. Among the minerals considered are apatite, plagioclase, biotite, hornblende, ilmenite, zircon, and tourmaline.

Weathering grade 2-3 showed REE to be confined to biotite and hornblende, while grade 4, the rock-soil interface, showed a sharp drop in REEs followed by enrichment in grade 5 and finally anomalous Ce at grade 7.

G.H. Teh



HAMZAH MOHAMAD

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22. Thomas L. Davis, Dept. of Geophysics, Colorado School of Mines, Golden, Co. 80401, USA.
23. Wee Eng Swee, Phoenix Expl. Resources, 13 Floor, K.L. Tower, K.L. Plaza, Jalan Bukit Bintang, 55100 Kuala Lumpur.
24. Chen Shyong Chang, Gladioli Services, 198, Lorong 8, Poh Kwong Park, 93150 Kuching, Sarawak.
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28. Putri Yunalis bt. Md. Yunos, Core Lab, Lot 10-B, Jalan 51A/223, 46100 Petaling Jaya.
29. Basri b. Bakar, Geoeast, 56A, Jalan Merbau, CDT 177, 98009 Miri, Sarawak.
30. Mahani Mohamed, Core Lab, Lot 10-B, Jalan 51A/223, 46100 Petaling Jaya.
31. Wong Kee Meng, 88, Jalan Tenggara, Taman Julong, 31900 Kampar, Perak.

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2. Geoffrey Pang Vui Kiong, Department of Geology, University of Malaya, 59100 Kuala Lumpur.

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2. V. Srimugayogam,
formerly 1, Jalan Ampang (4 fl.),
50450 Kuala Lumpur.

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2. Ong Chu Yin, 24 Lorong Haji Ahmad 15, 25300 Kuantan, Pahang.
3. R.T. Eubank, 22 Woollerton Park #08-26, Singapore 1025, Republic of Singapore.
4. Abdul Aziz bin Sidik, Malaysia Mining Corp. Bhd., No. 24, Jalan Sultan Mahmud, 20400 Kuala Terengganu.
5. Mohd Redzuan b. Mohd Ramli, S.K.C. Bernam Section, 35800 Slim River, Perak, Malaysia
6. Harwant Singh, c/o Osborne & Chappel International Sdn. Bhd., 114 Jalan Sultan Yussuf, 30000 Ipoh, Perak.

PERTAMBAHAN BARU PERPUSTAKAAN (NEW LIBRARY ADDITIONS)

The Society has received the following publications:

1. U.S.G.S. Techniques of water resources investigations, Book 5, Chapter A4, 1987 (revised).
2. U.S.G.S. Professional Paper 1989: 1404-B, 1478.
3. U.S.G.S. Bulletin 1989: 1787-G, 1745-B, 1746-F, 1860, 1890, 1882, 1847.
4. Bulletin of the Chinese Academy of Geological Sciences, no. 18, 1988.
5. Proceedings of the 17th Session, 13-22, Oct. 1988.
6. Chronique de la recherche miniere, no. 496, special issue, July 1989.
7. American Museum Novitates, no. 2933, 2949, 2941, 2931, 2930, 2924, 2922, 2921, 1989.
8. Journal of Water Resources, vol. 6, nos. 1 & 2, 1987.
9. IMM Section A, May-Aug 1989.
10. IMM Bulletin nos. 990 & 991, 1989.
11. Annual Report, Chinese Academy of Geological Sciences, 1987.
12. Guangdong Geology, vol. 4, nos. 1-4, 1989.
13. AAPG Explorer, Dec 1989 & Jan, Feb 1990.
14. Report of investigation no. 71 (1988), 73 & 74 (1989).
15. International symposium on coastal evolution, management & exploration in SEA., 4-10 Sept. 1989, Ipoh, Malaysia: extended abstracts.
16. Acta Micropalaeontologica Sinica, vol. 6, nos. 2-4, 1989.
17. Acta Palaeontologica Sinica, vol. 28, no. 3-5, 1989.
18. Explanatory text of the Geological map of Taiwan: sheets 6 & 10. Scale 1:50,000.
19. Diatomite in New South Wales by G.G. Holmes, *et. al*, 1989.
20. Proceedings of the Geological Society of Taiwan, vol. 32, nos. 2-4, 1989.
21. Bulletin of the Central Geological Survey, no. 5, 1989.

BERITA - BERITA LAIN (OTHER NEWS)

KATALOG BUKU-BUKU BERMUTU '90, DEWAN BAHASA & PUSTAKA

Pertanyaan/Pesanan

Unit Pesanan,
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Ampang/Hulu Kelang,
54200 Selangor Darul Ehsan

TEL: 4084287

BUMI - SIFAT FIZIK & KIMIA
Ibrahim Komoo dan lain-lain
\$6.00, 86 Halaman, Cetakan 1987.

Ditulis oleh empat orang pensyarah geologi dari Universiti Kebangsaan Malaysia. Kandungannya menjelaskan tentang sifat fizik dan kimia bumi dan kaitannya dengan alam semesta. Penerbitan buku ini memperlihatkan kemampuan bahasa Malaysia sebagai bahasa ilmu dalam bidang geosains.

FOSIL

Penterjemah: Mohd. Nazrin Mat Noor
\$9.00, 74 Halaman, Cetakan 1989

Fosil dapat ditakrifkan sebagai kesan tinggalan atau surihan daripada tumbuhan dan haiwan yang hidup dalam keadaan yang berlainan dari keadaan sekarang, yang kemudiannya terawet di dalam batuan. Untuk mendapatkan fosil yang sebenar, objek yang 'digali' itu mestilah berasal daripada bahan organik. Bahan organik ini mungkin terdiri daripada bahagian anggota organisma itu sendiri ataupun kesan yang ditinggalkan oleh organisma yang pernah mendiami sesuatu kawasan itu. Buku yang diterbitkan untuk memenuhi keperluan paleontologi 'G.C.E. Ordinary Level' ini akan membincangkan berbagai-bagai topik yang berkaitan dengan fosil seperti Kejadian Fosil; Fosil sebagai Bahan Pembentuk Batuan; Fosil sebagai Penunjuk Persekitaran; Fosil sebagai Penentu Usia dan Korelasi; dan sebagainya.

GEOMORFOLOGI

H.D. Tjia
\$30.00, 319 Halaman, Cetakan 1987

Membincangkan proses geologi secara terperinci agar perbezaan atau perkaitan di antara proses-proses ini dapat dibandingkan dengan jelas.

Gambar foto dan lukisan dapat membantu pembaca mendapat pandangan yang lebih baik tentang proses geomorfologi. Tajuk-tajuk perbincangan merangkumi Geomorfologi Pantai, Morfologi Mendapan oleh Air Mengalir, Penepelan, Kars Terumbu Karang dan sebagainya.

KAEDAH GEOKIMIA GUNAAN

Tan Teong Hing

\$12.00, 156 Halaman, Cetakan 1989.

Kaedah Geokimia Gunaan merupakan buku yang pertama ditulis dalam bahasa Malaysia tentang geokimia untuk kegunaan para pelajar di pusat-pusat pengajian tinggi dan para pegawai di makmal penyiasatan dan penjelajutan geologi. Buku ini membincangkan dengan baik prinsip analisis unsur utama mineral ekonomi, menghuraikan kaedah lazim analisis geokimia gunaan dan menyertakan sekali tatacara terperinci analisis untuk 25 unsur surih utama.

LATIHAN PENGENALAN KEPADA PETA-PETA GEOLOGI

Mohamad Ali bin Hasan

\$8.00, 75 Halaman, Cetakan 1986

Merupakan sebuah buku latihan tentang cara-cara mengenali dan mempelajari peta-peta geologi. Setiap latihan yang diberikan disusun berperingkat-peringkat hingga akhir sekali menyentuh aspek-aspek sejarah geologi sesuatu kawasan. Dilengkapi dengan piawaiian simbol-simbol geologi dan warna-warna serta daftar istilah yang lengkap.

PEMBACAAN PETA GEOLOGI

M.J. Bradshaw, E.A. Jarman

(Mohd. Ali Hassan)

\$7.00, 56 Halaman, Cetakan 1988

Buku ini menyediakan asas teori dan garis kasar mengenai teknik-teknik yang akan digunakan dalam menganalisis berbagai-bagai keadaan geologi yang ditunjukkan di atas peta. Latihan di dalamnya telah dirangka khas untuk pelajar mencubanya sendiri dengan pengetahuan dan kemahiran yang diperolehi semasa mengikuti kursus asas geologi.

PETROLOGI BATUAN METAMORF

Roger Mason (Hamzah Mohamad)

\$19.00, 269 Halaman, Cetakan 1989

Perbincangan utama buku ini ialah tentang pengenalanpastian himpunan mineral yang sama-sama wujud dalam keadaan keseimbangan semasa metamorfisme, penganggaran suhu dan lain-lain yang diperolehi daripada kajian terhadap himpunan mineral dan yang seumpamanya.

PRINSIP-PRINSIP GEOLOGI JILID 1

James Gilluly dan rakan (Ibrahim Komoo dan rakan-rakan)

\$25.00, 311 Halaman, Cetakan 1989

PRINSIP-PRINSIP GEOLOGI JILID 2

James Gilluly dan rakan (Ibrahim Komoo dan rakan-rakan)

\$22.00, 359 Halaman, Cetakan 1989

Prinsip-prinsip Geologi Jilid 1 dan 2 mengutarakan konsep asas tentang berbagai-bagai aspek sains bumi. Jilid 1 mengandungi 9 Bab dan Jilid 2 mengandungi 10 Bab. Tajuk-tajuk yang dimuatkan dalam Jilid 1 ialah Bahan Bumi, Peralatan Geologi, Gempa Bumi dan Pendalaman Bumi,

Bahagian Membangun Kitaran Geologi dan lain-lain, manakala tajuk-tajuk dalam Jilid 2 pula ialah Gerakan Menurun Lereng Tanah dan Batuan, Air Tanah, Sumber Mineral, Batuan Endapan sebagai Dokumen Sejarah dan lain-lain.

PROSES EKSOGEN

H.D. Tjia dan rakan-rakan
\$7.50, 130 Halaman, Cetakan 1987

Memperkenalkan proses-proses geologi yang bermula pada atau berhampiran permukaan bumi. Buku ini memberi definisi serta penghuraian jelas bagi setiap tajuk yang dibincangkan; meliputi antaranya luluhawa, hakisan ombak, tindakan organisma, pembentukan tanah dan pemendapan. Senarai istilah Bahasa Malaysia - Bahasa Inggeris disertakan di bahagian akhir buku ini.

POSTPONEMENT OF THE 7TH GEOSEA TO 1991

Following a decision by the Council of the Geological Society of Thailand, the 7th regional conference of GEOLOGY AND MINERAL RESOURCES OF SOUTH-EAST ASIA which is to be held in 1990 is now postponed to 1991.

Details will be made available soon by the Geological Society of Thailand.

For further information please contact:

Prakong Polahan,
Committee Chairman,
c/o Dept. of Mineral Resources,
Rama VI Road,
Phayathai,
Bangkok 10400.

PROCEEDINGS - SIXTH REGIONAL CONFERENCE ON THE GEOLOGY,
MINERAL AND HYDROCARBON RESOURCES OF SOUTHEAST ASIA

Jakarta, July 6-12, 1987

Compiled and Edited by B. Situmorang

Published by Ikatan Ahli Geologi Indonesia, Indonesian Association of Geologists, Jakarta, 1989.

List of contents

Thomas W.C. Hilde

Plate Tectonics: new results-future directions

Patrick R. Bird, Kusnama Brata and Ichsan Umar

Sedimentation and deformation of the Permo-Triassic of Kekeno, West Timor: from intracratonic basin to accretionary complex

Sarah E. Cook, Kustomo Hasan, Aziz Said and Syarif Hidayat

Stratigraphic sequences in deep water Triassic sediments from Timor

M. Untung

The isostatic state of the crust in the western portion of Irian Jaya.

U. Hartono, U. Sukanta and N. Ratman

Pre- and post-Late Tertiary collision magmatic activity in Irian Jaya, Indonesia.

H.D. Tjia

The Bentong Suture

Syed Sheikh Almashoor

The Main Range batholith: its role in fault development

T.R. Charlton

Geological cross-section through the Timor collision complex, Eastern Indonesia

M.C. Daly, B.G.D. Hooper and D.G. Smith

Tertiary plate tectonics and basin evolution in Indonesia

Felix Tongkul

Sedimentology and structure of the Crocker Formation in the Kota Kinabalu area, Sabah, East Malaysia

S. Sartono and S. Hadiwisastra

Ophiolitic melange in Gebe island and its olistostromal origin

Md Nazri Ramli

Stratigraphy and palaeofacies development of Carigali's operating areas in the Malay basin, South China Sea

M.T. Zen

Seismicity of the Sumatra fault zones

Philip R. Davies

Tectonics of North Sumatra

Soejono Martodjojo

Stratigraphic and tectonic behaviour of a back arc basin in West Java, Indonesia

Herve Bellon, Rubini Soeria-Atmadja, Rene C. Maury, Emmy Suparka and Y. Suyatno Yuwono

Chronology and petrology of back arc volcanism in Java

Engkon K. Kertapati

Seismotectonics of Java island and adjacent regions

Mulhadiono and Sukendar Asikin

The pull apart basin offshore Bengkulu promises attractive exploration ventures

GEOLOGICAL SOCIETY OF MALAYSIA PUBLICATIONS

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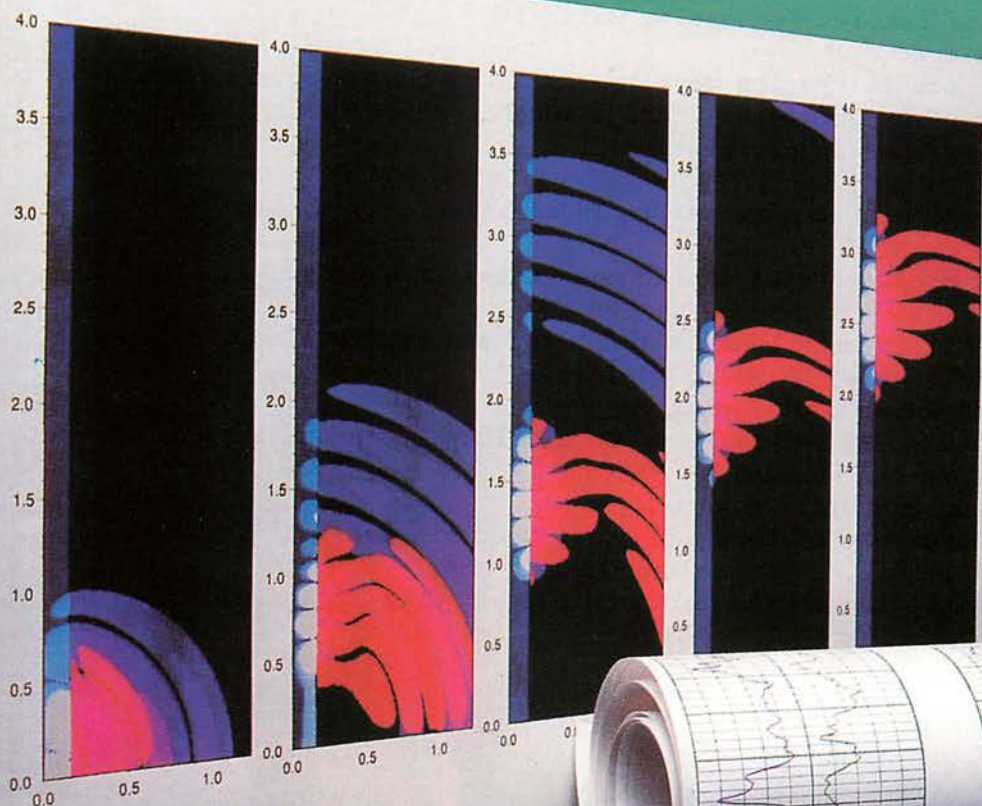
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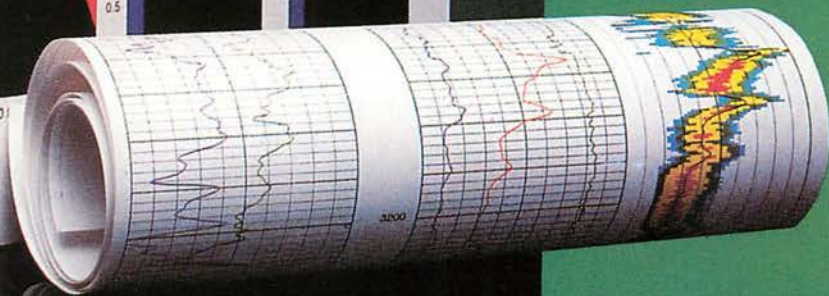
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- S. Arrykul
The determination of cassiterite tin and arsenic in rocks by atomic absorption - volatile hydride method
- Daud A.F. Batchelor
The Pulai alluvial gold deposit, South Kelantan, Malaysia
- A.C. Cook
Source potential and maturation of hydrocarbon source rocks in Indonesian sedimentary basins
- C.V. Ponto, C.H. Wu, A. Pranoto and W.H. Stinson
Controls on hydrocarbon accumulation in the Main and Massive sandstones of the upper Cibulakan Formation, offshore Northwest Java basin
- Benjavun Ratanasthien and Wittaya Kandharosa
Coal-, oil-, oil shale-bearing Formations in intermontane basins of Thailand
- A. Pranoto, C.V. Ponto, Charlie Wu, W.H. Stinson and D.J. Parket
Seismic reprocessing cost saving alternative to new acquisition and offshore Northwest Java Sea example
- Suprijono Wiriosudarmo and Deddy Heradi Bisri
The use of environmental geological information to plan erosion control in the upper part of the Citanduy catchment, West Java Province, Indonesia
- U. Sudarsono
Evaluation of municipal solid waste disposal sites at Semarang, Central Java, Indonesia.
- Anizan Isahak
Wind stress features and their paleoenvironmental implication, the east coast of Johore, Peninsular Malaysia
- Soetoto and Widiasmoro
Concepts of coastal region development in Southern Yogyakarta Province based on geological data through Landsat imagery and aerial-photographs interpretation
- M.M. Purbo-Hadiwidjoyo
The occurrence of ground water in Indonesia: a synthesis
- Ibrahim Komoo
Engineering properties of the igneous rocks in Peninsular Malaysia
- Ibrahim Abdullah
Structural differences between the Lower and Upper Paleozoic rocks of Langkawi islands, NW Malay Peninsula
- John A. Katili and Adjat Sudradjat
The devastating 1987 eruption of Colo volcano, Una-Una island, Central Sulawesi, Indonesia
- W. Sunalo, M. Hyodo and E.E. Susanto
Magnetostatigraphy of Sangiran area, Central Java
- Mohammed Sayyadul Arafin, C.Y. Lee and Gurdeep Kaur
Gravity delineation of the Tertiary beds of Chuping in Perlis, Malaysia

IGCP MALAYSIA - NEWSLETTER I (January 1990)

Report on 1989 IGCP Activities in Malaysia

Introduction

The International Geological Correlation Programme (IGCP) is a scientific enterprise carried out through the co-operation of UNESCO and IUGS. It is governed by an International Board of 15 members appointed jointly by the Director-General of UNESCO and the President of IUGS.

The programme was developed to encourage international research on basic geological problems, on the identification and assessment of natural resources and on the improvement of man's environment.

Projects are classified into 4 divisions:

- i) Time and stratigraphy: principles, methods, definition.
- ii) Major events in time and space and their environmental implications: patterns of geological processes.
- iii) Distribution of mineral deposits in space and time: relation of their formation to other geological processes.
- iv) Quantitative methods and data processing: standardisation, computerisation.

IGCP was first proposed in 1967 and officially set up in 1973.

Malaysian National IGCP Committee

The Minister of Primary Industries approved the formation of a National Committee in 1979 with the committee comprising the following:

- | | | |
|---------------|---|---|
| Chairman | - | Director-General of Geological Survey of Malaysia |
| Secretary | - | Deputy Director-General of Geological Survey of Malaysia |
| Other Members | - | 1 Representative from University of Malaya |
| | - | 1 Representative from Universiti Kebangsaan Malaysia |
| | - | 1 Representative from Universiti Sains Malaysia |
| | - | 2 Representatives from the Geological Society of Malaysia |

The National Committee for 1989 is as follows:

- | | | |
|-----------|---|--|
| Chairman | - | Mr. Yin Ee Heng, Director-General |
| Secretary | - | Mr. T. Suntharalingam, Director of Mapping Division, Geological Survey of Malaysia |
| Members | - | Dr. John Kuna Raj, University of Malaya |

- Dr. Ahmad Jantan, Universiti Kebangsaan Malaysia
- Mr. Loke Meng Heng/Dr. Lee Chong Yan, Universiti Sains Malaysia
- Dr. Teh Guan Hoe, Geological Society of Malaysia
- Dr. Yeow Yew Heng, Geological Society of Malaysia

The committee met once this year to discuss the progress of its going activities, to appoint co-ordinators to new projects and to discuss other administrative matters.

Project News

Malaysians have been active in seven programmes and this part of the Newsletter gives a report on the activities for 1989 together with announcements of further plans.

No. 224 Pre-Jurassic Geologic Evolution of Eastern Continental Margin of Asia (1987-1991)

(report by National Convenor Dr. T.T. Khoo)

The Fourth International Symposium was held at Hat Yai, Thailand and Langkawi Islands, Malaysia from 25 April to May 1989. The meeting was attended by fifty-five geoscientists from Australia, China, France, Japan, Korea, Malaysia, Philippines, Thailand, U.S.A. and Vietnam.

During the three-day session at Hat Yai, twenty-nine papers were presented. Two-thirds of the papers covered the Shan-Thai (or Sinoburmalaya or Sibumaru), Indochina and S & W China Blocks as the inter-block mobile belts. The remaining papers dealt with the pre-Jurassic evolution of the eastern margin of Asia including present day island arc regions. A one day fieldtrip was organised around Songkla to visit outcrops of Carboniferous siliceous rocks, Triassic clastic rocks and Mesozoic granite which belong to the eastern part of the Shan-Thai Block.

The participants crossed over the border to Langkawi to attend a half-day paper presentation on the Pre-Jurassic geology of the Langkawi area followed by a two-days excursion.

During the excursion the participants had the opportunity to compare the Palaeozoic successions in Langkawi with areas further north in Thailand and Southwest China. The Carboniferous - early Permian Singa Formation, a succession of arenaceous and dark argillaceous rocks containing pebbly horizons, captured the interest of all participants as similar distinctive rocks occur further north in Thailand and western Yunnan. Much discussion centred on the origin of the pebbly layers and a glaciogenic origin seemed to be the predominant opinion among the participants.

The similarities in geological evolution of western Yunnan, western Thailand, Shan States of Burma (Myanma) and northwest Peninsular Malaysia have been noted by earlier workers and reconfirmed by the

participants.

Several reports and excursion guides were prepared by the organisers.

The next Symposium is to be held by the Soviet Working Group between 13-20 August 1990 in Ulan-Ude, USSR.

A new project 'Gondwana dispersion and Asian accretion' will be proposed to the IGCP Board to succeed IGCP 224.

No. 274 Quaternary Coastal Evolution (1988-1992)
(report by National Convenor Prof. Dr. H.D. Tjia of Universiti Kebangsaan Malaysia)

This symposium on 'Coastal evolution, Management and Exploration in Southeast Asia' was held in Ipoh from 4-10 September 1989. It attracted 67 participants from 21 countries located on all continents except South America. After the two days of technical sessions, most of the participants also joined extended fieldtrips to the west and east coastal zones of Peninsular Malaysia. Technical presentations report on late Quaternary shoreline changes on stable coasts, such as China and the USSR and tectonically very active environments: Ryokys, Marianas, New Zealand, and eastern Indonesia; on a variety of coastal environments that include tropical mangrove shores, reefs, deltas, and on wind-controlled shores represented by eolianites in South China. Coastal management problems in Peninsular Malaysia, Sri Lanka and those related to tourism were also highlighted.

A well-attended, 5-day fieldtrip was conducted to view the coastal stratigraphy and morphology in areas of the west and east coasts of Peninsular Malaysia. A recently discovered paleolithic site at Kota Tampan, Perak also received attention.

The next meeting will be held in South America.

No. 296 Quaternary Stratigraphy of Asia-Pacific Region (1989-1993)
(National Convenor: Mr. Yunus Abdul Razak, Geological Survey of Malaysia)

The inaugural meeting of IGCP 296 was held in Ipoh, Malaysia from 11-13 September 1989. Participants from 14 countries attended the meeting where 13 papers were presented. The papers covered the state of mapping, stratigraphic knowledge and the techniques used in research. Several recommendations were made on how to proceed in stratigraphic work and correlation. A newsletter will be published.

Countries in close proximity were encouraged to establish sub-working groups and co-operate by exchanging stratotypes, chronologic data and others. Developed countries were requested to provide training and support for all aspects of correlation.

The next meeting in 1990 will be held in Seoul, Korea.

No. 282 Rare Metal Granitoids (1989-1993)
(National Convenor: Dr. Hamzah Mohamad, UKM)

This is successor to Project No. 220 (Correlation and Resources

evolution of the tin and tungsten granites in S.E. Asia and Western Pacific). It will study rare metals (e.g. Ta, Nb, Li, Be, Sn, W, Mo and Bi) granitoids and associated mineral deposits. Exploration techniques and strategies will be considered as will the geotectonic environment and the magmatic and post magmatic evolution of rare-metal mineralizing system.

No. 267 Palaeozoic Terranes in the Circum-Pacific Orogen (1989-1993)
(National Convenor: Dr. Ibrahim Abdullah, Universiti Kebangsaan Malaysia)

This will compare the tectonic and palaeomagnetic synthesis of terranes around the Pacific. A series of terrane maps and correlation charts will be prepared as the basis for strato-tectonic terranes analyses, crustal profiles, tectonic maps and models for the evolution of the orogen.

Project Proposed: Geology and Petroleum Resources of Phanerozoic River Deltas (1990-1994)

(National Convenor: Mr. Noor Azim Ibrahim of PETRONAS)

The aim of this project is to: (a) elaborate the basic geologic-geophysical models of Phanerozoic river deltas, (b) improve the methods of researches, exploration and exploitation of oil and gas deposits in Phanerozoic deltas and (c) make evaluation of petroleum resources in Phanerozoic river deltas in the territory of status participating in this project.

Sub-programme: On Quaternary Geoscience for Human Survival Major Regional Project (MRP) for Southeast Asia and Pacific

(National Contact: Mr. T. Suntharalingam, National Secretary of IGCP)

This involves studies on applied Quaternary geology and yearly meetings are held at various Southeast Asian Cities.

All geoscientists who wish to participate in the IGCP projects, present papers or attend the meetings are requested to get in touch with the respective National Convenors.

Compiled by T. Suntharalingam
National Secretary, IGCP Malaysia
Geological Survey of Malaysia
P.O. Box 1015, 30820 Ipoh,
Malaysia

PERSIDANGAN SAINS BUMI DAN MASYARAKAT

Sumbangan penyelidikan geologi dalam pembangunan negara
Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor Darul Ehsan.
9-10 Julai, 1990.

Anjuran: Jabatan Geologi, Universiti Kebangsaan Malaysia,
Sempena sambutan 20 tahun UKM

Pendahuluan

Geologi ialah cabang ilmu yang mengkaji kejadian, perkembangan dan kandungan bumi. Seperti bidang ilmu yang lain, geologi juga menyumbang kepada pembangunan negara dan tamadun manusia. Di samping menyingkap rahsia bumi dan alam, geologi memainkan peranannya dalam mencari serta mengeluarkan hasil mahsul bumi bagi kegunaan manusia. Ahli-ahli geologi hari ini berganding bahu dengan pakar-pakar lain dalam menyediakan maklumat mengenai bumi supaya projek-projek besar seperti perlombongan, pengeluaran petroleum, pembinaan lebuh raya, empangan, landasan, kawalan banjir dan carigali air tanah dapat dijayakan dengan selamat dan berkesan.

Penyertaan

Ahli-ahli geologi dan bidang berkaitan di institusi pengajian tinggi, badan-badan penyelidikan kerajaan, dan swasta; pelajar ijazah dan pelajar peringkat tinggi prasiswazah; para pendidik dan perancangan dasar pendidikan di Malaysia dan negara serantau.

Tajuk kertas-kerja

- Pengembangan airtanah serta pengelolaannya di Sumatera Utara.
- Kajian perbandingan penilaian rizab bijih timah di Selangor, Malaysia.
- Penjelajahan potensi geotermal di Sabah.
- Kegagalan tapak lebuh raya dalam Formasi Melange di Sabah.
- Sifat-sifat kejuruteraan yang utama batu-batu kapur di sekitar Lembah Kinta dan Analisis kesetabilan bukit-bukitnya.
- Penggunaan isotop dalam kajian hidrologi di Malaysia.
- Pantai Timur Semenanjung Malaysia: Geomorfologi dan kepekaannya terhadap tumpahan minyak.
- Tinjauan kembali tataan stratigrafi Pra-Tersier Sumatera bahagian selatan.
- Sifat kejuruteraan batuan granit di lebuh raya Ipoh-Changkat Jering, Perak Darul Ridzuan.
- Luluhawa batuan granit: perlakuan mineral, unsur dan sifat fiziko-kimia.

- *Sarcotheca diversifolia* (NIQ) hall.f (belimbing bajo) sebagai petunjuk adanya endapan nikel dalam lapisan tanah.
- Formasi Semantan: Aspek geologi dan geologi kejuruteraan.
- Kajian unsur-unsur surihan dan nadir bumi pada batuan granit Semenanjung Malaysia: beberapa maklumat awal.
- Penggunaan sedimentologi klastik dalam penyelenggaraan takungan minyak di SSB/SSPC.
- Penggunaan teknik penyurih radioaktif dalam kajian pergerakan sedimen di Malaysia.
- Magmatisme granitoid serta hubungannya dengan pemineralan timah di kawasan Kuantan-Dungun.
- Geologi wilayah Kalimantan Barat, Kalimantan Tengah dan Kalimantan Timur.
- Fenomena luluhawa tanah basalt di Gebeng, Kuantan.
- Kajian radiolaria daripada rijang di Utara Sabah.
- Kewujudan emas dan kegiatan mendulang emas di Marang, Terengganu.
- Kajian geofizik di sepanjang lebuh raya Tangkak-Pagoh, Johor, Malaysia.
- Mentafsir sekitaran kuno pengenapan daripada litofasies: tiga contoh tempatan bagi kipas laut dalam, delta dan kipas lanar.
- Pola anjakan permatang rijang di kawasan Padang Terap, Kedah: Penjelasan Struktur.
- Lembangan graben ditafsir daripada sekutuan dan taburan litofasies: contoh daripada batuan Trias di Larut-Matang, Perak.
- Pemodelan lereng pada kasus toppling
- Metoda gayaberas dalam eksplorasi bawah permukaan
- Semenanjung Malaysia dan Indonesia Barat: Interpretasi tektonostratigrafi Pratersier.

Yuran pendaftaran

Peserta/Pembentang: M\$70.00 (meliputi prosiding, makan tengahari dan minuman sepanjang persidangan).
Pendaftaran lewat: M\$90.00

Pelajar: M\$20.00 (meliputi prosiding dan minuman sahaja sepanjang persidangan)

Borang prapendaftaran bersama yuran pendaftaran mestilah sampai kepada urusetia persidangan tidak lewat daripada 30 mei 1990.

Penginapan

Diuruskan atas permintaan.

Rumah tamu UKM (terhad) - M\$18.00

Pertanyaan

Untuk keterangan lanjut sila hubungi: (u.p. Dr. Mohamad Md. Tan)
Tel: 03 8250001 samb. 2393/2494
atau
Jabatan Geologi,
Universiti Kebangsaan Malaysia, (Dr. Basir Jasin)
43600 Bangi, Selangor Darul Ehsan. Tel: 03 8250001 samb. 2393/2492

COMPARATIVE SYSTEMS TRACTS ANALYSIS IN CARBONATE AND SILICICLASTIC DEPOSITIONAL SYSTEMS

September 10-16, 1990 - field workshop - SE France.

Diastrata Company of Lyon in France, together with Doctors S. Ferry and G. Dromart (University of Lyon) are planning a field workshop to be held next September across southeastern France. The basic purpose of this workshop in Sequence Stratigraphy. It aims at providing an opportunity for oil industry people to get more training in sequence stratigraphy, test the distinct available models, and calibrate the sea-level chart.

Conditions are met in South-East France for such a topic. Supported by a century of biostratigraphy investigations, the systems tracts analysis can be performed here from the pure carbonate environments of the Mesozoic Vocontian Trough and its adjacent platforms, to the mixed and pure siliciclastic environments of the Upper Cretaceous and Tertiary (molasse foreland basins). Systems tracts analysis can be thus achieved from deep pelagic carbonate environments to fluvial valleys.

The internal stratigraphic organization of parasequences from shallow to deep-water environments, compared to that of 3rd order sequences.

The sequential position of slope channels and basinal turbidites depending on the hierarchical level of depositional cyclicity.

Total number of participants: 15
Registration deadline: June 30, 1990.
Comprehensive price: 8,000 FF (except air-fares, free of V.A.T.
for non European Common Market participants)

For further information

Serge Ferry or Gilles Dromart,
Diastrata Co.,
78, rue de la Part-Dieu,
69003 Lyon, France.

IGCP PROJECT 274 - COASTAL EVOLUTION IN THE QUATERNARY, RADIOCARBON DATING POOL - POLICY AND PROCEDURE

As of October 1989, 22 radiocarbon dating laboratories from 17 countries have 'pooled' up to 120 free radiocarbon dates annually as a contribution to IGCP Project 274 (see 1989 - annual Project report, January 1990). The primary objective of this Radiocarbon Dating Pool is to aid in coastal research in the non-industrialized world by providing a limited number of free radiocarbon dates for "critical samples" to scientists who could not otherwise obtain such data.

Policy

For an application to be considered the following five conditions apply:

- (a) Requester should be a corresponding member of the Project (i.e. has returned a completed Project 274 application form, which is obtainable from the countries National Representative or Contact Person or from the Project Leader);
- (b) It should be evident that the submitter has neither the technical nor the financial means to have his/her most critical samples dated. This does not necessarily mean that only requests from researchers in 'developing' countries will be considered; in exceptional cases, well-argued requests can be acceptable too;
- (c) The objective of the research project for which the sample are to be dated should be clearly related to the theme of Project 274;
- (d) Submission of a request for free dating implies agreement that the laboratory which carries out the analyses is entitled to be involved in the publication of results, should interest in co-authorship be expressed; and
- (e) Samples must be collected at the time that a request for dating is submitted.

The above conditions may be subject to modification as experience is gained with management of the dating pool.

Procedure

The process by which projects are evaluated and selected has been kept as simple and objective as possible by leaving the decision about the actual analysis with each of the donating laboratories.

The procedure can thus be limited to the following five steps:

- (a) Project description forms are assembled by the Central Administrator (C.A.; Dr. John F. Wehmiller) and screened for the first three conditions stated above;

- (b) Approximately every six months, the C.A. compiles a list of all requests (meeting the requirements), which are sent to all collaborating laboratories;
- (c) Laboratories indicate interest in as many projects as possible, with or without priority, and inform the C.A.;
- (d) The C.A. assigns projects to the laboratories taking the stated interest, dating capacity and number of requested dates into account as best as possible, and informs both the laboratories and submitters; and
- (e) The laboratories send the required number of sample information forms (with guidelines) to the requesting party.

Additional remarks

- (1) Requesters are urged to provide concise but complete and informative project descriptions (abstract style, with brief elaborations where appropriate).
- (2) Because of high demand, pool users are urged to be selective in their choice of samples for which free dating is requested.
- (3) The three conditions for which each request is screened by the C.A. are believed to be sufficiently straightforward to ensure fairness. In cases of doubt the Project's Executive Committee (or others appointed by the Committee) will be called upon to evaluate a particular project.
- (4) Deadlines for submission of project description forms will be January 15 and June 15 of each year (for 1990 the first deadline is February 15). Every effort will be made to have laboratory selection completed within two months of these deadlines.
- (5) Requests that cannot be fulfilled during the first cycle of submission and evaluation will be held for evaluation in the next round. If still no interest is expressed in the project, the request will be denied. The investigator will be kept informed of the status of all requests.
- (6) In order to carry out his task and because the C.A. is obliged to prepare an annual report of the project's activities, it is important that copies of all communications between laboratory and scientist are sent to Dr. John F. Wehmiller.
- (7) Unused dating capacity will be carried over into the next year whenever possible, at the discretion of the collaborating laboratories.
- (8) Rapid communication will be needed. Consequently, FAX and BITNET numbers (if available) will be particularly helpful, for all laboratories and sample submitters.

INTERNATIONAL CONFERENCE OF RARE EARTH MINERALS AND MINERALS FOR ELECTRONIC USES

23-25 January, 1991

At Prince of Songkla University, Hat Yai, Thailand

Organised by: Department of Mining and Metallurgical Engineering,
Faculty of Engineering, Prince of Songkla University.

Thailand is moving towards a state of newly industrialised country indicated by considerable growth rate of various industries. Many developing countries are well aware of advantageous factors for their investments in this land of peace and cheap labour cost. Industry in the field of high-technology, electronics, and its related areas is no exception. Rare earth minerals will undoubtedly play important role in this sector. As Thailand is one of some other nations that possess rare earth mineral resources. We wish to gather scientists, technologists, and interested persons from all over the world to share informations and discussions at the conference.

Conference outline

- World resources/reserves
- World supply/demand - present and future
- Mineralisation
- Extraction
- Applications
- National management plan
- Information management system
- Technologies of the next decade that need rare earth minerals
- Other related areas

Proceedings

Publication of proceedings will be available at the registration desks.

Excursions

Some site visits in Phuket area will be provided with extra charge from registration fee.

Language: English

Further information can be requested from:

Asst. Prof. Dr. Boonsom Siribumrungsukha,
Head of the Department of Mining and Metallurgical Engineering,
Faculty of Engineering,
Prince of Songkla University,
P.O. Box 2, KhoHong,
Hat Yai 90112 THAILAND.

INTERNATIONAL GEOLOGY CONFERENCE - BASIN MODELLING: ADVANCES AND APPLICATIONS

Stavanger, Norway.
13-15 March 1991

Research work in the mid-late 1980's has significantly changed our perception of many aspects of source rock studies and related disciplines. Without doubt, the most interesting trends have been in the sphere of "Basin Modelling". This term has come to mean the integration of themes - basin formation and thermal history, subsidence, compaction, maturation and generation, expulsion, basin hydrodynamics, trapping and leakage - in attempt to model complex real-world systems, with the ultimate objective of explaining and predicting hydrocarbon accumulations. Mathematical modelling and computer simulation is playing an increasingly important role in this process. Use of these techniques has been encouraged in the Norwegian environment.

The Norwegian Petroleum Society (NPF) has decided to host a conference on basin modelling to highlight these efforts, and to promote basin modelling as being an important branch of petroleum geology. The conference will include papers dealing with the primary geological and geochemical input to basin models, with the dynamic systems that operate in generative basins, and with the theory of basin modelling. Presentation of case studies will be encouraged. The emphasis will be on specific problems related to the Norwegian Shelf (e.g. uplift and erosion, rapid subsidence and complex phase relationships) although interesting case studies from elsewhere in the world are also welcome. Comparison between the results of different models, and with actual drilling results, will be encouraged. Keynote speakers will address specific themes, and sufficient time will be set aside for discussion of the effectiveness and future potential of the techniques employed.

Themes will include:

- Determination of key modelling parameters; accuracy and sensitivity analysis.
- Temperature modelling. (Determination of thermal history, importance of long term versus transient effects, etc.)
- Advances in kerogen typing, mapping, yield determination, reactions and kinetics.
- Compaction and overpressure/palaeopressure development. Mechanism and efficiency of hydrocarbon expulsion.
- Basin hydrodynamics and fluid flow. How do hydrocarbons migrate?
- Trapping mechanism and seal efficiency.
- Theory of basin modelling. What are the relative merits and applicability of 1D, 2D and 3D systems?

- How sensitive are integrated basin modelling systems to input parameters?
- What is the future potential of the technique?
- Case histories. Selected -xamples of 1D, 2D and 3D studies from Norway and elsewhere.
- Significance of the results. How well validated are they by drilling?

With this letter the conference committee is making a call for papers covering subjects relevant to conference theme. Proposed papers giving the title, abstract (no more than one A4 size or 500 words) and preference for lecture or poster presentation should be sent to:

Norwegian Petroleum Society (NPF),
P.O. Box 1897 - Vika,
0124 Oslo 1 - Norway.

Telefax No.: + 47-2-554630
Telex No.: 77 322 nopet n

REGIONAL TRAINING COURSE ON GROUNDWATER EXPLORATION AND ASSESSMENT

March 11 to 30, 1991

Sponsored by: Association of Geoscientists for International Development (AGID)

Organised by: Department of Earth Sciences, University of Roorkee, Roorkee-247 667, India.

Introduction

A regional training course on Groundwater Exploration and Assessment will be organised at Department of Earth Sciences, University of Roorkee, Roorkee, India from March 11 to 30, 1991. The course is sponsored by the Association of Geoscientists for International Development (AGID).

Persons holding M.Sc./M.Tech. degree in Geology/Geophysics or B.E./B.Tech in Civil Engg. are eligible for admission to the course.

Course contents and faculty

The course will include topics on geological, geophysical, remote sensing and hydrological methods of groundwater exploration and assessment. In addition to lectures and tutorials, fieldwork is also planned. Emphasis will be given to modern methods of data interpretation.

The various topics proposed to be covered are:

- a) Geological and Geomorphological Studies.
- b) Geophysical methods with special reference to Electrical methods and Well Logging.
- c) Interpretation of remote sensing data.
- d) Evaluation of aquifer parameters.
- e) Estimation of Groundwater recharge and Water Balance.
- f) Artificial recharge, water harvesting.

The faculty will include teachers and scientists from University of Roorkee, National Institute of Hydrology, Central Ground Water Board, National Geophysical Research Institute and few other groundwater investigation agencies. There is also a possibility of having one or two resource persons from abroad.

Expenses

An amount of Rs. 1,000/- (US\$100) towards expenses on technical visits and course material etc. has to be paid by each participant.

The cost of travel to Roorkee and back and living expenses at Roorkee have to be borne by the participants or their sponsors. The arrangements of lodging and boarding can be made in the hostel/guest house of the University for which the charges will be about Rs. 75/- per person per day. Accommodation can also be made available in hotels close to University campus where the lodging and boarding charges will vary from Rs. 150 to Rs. 500 per person per day.

The weather in Roorkee during March is pleasant. However, light woolens may be required in the night.

For further information

Dr. B.B.S. Singhal,
Professor,
Dept. of Earth Sciences,
University of Roorkee,
Roorkee 247 667, India.

1991 AAPG 75TH ANNIVERSARY ANNUAL MEETING

The 1991 Annual Meeting of the American Association of Petroleum Geologists (AAPG) and its divisions, the Division of Professional Affairs (DPA) and the Energy Minerals Division (EMD), along with the Society for Sedimentary Geology (SEPM), will be held in Dallas, Texas, April 7-10, 1991. The site of the convention will be the Dallas Convention Center.

Celebrate the 75th anniversary of the Association by attending the special events currently being planned to make this, the Diamond Jubilee, one of the best conventions yet. Our city, our industry, and our Association are reflected in this year's theme, "A Look Back, A Look Forward," by highlighting past successes and future areas of petroleum activity. The major focus of the program is on international studies, developmental geology and sequence stratigraphy.

We invite authors to submit new and original work for either oral or poster presentations. We intend to review abstracts rigorously and to select those having the greatest geological significance, information and general interest appeal. Abstracts for both oral and poster presentations should be typed in 250 words or less on the attached form. No figures will be permitted. Indicate your preferred session and whether you desire an oral or poster presentation. Please proofread your abstract carefully: neither the Technical Program Committee nor AAPG will be responsible for making changes or grammatical corrections.

All abstracts must be sent to:

1991 Abstracts
AAPG Convention Department,
P.O. Box 979,
Tulsa, Oklahoma 74101-00979.

KURSUS-KURSUS LATIHAN & BENGKEL-BENGKEL (TRAINING COURSES & WORKSHOPS)

1990

March 1990 - November 1990

PHOTOINTERPRETATION APPLIED TO GEOLOGY AND GEOTECHNICS (Bogota, Colombia). Annual post-graduate diploma courses organized by the Government of Colombia, Centro Interamericano de Fotointerpretacion, International Institute for Aerial Survey and Earth Sciences and Unesco. Language: Spanish. For Information: Academic Secretariat of the CIAF, Apartado Aereo 53754, Bogota 2, Colombia.

April 1990 - July 1990

RURAL GROUNDWATER DEVELOPMENT (Loughborough, U.K.). A 10-week diploma course organized annually by WEDC. For Information: WEDC, University of Technology, Loughborough, Leics. LE11 3TU, U.K.

April 1990 - July 1990

ENVIRONMENTAL EVALUATION MANAGEMENT AND CONTROL (Liverpool, U.K.). Annual 12-week training course for administrators, consultants and professionals. For Information: Dr. H.W. Pearson, Environmental Management Course, Department of Botany, University of Liverpool, P.O. Box 147, Liverpool L69 3BX, U.K.

May 1990

HYDROLOGY OF FRACTURED ROCKS (Montpellier, France). Annual three-week post-graduate course sponsored by Unesco. For Information: Professeur C. Drogue, Laboratoire d'Hydrogeologie, Universite des Sciences et Techniques du Languedoc, Place Eugene Bataillon, 34060 Montpellier, France.

June 1990

SEDIMENT TECHNOLOGY (Ankara, Turkey). An annual four-week Unesco-sponsored post-graduate course. For Information: Dr. Ergun Demiroz, DSI Teknik Arastirma ve Kalite Kontrol, Dairesi Baskanligi, 06100 Ankara, Turkey.

June 1990 - August 1990

TECHNIQUES OF HYDROLOGIC INVESTIGATIONS (Washington, D.C. and Denver, Colorado, U.S.A.). Annual training course for international participants. For Information: Office of International Hydrology, Water Resources Division, U.S. Geological Survey, 470 National Center, Reston, VA 22092, U.S.A.

July 1990 - August 1990

CRYSTALLOGRAPHY, MINERALOGY, METALLOGENY (Madrid, Spain). Annual course organized by the Department of Geology and Geochemistry of the Universidad Autonoma de Madrid and sponsored by Unesco. Language: Spanish. For Information: Departamento de Geologia y Geoquimica, Facultad de Ciencias, Universidad Autonoma de Madrid, Canto Blanco, Madrid 34, Spain.

October 1990 - September 1992

GEOLOGICAL EXPLORATION METHODS (Nottingham, U.K.). Two-year MSc course starting every other year with emphasis on applied methodology, data acquisition and interpretations). For Information: Dr. M.A. Lovell, Department of Geology, University of Nottingham NG7 2RD, U.K.

September 13-16, 1990

1990 WORKSHOP ON COASTAL ZONE MANAGEMENT (Coastal processes and public risk; sea-level rise; engineering and management aspects; field visits) at the Iwasaki Resort, Yappoon, Queensland, Australia. For Information: Dr. Aro Arakel, CSEG, Dept. of Applied Geology, Queensland University of Technology, Box 2434, Brisbane, Queensland 4001, Australia.

December 1990 - January 1991

METHODS AND TECHNIQUES IN EXPLORATION GEOPHYSICS (Hyderabad, India). Diploma course organized every second year by the National Geophysical Research Institute of the Council of Scientific and Industrial Research, Hyderabad, India, and sponsored by Unesco. Language: English. For Information: The Director, International Training Course on Methods and Techniques in Geophysical Exploration, National Geophysical Research Institute, Hyderabad, 500 007 (A.P.) India.

1991

February 1991 - March 1991

STRUCTURAL GEOLOGY (Dehra Dun, India). A six weeks training course organized every second year by the Wadia Institute of Himalayan Geology, sponsored by the Government of India and Unesco. Language: English. For Information: The Organizer of the Regional Training Course in Structural Geology, Wadia Institute of Himalayan Geology, 33 General Mahadev Singh Road, Dehra Dun 24 8001, India.

May 1991 - November 1991

GENERAL HYDROLOGY with emphasis on groundwater (Buenos Aires, Argentina). A six-month post-graduate diploma course organized every other year and sponsored by Unesco. Language: Spanish. For Information: Comité Nacional para el Programa Hidrologico Internacional de la Republica Argentina, Av. 9 de Julio 1925-15° piso, 1332 Buenos Aires, Argentina.

August 1991 - June 1993

SOIL SCIENCE AND WATER MANAGEMENT (Wageningen, The Netherlands). A 2-year MSc. course organized by Agricultural University Wageningen. Course starts every other year. Language: English. For Information: The Director of Studies of the MSc. Course in Soil Science and Water Management, P.O. Box 37, 6700 AA Wageningen, The Netherlands.

August 1991 - October 1991

GEOCHEMICAL PROSPECTING METHODS (Prague, Czechoslovakia). Certificate course organized every second year by the Geological Survey of Czechoslovakia and sponsored by Unesco, IAGC and Czechoslovakia. Language: English. For Information: GEOCHIM Unesco CSSR, Geological Survey of Prague, Malostranské nam. 19, 11821 Prague 1, Czechoslovakia.

KALENDAR (CALENDAR)

1990

July 9-13, 1990

GROUNDWATER IN LARGE SEDIMENTARY BASINS (International Conference), Perth, Western Australia. (Groundwater Conference, University of Western Australia, Nedlands, Western Australia 6009).

July 29 - August 3, 1990

CIRCUM-PACIFIC ENERGY AND MINERALS RESOURCES (Conference), Honolulu, Hawaii. (Mary Steward, Circum-Pacific Council on Energy and Mineral Resources, 5100 Westheimer Road, Houston TX 77056, USA).

August 1990

IGES (13th International Geochemical Exploration Symposium), Rio de Janeiro, Brazil. Sponsored by AEG. (Sherman Marsh, USGS, Federal Center MS 973, Denver, CO 80309-0250, USA).

August 6-10, 1990

INTERNATIONAL ASSOCIATION OF ENGINEERING GEOLOGY (IAEG/AIGI) (6th International Congress), Amsterdam. (QLT/CONGREX, Keisersgracht 782, 1017 EC Amsterdam, The Netherlands).

August 12-18, 1990

INTERNATIONAL ASSOCIATION ON THE GENESIS OF ORE DEPOSITS (8th Symposium), Ottawa, Canada. (Dr. R.W. Boyle, 601 Booth Street, Ottawa, Canada K1A 0E8)

August 20-24, 1990

GEOHERMAL ENERGY (International Symposium), 14th Annual Meeting of the Geothermal Resources Council, Kailua-Kona, Hawaii (GRC Hawaii, P.O. Box 1350, Davis CA 95617-1350, USA).

August 25-31, 1990

GEOCHEMICAL PROSPECTING (International Symposium), Prague, Czechoslovakia, including the 5th IAGC Symposium on Methods of Geochemical Prospecting and the 14th AEG International Geochemical Exploration Symposium. (Dr. Frantisek Mrna, Geological Survey/UUG, Symposium on Geochemical Prospecting, Malostranske nam 19, 118 21 Prague 1, Czechoslovakia).

August 26 - September 1, 1990

SEDIMENTOLOGY (13th International Congress), Nottingham, UK. (Dr. I.N. McCave, Department of Earth Sciences, University of Cambridge, Downing Street, Cambridge CB2 3EQ, UK).

August 26 - September 8, 1990

LATIN AMERICAN CONODONT SYMPOSIUM, La Paz, Bolivia and San Juan, Argentina. (M. Lunicken, Academia Nacional de Ciencias, Casilla Correo 36, 5000 Cordoba, Argentina).

August 27 - September 1, 1990

WATER RESOURCES IN MOUNTAINOUS REGIONS (IAH and IAHS International Symposium) and IAH (22nd Congress), Lausanne, Switzerland. (Dr. A. Parriaux, Laboratory of Geology EPFL (GEOLEP), CH-1015 Lausanne, Switzerland).

August 28-31, 1990

ADVANCES IN GEOLOGICAL ENGINEERING (International Symposium), Beijing, Peoples' Republic of China (Secretariat: Dr. Yang Zhifa, Institute of Geology, Academia Sinica, P.O. Box 634, Beijing, PRC).

September 10-13, 1990

AFRICAN GEOLOGY (15th Colloquium), organised at the Universite de Nancy with the support of CIFEG and CNRS. (Prof. G. Rocci, Laboratoire de Petrologie, Universite de Nancy 1, BP 239, 54506 Vandoeuvre-les-Nancy, Cedex, France).

September 17-21, 1990

THIRD INTERNATIONAL ARCHAEOLOGICAL SYMPOSIUM, organised by the University of Western Australia. (Dr. Susan Ho, Third International Archaeological Symposium, P.O. Box 435, Nedlands 6009, Western Australia).

September 20-24, 1990

ANDEAN MAGMATISM AND ITS TECTONIC SETTING (International Meeting of IGCP Project 249 with XI Argentinian Geological Congress), San Juan, Argentina. (Dr. C.W. Repela, Centro de Investigaciones Geologicas, Calle 1 No. 644, 1900 La Plata, Argentina).

September 24-28, 1990

PAST AND PRESENT CLIMATE DYNAMICS: RECONSTRUCTION OF RATES OF CHANGE (International Conference), Canton of Ticino, Switzerland. Sponsored by the Swiss Academy of Sciences (K. Kelts, ProClim 90, Postfach 7613, CH3001 Bern, Switzerland).

October 7-13, 1990

COAL DEVELOPMENT IN ASIA/PACIFIC (International Symposium), Hanoi, Viet-Nam. Sponsored by United Nations Economic and Social Commission for Asia and the Pacific (UN-ESCAP). (Dr. Do Huu Hao, General Department of Mines and Geology, 6 Pham Ngu Lao, Hanoi, Viet-Nam).

October 20-25, 1990

GEOLOGICAL DYNAMICS OF THE ARABIAN PLATE (International Conference), Kuwait. (Dr. Waris E.K. Warsi, Department of Geology, University of Kuwait, P.O. Box 5969, Safat 13060, Kuwait).

October 20-25, 1990

HYDROLOGICAL BASIS FOR WATER RESOURCES MANAGEMENT (International Symposium), Beijing, People's Republic of China. (Dr. Chen Jiaqi, P.O. Box 366, IWHR, Beijing, PRC).

October 28 - November 1, 1990

MONOCYCLIC VS. POLYCYCLIC EVOLUTION IN BRAZILIAN/PAN AFRICAN FOLD BELTS (Symposium in conjunction with the 36th Brazilian Geological Congress), Natal, Rio Grande del Norte, Brazil. (Emanuel Ferraz Jardim de Sa, Departamento de Geologia - UFRN-Campus, 59.071 Natal RN, Brazil).

November 19-23, 1990

UNITED NATIONS GLOBAL SEMINAR ON URBAN GEOLOGY (International Symposium organized by UN-ESCAP, HABITAT, UNEP and UNESCO), Bangkok, Thailand.

1991

January 23-25, 1991

MINERAL DEVELOPMENT AND ENVIRONMENT (International Conference), New Delhi, India. (Prof. K.L. Rai, Indian School of Mines, Dhanbad 826 004, Bihar, India).

February 2-4, 1991

SMALL SCALE MINING (International Conference), Calcutta, India. (Organising Secretary ICSSM, c/o The Mining, Geological and Metallurgical Institute of India, 29 Chowringhee Road, Calcutta 700 016, India).

February 20-24, 1991

TECTONICS AND MINERAL DEPOSITS OF THE CARIBBEAN (10th Annual Symposium on Caribbean Geology) Mayaguez, Puerto Rico. (J.H. Schellekens, Department of Geology, University of Puerto Rico, P.O. Box 5000, Mayaguez, Puerto Rico 00709-5000).

March 1991

ECONOMIC EVALUATION OF MINERAL RESOURCES (International Conference), Kosice, Czechoslovakia. Languages: Russian and English. (Intergeoeconomika 1991 CSSR, GEOPOND, Eng St Richter, Garbanova 1, 040 11 Kosice, Czechoslovakia).

April 15-19, 1991

AQUIFER OVEREXPLOITATION (23rd International Congress), Puerto de la Cruz, Tenerife (Islas Canarias), Spain. (Dr. Permin Villaroga, Departamento de Geodinamica, Facultad de Ciencias Geologicas, Universidad Complutense, 29040 Madrid, Spain).

April 26 - May 1, 1991

ASSOCIATION OF EXPLORATION GEOCHEMISTS (15th International Geochemical Exploration Symposium), Reno, U.S.A. (Richard B. Jones, Nevada Bureau of Mines and Geology, University of Nevada, Reno, Nevada 89557-0088, U.S.A.)

May 1991

QUANTITATIVE METHODS OF INVESTIGATION OF THE STRUCTURE OF SOILS AND ROCKS (IAEG International Symposium), Moscow. (Dr. M. Primel, LCPC, 58 Bd. Lafevvre, 75732 Paris Cedex 15, France)

May 7-22, 1991

GOLD '91 (5th International Conference), Belo Horizonte, Minas Gerais, Brazil. (Brazil Gold '91 Organizing Committee, Avenida Alfonso Pena, 3880-3^o/5^o andares, 30130 Belo Horizonte, MG, Brazil).

May 12-18, 1991

LAND SUBSIDENCE (4th International Symposium), Houston, Texas, USA. (Ivan Johnson, FISOLS, 7474 Upham Court, Arvada CO 80003, USA).

June 10-12, 1991

AFRICAN MINING '91 (2nd International Conference), incorporating PROSPECTING IN AREAS OF ARID TERRAIN and MINE-EX '91, Harare, Zimbabwe: geology, exploration, mining, mineral processing, extractive metallurgy, finance. Organized by The Institution of Mining and Metallurgy in association with The Zimbabwe Section of IMM, The Geological Society of Zimbabwe and The Zimbabwe Institution of Engineers. (The Conference Office, IMM, 44 Portland Place, London W1N 4BR, UK).

August 2-9, 1991

QUATERNARY RESEARCH (13th INQUA International Congress), Beijing, People's Republic of China. (Secretariat, 13th INQUA Congress, Chinese Academy of Sciences, 52 Sanlihe, Beijing 100864, PRC).

August 11-24, 1991

IUGG (XX General Assembly), Vienna, Austria. (IUGG '91 Organizing Committee, c/o Prof. Peter Steihauser, ZAMG, Hohe Warte 38, A-1190 Vienna, Austria).

September 6-11, 1991

PALEOECOLOGY (2nd International Congress), Nanjing, People's Republic of China. (Ma Yu-Ying, Nanjing Institute of Geology and Palaeontology, Academia Sinica, Chi-Ming-Ssu, Nanjing 210008, PRC).

September 16-20, 1991

ROCK MECHANICS (7th International Congress), Aachen, F.R. Germany. (Deutsche Gesellschaft für Erd- und Grundbau, Kronprinzenstrasse 35a, D-4300 Essen 1, F.R.G.).

September 22-27, 1991

CARBONIFEROUS-PERMIAN STRATIGRAPHY AND GEOLOGY (12th International Congress), Buenos Aires, Argentina. Language: English. (Dr. S. Archangelsky, Museo Argentino de Ciencias Naturales, Avenida A. Gallardo 470, Buenos Aires 1405, Argentina).

1992

February 9-12, 1992

LANDSLIDES (6th International Symposium), New Zealand. (Dr. M. Primel, LCPC, 58 Bd. Lafevvre, 75732 Paris Cedex 15, France)

June 1992

WORLD MINING (15th Congress), Seville, Spain. (World Mining Congress, Al Ujazdowski 1-3, PL-00583, Warsaw, Poland).

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 reconsideration 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 Palaeozoic 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.

