

PERSATUAN GEOLOGI MALAYSIA

WARTA GEOLOGI

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KANDUNGAN (Contents)

CATATAN GEOLOGI (Geological Notes)

- K.R. Chakraborty & I. Metcalfe: Deformation and age of limestone at Sungei Bilut near Raub, Pahang 115

PERTEMUAN PERSATUAN (Meetings of Society)

- Kumpulan Kerja Geologi Petroleum (Petroleum Geology Working Group) First Meeting 115
 Resignation and Appointment of Honorary Secretary and Asst. Hon. Secretary 162
 Keahlian (Membership) 127
 Pertambahan Baru Perpustakaan (New Library Additions) 127

BERITA-BERITA LAIN (Other News)

- Techniques of hydrologic investigations for international participants 129
 Centre for Environmental Management and Planning (CEMP) – Conference and training calendar 130
 CEMP – 10th International seminar on environmental impact assessment and management 131
 Symposium Precambrian Granitoids: Petrogenesis, geochemistry, and metallogeny 135
 3rd Multidisciplinary Conference on sinkholes and the engineering and environmental impact of karst 136
 XIII International Geochemical Exploration Symposium, Rio 89 137
 MMIJ/IMM Joint Symposium, 1989, Kyoto – Today's technology for the mining and metallurgical industries 138
 Kursus-kursus Latihan & Bengkel-bengkel (Training Courses & Workshop) 140
 Kalendar (Calendar) 142



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CATATAN GEOLOGI (GEOLOGICAL NOTES)

DEFORMATION AND AGE OF LIMESTONE AT SUNGEI BILUT NEAR RAUB, PAHANG

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Abstract

An undated limestone section in Sungei Bilut near Raub, previously mapped as Carbo-Permian "Raub Group", shows two phases of non-coaxial folding. The presence of polyphase deformation, not evident in other dated "Raub Group" sediments indicated an older age which was confirmed as either Devonian or lower Lower Carboniferous by conodont studies. The lower part of the "Raub Group" can thus be recognised using structural criteria and it seems likely that an unconformity is present within the strata previously mapped as "Raub Group".

Introduction

Occurrence of limestone in the Sungei Bilut area has been noted by a number of previous workers (e.g. Alexander, 1968; Ong, 1974) and these occurrences have been mapped as forming part of the Carbo-Permian "Raub Group" (Alexander, 1959; Haile *et al.*, 1977).

Recently, the authors visited one of these limestone exposures in an estate road cutting adjacent to Sungei Bilut four and a half kilometers south of Raub (Fig. 1). The limestones at this locality show polyphase folding not evident in other Carbo-Permian "Raub Group" rocks of the area. This suggested to the authors that the previously undated rocks at this locality may well in fact be older. Accordingly, some structural studies were made on this exposure and samples were collected for conodont extraction and dating. The results of this work are presented in this note.

Lithology and structure

The sequence comprises mainly thinly bedded, dark grey, carbonaceous limestone with shale partings and occasional thicker shale beds. The studied strata is exposed in a roughly east-west, approximately 40 m long, estate road cut section (A general sketch of which is given in Figure 2).

The road cut section comprises a series of folds including one refolded fold providing evidence for two phases of folding. A photograph and sketch of the refolded fold are given in figures 3 and 4. Within the

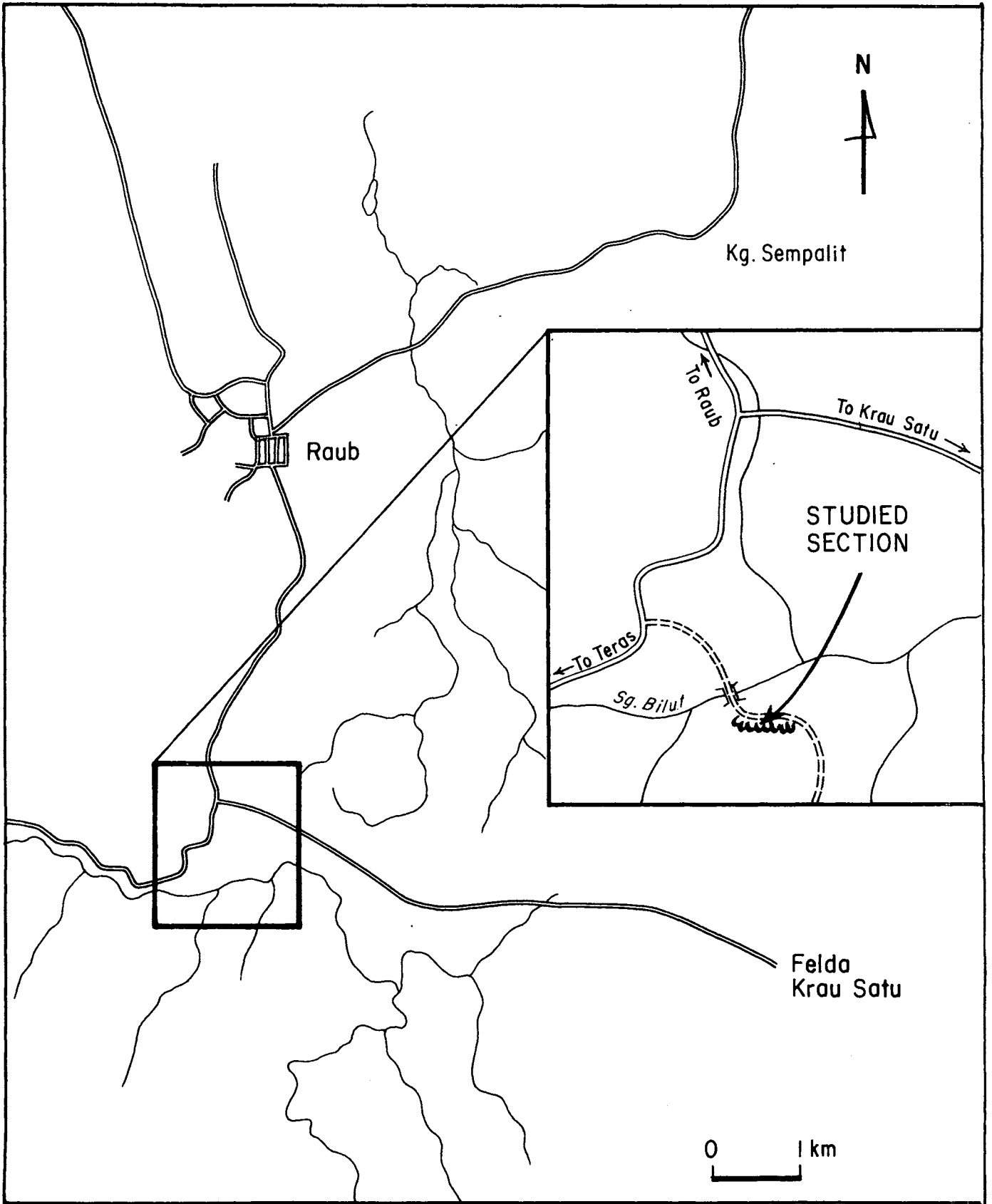


Fig. 1. Sketch map showing the location of the studied section.

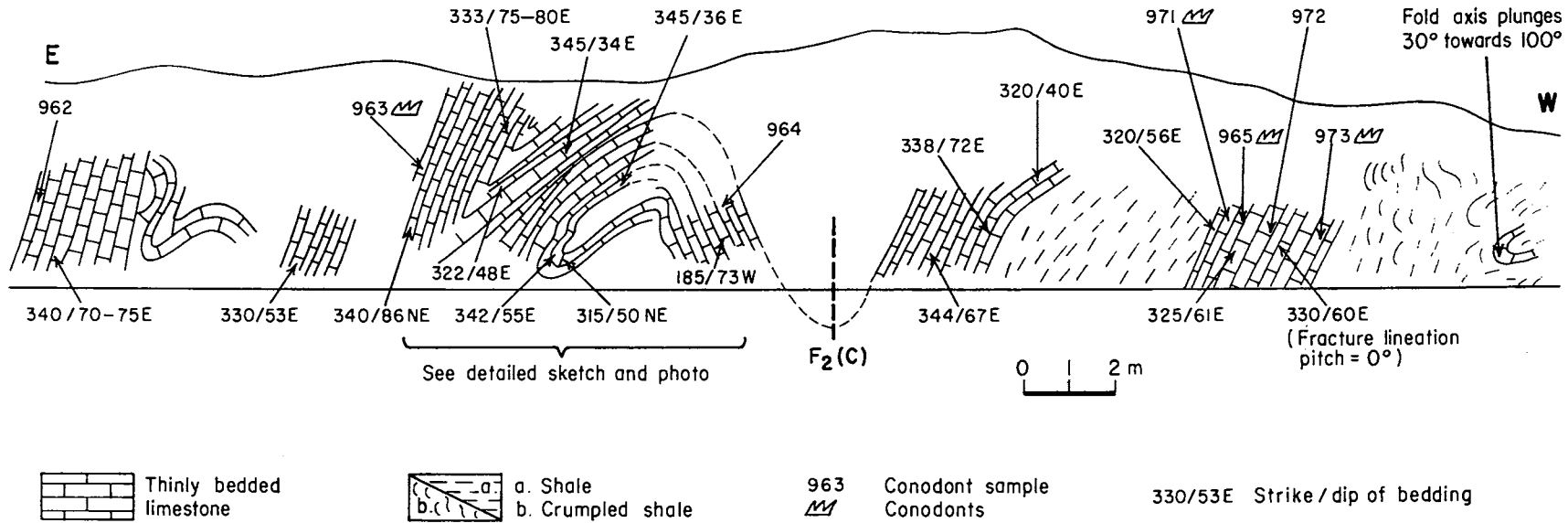
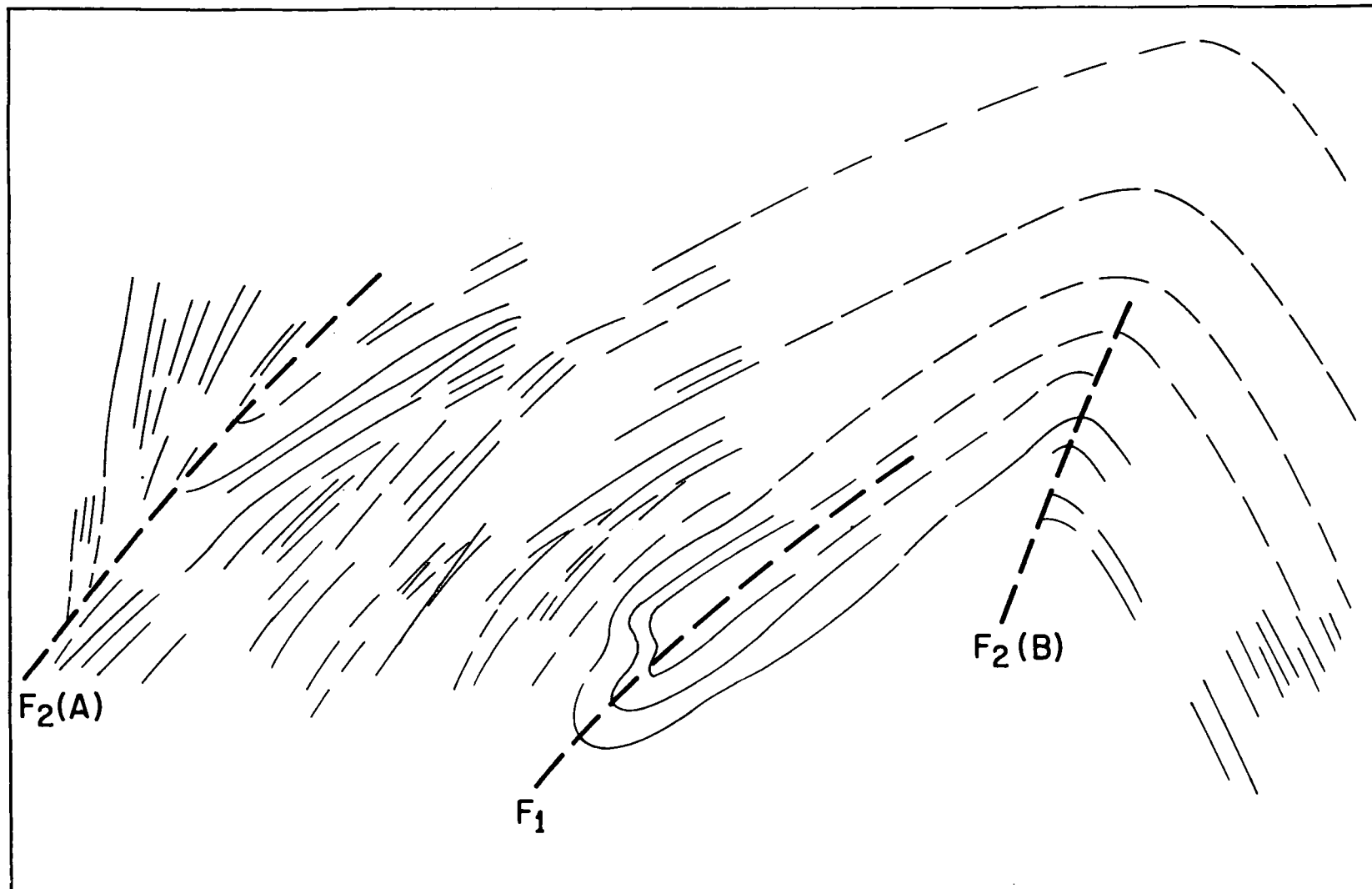


Fig. 2. Generalised sketch of the studied road-cut exposure.



Fig. 3. Photograph of the refolded fold.



— — — Axial plane traces of first (F_1) and second (F_2) folds. Plunge of fold axes : $F_1 = 50^\circ \rightarrow 102^\circ$
 $F_2(A) = 30^\circ \rightarrow 342^\circ$; $F_2(B) = 12^\circ \rightarrow 002^\circ$; $F_2(C) = 27^\circ \rightarrow 356^\circ$ (see fig. 2)

Fig. 4. Sketch of the refolded fold illustrated in Figure 3.

disturbed shaley horizon in the western end of the section a few small isolated fold hinges are observed whose attitudes are distinctly different to the main folds (Fig. 2). It was possible to measure one of these small folds directly, and the axis was found to plunge 30° towards 100° .

The geometry and the attitude of the first phase fold (F_1) could not be determined with certainty from the road cut section, though the axial plane appears to be southeasterly dipping. However, measurements of the bedding traces around the vaguely visible closure of F_1 on the road suggest that the F_1 axis plunges 50° towards 102° . If this determination is correct, then it seems to suggest that the F_1 fold is reclined. It may also be noted that this attitude is similar to that of the isolated small folds in the west end as mentioned earlier. It is thus likely that the isolated fold hinges belong to the first phase.

The second phase folds (F_2) dominate the road-cut section and the present attitude of the beds are mainly due to F_2 deformation. The individual F_2 folds vary in style from overturned to upright and also slightly in their attitudes as evident from the folds marked $F_2(A)$, $F_2(B)$ and $F_2(C)$ in figures 2 and 4. The beddings have been measured systematically along the section. The lower hemisphere equal area projections of the bedding poles, shown in Figure 5, define a π -circle whose axis plunges 35° towards 353° . The F_2 attitude thus differs significantly from F_1 indicating that the two phases of folding are not coaxial.

Age of the sediments

Seven conodont samples, each weighing 6 kg were collected (see Fig. 2 for localities) and dissolved in 5% formic acid. Only four samples yielded conodonts and these were rare and poorly preserved comprising only unidentifiable ramiform element fragments except for one specimen from sample 965 which was a platform element identifiable to the generic level. This specimen is identified as *Polygnathus* sp. (Fig. 6) and this genus indicates either a Devonian or lower Lower Carboniferous (Tournaisian or early Viséan) age for the Sungei Bilut limestones.

The conodont elements exhibit a colour alteration index (C.A.I.) of 5 indicating they have been heated to temperatures between 300 and 480°C . They also show a fair degree of textural alteration (Fig. 6) consistent with regional metamorphism (Rejebian *et al.*, 1987).

Discussion

The term "Raub Group" has been variously applied to widely differing rock types of Carboniferous - Triassic age in the Central Belt of Peninsular Malaysia (Foo, 1983). In this paper we use the term "Raub Group" as applied by Alexander (1959) and Foo (1983) which is equivalent to the "Raub Series" of Scrivenor (1907), "Calcareous Formation" of Richardson (1937, 1939) and "Calcareous Series" of Richardson (1950) and Alexander (1968). The age of these rocks is generally Carbo-Permian with possible extension into the Triassic. The oldest fossils previously described from the "Raub Group" are upper Lower Carboniferous (late Viséan) macrofossils from near Cheroh (Yancey, 1972).

It is clear that strata representing the "Raub Group" exhibit varying degrees of deformation and it appears from our study that the older part of the "Raub Group" is more intensely deformed and can be recognised on structural grounds from younger dated Permo-Triassic "Raub Group" sediments. This suggests a probable unconformity within the "Raub Group". More detailed systematic mapping with palaeontological control and structural data is required to define this unconformity more precisely.

Acknowledgements

This study was supported by research grants from the University of Malaya (F28/78 to K.R.C.) and Universiti Kebangsaan Malaysia (6/86 to I.M.). We also thank Ching Yu Hay for drafting the figures.

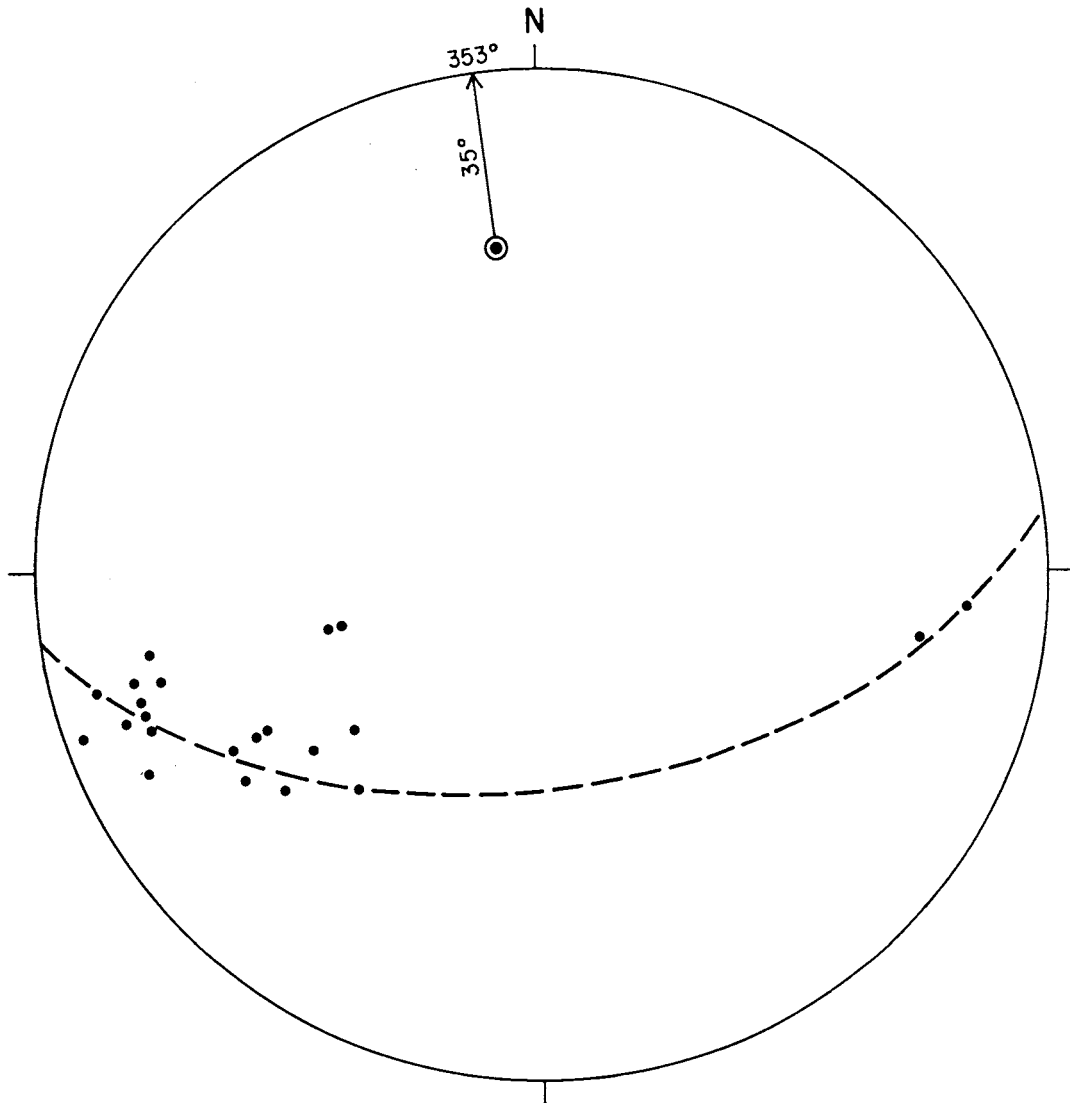


Fig. 5. Lower hemisphere equal area plot of poles to bedding in the studied section.

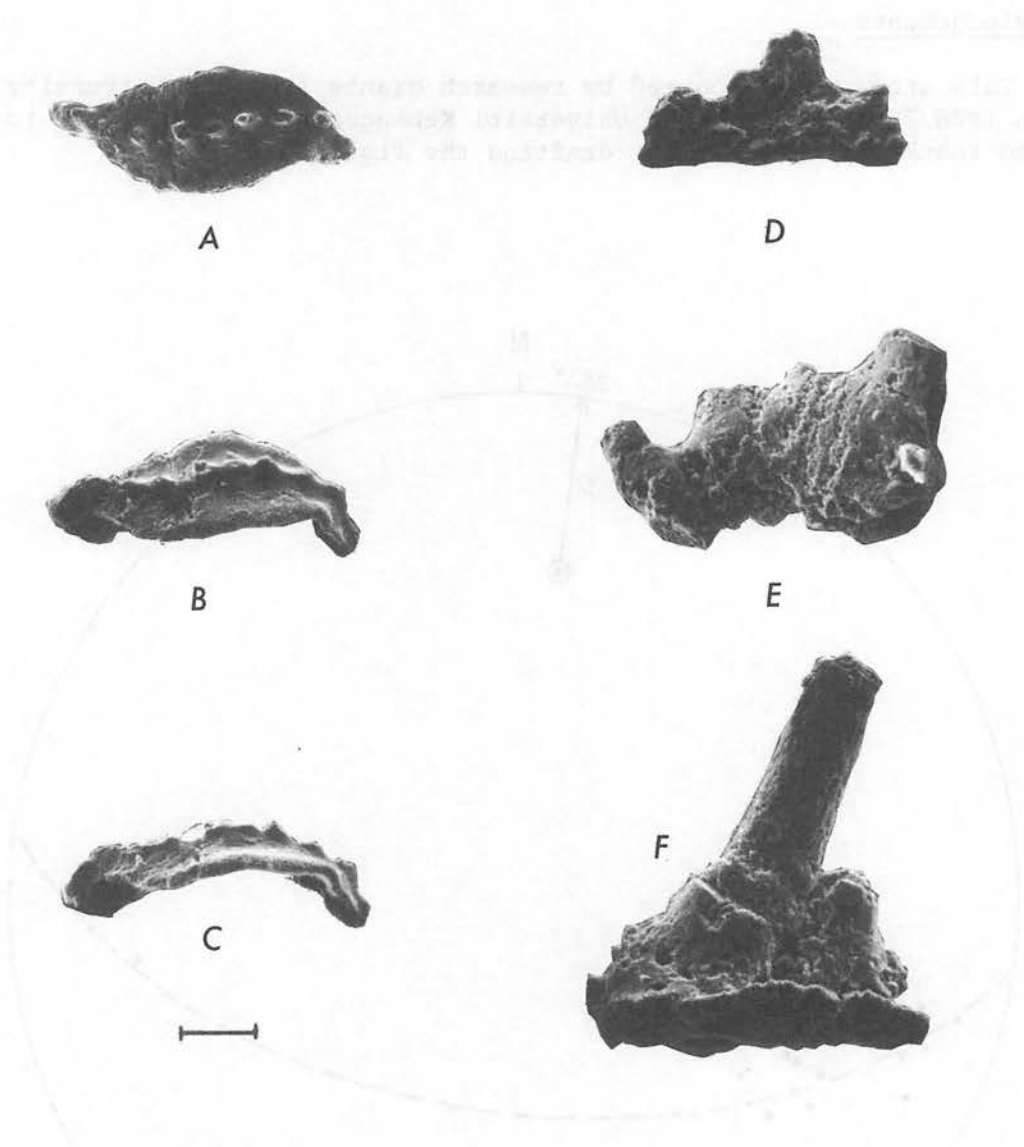


Fig. 6. A, B, C. *Polygnathus* sp. Oral, oblique lateral and inner lateral views respectively, sample 965.
D, E, F. Unidentifiable ramiform elements showing a high degree of textural alteration, sample 965.
Scale bar represents 100 microns.

References

- Alexander, J.B., 1959. Pre-Tertiary stratigraphic succession in Malaya. *Nature*, 183, 230-1.
- Alexander, J.B., 1968. The geology and mineral resources of the neighbourhood of Bentong, Pahang and adjoining portions of Selangor and Negeri Sembilan. *Mem. Geol. Surv. Dept. West Malaysia*, 8, 250 pp.
- Foo, K.Y., 1983. The Palaeozoic sedimentary rocks of Peninsular Malaysia - stratigraphy and correlation. *Proc. Workshop on Strat. Correlation of Thailand and Malaysia*, Volume 1, Technical papers, 1-19. Geol. Soc. Thailand/Geol. Soc. Malaysia.
- Haile, N.S., Stauffer, P.H., Krishnan, D., Lim, T.P. and Ong, G.B., 1977. Palaeozoic redbeds and radiolarian chert: reinterpretation of their relationships in the Bentong and Raub areas, West Pahang, Peninsular Malaysia. *Geol. Soc. Malaysia Bull.*, 8, 45-60.
- Ong, G.B., 1974. *Geology of an area southwest of Raub, Pahang*. Unpubl. B.Sc. (Hons) thesis, Department of Geology, University of Malaya.
- Rejebian, V.A., Harris, A.G. and Huebner, J.S., 1987. Conodont colour and textural alteration: An index to regional metamorphism, contact metamorphism and hydrothermal alteration. *Geol. Soc. Am. Bull.*, 99, 471-479.
- Richardson, J.A., 1938. Progress report of the geological survey of that part of the gold belt in Pahang which lies north of Raub. *Rep. Geol. Surv. Dep. F.M.S.* (for 1937), 27-46.
- Richardson, J.A., 1939. The geology and mineral resources of the neighbourhood of Raub, Pahang, Federated Malay States, with an account of the geology of the Raub Australian Gold Mine. *Mem. Geol. Surv. Dep. Fed. Malaya*, 3, 166 pp.
- Richardson, J.A., 1950. The geology and mineral resources of the neighbourhood of Chegar Perah and Merapoh, Pahang, Malaya. *Mem. Geol. Surv. Dep. Fed. Malaya*, 4, 162 pp.
- Scrivenor, J.B., 1907. *Geologist's report of progress, Federated Malay States, September 1903 to January 1907*, ix + 44 pp. Kuala Lumpur, Govt. Press.
- Yancey, T.E., 1972. Carboniferous fossils from the "Raub Group" near Cheroh Village, western Pahang, West Malaysia. *Geol. Soc. Malaysia Newsletter*, No. 34, 5-9.

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BERITA - BERITA PERSATUAN (NEWS OF THE SOCIETY)

PETROLEUM GROUP - FIRST MEETING

Notes on the first meeting of the Petroleum Group of the Geological Society of Malaysia held in the University of Malaya at 3 p.m. on the 7th May 1988.

Present:

- | | |
|---------------------------------|----------------------------------|
| 1. Dr. Nik Ramli | (Petronas) |
| 2. Dr. Teh Guan Hoe | (Universiti Malaya) |
| 3. En. Hila Ludin Abu Hazim | (Petronas) |
| 4. En. R. Vaeravan | (Exploration Logging) |
| 5. En. Mohd. Tahir Mohd. Kassim | (Petronas) |
| 6. En. Ali Bin Md. Shariff | (Exploration Dept., Petronas) |
| 7. En. Abdul Rahim Abu Bakar | (Petronas) |
| 8. En. Che Aziz B. Ali | (Universiti Kebangsaan Malaysia) |
| 9. Dr. Updesh Singh | (Petronas) |
| 10. En. Ramly Bin Khairuddin | (Universiti Malaya/Petronas) |
| 11. En. Noor Azim Bin Ibrahim | (Petronas Lab) |

Election of Chairman and Secretary

Dr. Nik Ramli was elected as Chairman and Che Aziz Ali as Secretary for the Group.

Discussions

Discussion centered around how the group can contribute towards promoting interest in the field of Petroleum Geology. Several projects were proposed. Among them were:

1. The preparation of an Istilah Geologi Petroliam

It was felt that the Group should utilise the existing Istilah Geologi to produce an Istilah Geologi Petroliam. Che Aziz Ali was nominated as chief compiler. Those present at the meeting who could assist the honourable secretary in compiling all the essential terms in Petroleum Geology have been identified as follows:

- | | |
|--------------------------|---|
| i) ? | (Geochemistry) |
| ii) Norazim Ibrahim | (Clastic sedimentology and Stratigraphy) |
| iii) Dr. Updesdh Singh | (Carbonate Sedimentology) |
| iv) Ali Sharif | (Electric Logging) |
| v) ? | (Mudlogging) |
| vi) Md. Tahir Md. Kassim | (Production Geology) |
| vii) Hila Ludin Hazim | (Exploration Geology) |
| viii) Ramly Khairuddin | (Geochemistry and Petroleum Application of Nuclear Geology) |

2. Preparation of a Petroleum Exploration Map of Malaysia

There was a general feeling that it would be useful to prepare and publish a Petroleum Exploration Status Map for Malaysia. This map can be made available at the Annual Petroleum Geology Seminar. Petronas Exploration Manager shall be consulted on the feasibility of the project.

3. Discussion on the Stratigraphy of Malaysian Offshore Basins

There is generally a need to call for an open discussion on the Stratigraphy of Malaysian Offshore Basins. Various stratigraphic nomenclatures utilised by oil companies operating in offshore Malaysia have been published with little discussion on the schemes themselves. A discussion/meeting on the basis for these nomenclatures would be useful for petroleum geologists and stratigraphers not familiar with these nomenclatures. It was proposed that a day/half day can be allocated for this purpose on the last day of the Petroleum Geology Seminar in December. Oil Companies will be approached for their co-operation in this matter.

4. Petroleum Schools and Field Trips

The AAPG and other bodies will be approached in order to try and bring Petroleum Schools to Kuala Lumpur. Field trips shall either be organized by the Group itself or together with other specialised groups.

Che Aziz Ali
Secretary
Petroleum Group

RESIGNATION AND APPOINTMENT OF HONORARY SECRETARY AND ASST. HON. SECRETARY

The Honorary Secretary, S. Paramanathan, who notified the Council of his intention to resign from the post in the early part of the year due to heavy commitments, was asked to serve until the new Council takes over after the AGM. He agreed.

The Council then appointed Ibrahim Komoo of Universiti Kebangsaan Malaysia as the new Honorary Secretary and Jimmy Khoo (Geological Survey Malaysia) as the new Asst. Honorary Secretary.

KEAHLIAN (MEMBERSHIP)

The following applications for membership were approved:

Full Members

1. Abdul Rahim Abu Bakar, Petronas Laboratory, Lot 1026, PKNS Industrial Estate, 54200 Hulu Kelang.
2. Helmut W. Ziemand, PanCanadian Petroleum Ltd., P.O. Box 2850, Calgary, Alberta, Canada T2P 2S5.
3. Akio Suzuki, Nippon Oil Exploration Co., Letter Box no. 74, 34th Floor, UBN Tower, No. 10, Jalan P. Ramlee, 50250 Kuala Lumpur.
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6. Ngu Tung Yiing, WTK Management Sdn. Bhd., 51-53, Jalan Maju, Sibul, Sarawak.

Associate Member

1. Wong Wei Khiang, Tameron Sdn. Bhd., 37-A Jalan SS21/1A, Damansara Utama, 47400 Petaling Jaya, Selangor.

PERTAMBAHAN BARU PERPUSTAKAAN (NEW LIBRARY ADDITIONS)

The Society has received the following publications:

1. Commonwealth Sc. Council, March-April 1988.
2. SOPAC News, vol. 5, no. 3, 1987.
3. Geophysical Research Bulletin, vol. 25, no. 4, 1987 & vol. 26, no. 1, 1988.
4. Petromin, May 1988.
5. Bulletin, Nanjing Inst. Geol. & Palaeont. Acad. Sinica no. 11, 1987.
6. Palaeontological abstracts, vol. 2, nos. 2-4, 1987 & vol. 3, no. 1, 1988.
7. Acta Palaeobot. Palynol. Sinica, no. 1, 1986.
8. Chronique de la recherche miniere, no. 490, 1988.
9. Oklahoma Geology Notes, vol. 47, nos 1-3, 1987.
10. Geological literature of USSR, Bibliographical yearbook for 1984 year, vols 1 & 2, 1987.
11. USGS Bulletin 1733: A & B (1987), 1734: A & B (1987), 1728: B-F (1986), 1641: B (1987), 1644 (1986), 1696 (1987), 1694 (1987), 1684 (1987), 1687 (1987), 1690 (1987), 1731: A, D, E, F (1987), 1725: A, B & D (1987), 1730: B (1987), 1764 (1987), 1721: A-C (1987), 1712: A-C (1987), 1703: A-C (1987), 1701: A-B (1987), 1711: A-D (1987), 1719: D-F (1987), 1720: A (1987), 1718: A (1987), 1716: A (1985), 1715: A (1987), 1713: C (1987), 1714: A (1987), 1726: E (1987), 1703: D (1986), 1705: B (1987), 1722: A & B (1987), 1724: A-C (1987), 1726: A-D (1986), 1682 (1987), 1680 (1986), 1664 (1987), 1566 (1987), 1559 (1986), 1590: A (1987), 1761 (1987), 1693 (1986), 1760 (1987), 1757: A & B (1987), 1751: A (1987), 1741: A (1987), 1740: A & B (1987), 1578 (1986), 1590: D (1987), 1579 (1987), 1581: A (1987), 1589: A (1987), 1705: C (1987), 1709: A-D (1987), 1710: B (1987), 1779 (1987),

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(1987), 1665 (1987), 1679 (1987), 1674: B (1987), 1674: A (1987).
12. USGS Prof. Paper 1348 (1987), 1321: A (1987), 1333 (1985), 1338 (1986),
1340 (1987), 1354 (1987), 1359 (1987), 1362 (1987), 1365 (1986), 1200:
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B E R I T A - B E R I T A L A I N
(O T H E R N E W S)

TECHNIQUES OF HYDROLOGIC INVESTIGATIONS FOR INTERNATIONAL PARTICIPANTS

U.S. Geological Survey, Water Resources Division.
1989 International Training Course.

The U.S. Geological Survey (USGS), Water Resources Division, is pleased to announce the 1989 course "Techniques of Hydrologic Investigations for International Participants".

Date: June 7 through August 4, 1989.

Locations: Orientation to USGS, project planning and management, USGS National Center, Reston, Virginia (June 7-10, 1989).

Hydrologic data collection, field site in Colorado Springs, Colorado (June 11-17, 1989).

Classroom lectures, workshops, and additional field activity, USGS National Training Center, Denver, Colorado (June 18 - August 4, 1989).

Cost: \$7,100 U.S. per participant.

Language of English (no interpreters will be provided).
Instruction:

Application March 31, 1989.
Deadline:

Contact: U.S. Geological Survey,
Water Resources Division,
436 National Center,
Reston, Virginia 22092.

Telex No: 160443 USGS UT
Telephone: (703) 648-5053
Telefax No: (703) 648-5295 (Please address to Mail Stop 436)

Purpose

The purpose of this training is to provide international hydrologists with an opportunity to learn the techniques and methods of data collection and analysis used by the USGS for hydrologic investigations. Participating hydrologists are expected to adapt these techniques and methods to the particular needs of their own organization and to share their knowledge with their colleagues.

For further information

Early application is encouraged due to the limited number of spaces available. Applications must be submitted by the nominee's organization or by the sponsoring international organization (not by personal request) to:

U.S. Geological Survey,
Water Resources Division,
436 National Center,
Reston,
Virginia 22092 USA.

Telex inquiries may be addressed to telex number 160443 USGS UT.

CENTRE FOR ENVIRONMENTAL MANAGEMENT AND PLANNING (CEMP) -
CONFERENCE AND TRAINING CALENDAR

- | | |
|----------------------------|---|
| 2 July - 22 September 1989 | 4th Three month Intensive Training Course on Environmental Impact Assessment at the University of Aberdeen. |
| 9-22 July 1989 | 10th International Seminar on Environmental Impact Assessment at the University of Aberdeen. |
| September 1989 | Advanced Study Institute on 'Ground Water' organized with Prof. L. Canter, University of Oklahoma to be held at Hotel Il Ciocco, Castelvechio Pascoli, Northern Tuscany, Italy. |
| October 1989 | Environment, Tourism and Development, a workshop to consider tourism in the context of strategies for sustainable development, to be held at the Chandris Hotel, Crete, Greece. |
| 1 July - 21 September 1990 | 5th Three month Intensive Training Course on Environmental Impact Assessment based at the University of Aberdeen. |
| 8-21 July 1990 | 11th International Seminar on Environmental Impact Assessment at the University of Aberdeen. |

For further information:

Centre for Environmental Management and Planning,
48 College Bounds,
Old Aberdeen AB9 1FX,
Scotland, U.K.

Telephone: 0224 272480
Telex 73458 UNIABN G
FAX 0224 487658

CEMP - 10TH INTERNATIONAL SEMINAR ON ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT

9-22 July 1989, University of Aberdeen.

Sponsored by The World Health Organization and United Nations Development Programme.

Background and objectives

The drive for economic growth in both developed and developing countries is now greater than ever. This can be witnessed in the current upsurge of interest in the financing, planning and implementation of a wide range of development projects. Unfortunately in many cases there have been harmful consequences for human health and environmental quality as a result of both the scale and nature of resource based and industrial developments. At the same time many established industrial areas now face major pollution problems.

Problems involving the relationship between economic development and environmental health and social issues are therefore the subject of growing concern in many parts of the world. Numerous attempts have been made to develop mechanisms to encourage optimal resource allocation, to minimize potential adverse impacts of development and maximize benefits. One such mechanism is Environmental Impact Assessment (EIA), which aims to provide decision-makers with an appraisal of the environmental, health and social implications of alternative courses of action. EIA has received publicity and support through the Brandt Report, the World Conservation Strategy, World Commission for Environmental and Development - "Our Common Future" - and initiatives of WHO, UNEP, UNDP and IMO.

Whilst many countries now have legislation requiring EIA for major development projects it has been noted by the EEC, where a mandatory system of EIA was introduced in 1988, that there is a need for the comprehensive development of training programmes in this topic.

For the tenth year in succession, WHO is sponsoring, with the support of the United Nations Development Programme (UNDP), an International Seminar on Environmental Impact Assessment and Management in recognition that development, health and the environment are inextricably linked. Health problems are frequently caused, directly or indirectly, by changes in the human environment. One of the aims of the seminar is to encourage increased awareness of health factors among those involved in the planning and assessment of new developments.

Schlumberger: services throughout Malaysia.

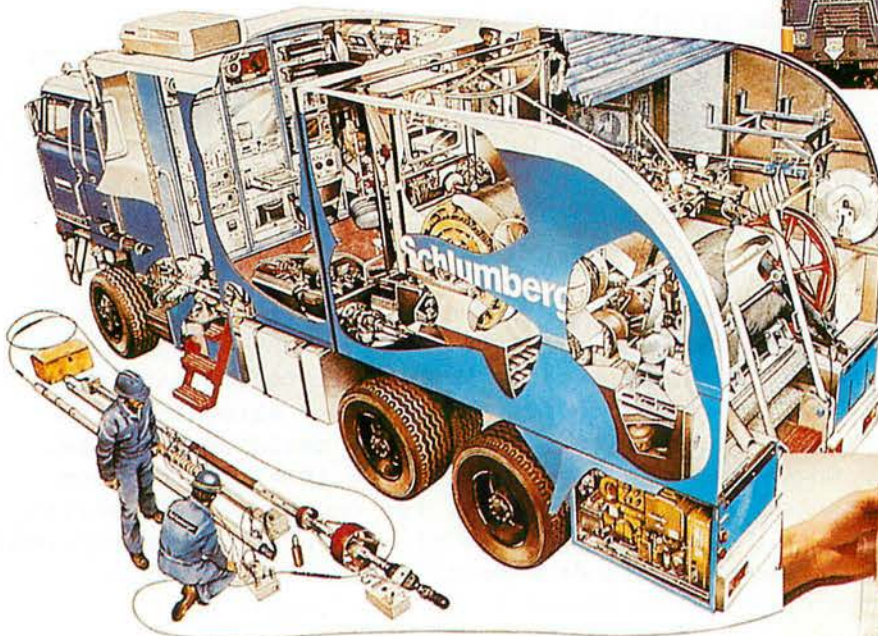
Schlumberger, the eyes of the oil industry, has provided services since the discovery of oil in Miri, Sarawak, several decades ago. Its commitment to high technology continues to provide the most cost effective results.



Schlumberger engineer at work with the Cyber Service Unit system inside a wireline logging Unit

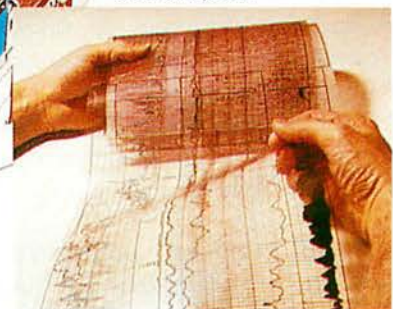


Cyber Service Unit on location.



Schlumberger crew checking a logging tool.

Cyberlook, an interpreted log prepared at the wellsite by the CSU computer.



Schlumberger

3rd Floor, Wisma Bunga Raya, 152 Jalan Ampang, 50450 Kuala Lumpur.
Tel: 2485533/2485621/2485947. Telex: SCHLUM MA 31335. Cable: SCHLUMEAD.

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Cable: SCHLUMEAD.

The seminar will present a comprehensive introduction to the aims and scope of EIA in the context of environmental management strategies. It will emphasise the methods and techniques which can be used to assess the impacts of proposed major development actions. Participation is open to government administrators, planners, academics, industrialists, scientists and all those who feel that a better understanding of EIA and Environmental Management would benefit their work.

Seminar costs

Seminar Fee	£910
Accommodation	£450
VAT	<u>£204</u>
	£1564

VAT (value added tax) at the rate ruling at date of invoice (current rate 15%).

Participants can register for the whole seminar or can attend for one week only or on a daily basis. The charges are as follows-

Daily Rates: Seminar Fee £110 plus VAT
Accommodation £35 plus VAT

The fee and accommodation charge will cover the costs of lectures, excursions and field-trips in the Aberdeen region, seminar material papers, all meals (breakfast, lunch, dinner, coffee, etc.) and accommodation in University Halls of Residence.

Please send cheques to CEMP or directly to CEMP bank account no. 70100444 Clydesdale Bank, University Branch, 17 High Street, Old Aberdeen AB2 3EE, Scotland, U.K., Bank Code 82-69-14. Please make cheques payable to CEMP. All fees must be paid by 1 June.

For Information:

Centre for Environmental Management and Planning,
48 College Bounds, Old Aberdeen AB9 1FX,
Scotland, U.K.

Telephone 0224 272480
Telex 73458 UNIABN G,
Fax 0224 487658

SYMPOSIUM PRECAMBRIAN GRANITOIDS: PETROGENESIS, GEOCHEMISTRY,
AND METALLOGENY
IGCP PROJECT 217 "PROTEROZOIC GEOCHEMISTRY"
IGCP PROJECT 247 "PRECAMBRIAN ORE DEPOSITS RELATED TO TECTONIC
STYLES"

August 14-17, 1989.

University of Helsinki, Helsinki, Finland.

Theme and topics

The symposium will focus on various petrogenetic, geochemical and metallogenetic aspects of Precambrian granitoids in different geotectonic environments: Archaean granitoids, Proterozoic orogenic granitoids, Proterozoic rapakivi granites and other anorogenic/post-orogenic granitoids.

The topics will include

- Precambrian granitoids of various tectonic settings.
- Rapakivi granite - anorthosite association, with possible volcanic members.
- Geochemistry, isotope geochemistry and petrography of different granite types.
- Mineralization (Mo, Cu, Au, Sn, W, REE etc.); metallogenic provinces.
- Origin and source.

Dates to remember

The symposium dates are August 14-17, 1989. Registration deadline is May 1, 1989.

Registration

Registration fee: 600 FIM before May 1 1989 and 750 FIM after May 1. Registration fee includes abstract volume, symposium material and services, and refreshments during the breaks.

Students and accompanying persons: 225 FIM (abstracts not included). Separate abstracts will be available at the Congress Desk.

Symposium venue

The Symposium will be held in the Porthania Building of the University of Helsinki, Hallituskatu 11, Helsinki.

Scientific excursions

Pre-symposium (A) and post-symposium (C) excursions as well as a one-day excursion (B) in the Helsinki area will be arranged.

A-1. The Åland, Vehmaa and Laitila rapakivi granite complexes (SW Finland), greisen-type Sn-Be-W mineralization associated with the youngest intrusion phases of rapakivi granite.

A-2. The classical Wiborg rapakivi granite complex (SE Finland) and its satellitic plutons, the rapakivi granite - anorthosite association, composite diabase - quartz porphyry dykes, greisen-type mineralization associated with the youngest intrusion phases of rapakivi granite, orbicular granites.

B. Granites and migmatites of the Helsinki area.

C-1. Late- and synorogenic Svecofennian granitoids of South Finland, the granite pegmatites of the Tammela, Tampere (Eräjärvi) and Seinäjoki areas, the tourmaline breccia-pipe Cu-W deposit of Ylöjärvi, orbicular granites at Kuru.

C-2. Post-tectonic Svecofennian granite stocks with spherulitic rhyolite dykes and Mo mineralization, and orogenic granitoids in North Finland.

C-3. Archaean granitoids and associated Mo, W and Au mineralization in East Finland.

C-4. The Wiborg rapakivi granite complex, SE Finland.

Address of the Organizing Committee:

Precambrian Granitoids Symposium,
Department of Geology,
University of Helsinki,
P.O. Box 115,
SF-00171 Helsinki, Finland.

Tel.: Int. + 358 0 1914426 (Prof. I. Haapala)

Int. + 358 0 1914432 (Mr. Y. Kähkönen)

Telex: 124690 unih sf

Telefax: Int. + 358 0 656591

3RD MULTIDISCIPLINARY CONFERENCE ON SINKHOLES AND THE ENGINEERING AND ENVIRONMENTAL IMPACTS OF KARST - PRELIMINARY ANNOUNCEMENT AND CALL FOR PAPERS

This highly successful conference brings together engineers, geologists, hydrologists, and geographers from all over the world to share their practical experience solving engineering and environmental problems in karst terranes. The third meeting of this multidisciplinary group will be held on the beach at St. Petersburg, Florida, October 1-4, 1989, at the luxurious Tradewinds hotel. Very advantageous rates have been negotiated for the Conference.

Papers are invited on all subjects related to applied karst geology and hydrology, but are particularly encouraged in the engineering field. All authors will be expected to present a 20 minute talk and a written manuscript for publication in a professionally published proceedings volume. At this time, please submit a prospective title. Abstracts will be due by April 17, 1989, and manuscripts by June 30, 1989. Send to: 3rd Multidisciplinary Conference, Florida Sinkhole Research Institute, University of Central Florida, Orlando, FL 32816.

XIII INTERNATIONAL GEOCHEMICAL EXPLORATION SYMPOSIUM, RIO 89

Rio de Janeiro, Brazil
October 1-6, 1989

Technical session and call for papers

Proposals for papers submitted for the XIII IGES covering the listed topics must be submitted in English as extended abstracts up to 1,000 words or as completed papers. The deadline for submission of abstracts is May 1, 1989.

Abstracts must be detailed enough to allow the Technical Program Committee to reach an informed decision. First consideration for acceptance will be given to those papers containing new contributions to the field and to those reflecting a clear understanding of the geochemical processes upon which applied exploration is based.

Papers will be presented in 25 minute sessions including 5 minutes for discussion and questions.

The following topics comprise the major themes for the XIII IGES.

- (1) Enrichment and formation of ore deposits by geochemical processes.
- (2) Petroleum Exploration Geochemistry.
- (3) Applied Geochemistry in humid tropical terrains.
- (4) Applied Geochemistry in arid terrains.
- (5) Exploration Geochemistry for precious metals, strategic metals (Cr, V, Mn etc.) and high-technology metals (Ga, Y, In etc.).
- (6) Recent developments in analytical chemistry techniques appropriate to Exploration Geochemistry.
- (7) Geochemistry of Carbonatites and Rare Earth Metals.
- (8) Applications of Lead Isotope Geochemistry.
- (9) Environmental Geochemistry.
- (10) Litho-geochemistry.

Field trips

Nine Field Trips to a number of ore bodies, mineral districts, and to a petroleum production platform are all scheduled as post-symposium events.

- Field trip no. 1: *Carajas Mineral Belt*
Field trip no. 2: *Iron Quadrangle*
Field trip no. 3: *Carbonatites of Araxa and Tapira*
Field trip no. 4: *Gold Mineralization in Northeastern Bahia State*
Field trip no. 5: *Mineralized ultramafic sequences in Northeastern Bahia State*
Field trip no. 7: *Campos Basin Petroleum Deposit*
Field trip no. 8: *Gold and Emerald Deposits of Goias State*
Field trip no. 9: *Gold, Lead, and Zinc deposits of Paracatu and Vazante*

Time and place

The XIII International Geochemical Exploration Symposium will be held as part of an overall event to extend over one week (Oct. 1 to 6) at the Hotel Gloria Convention Center, Rio de Janeiro, Brazil.

Registration fees

	to March 30	to June 30	after July 1
Member AEG	US\$ 150	US\$ 175	US\$ 200
Non-Member	US\$ 175	US\$ 200	US\$ 225
Accompanying Guest	US\$ 50	US\$ 55	US\$ 60
Workshops	US\$ 25	US\$ 30	US\$ 35

All payments should be in US dollars, by cheque, payable to RIO'89. Mail the registration form and payments to:

RIO'89 - Organizing Committee
Caixa Postal 3591
CEP 20001 - Rio de Janeiro - RJ - Brazil

Address for correspondence

RIO'89
Organizing Committee
Caixa Postal 3591
CEP 20001
Rio de Janeiro - RJ, Brasil

Tel. (55-21) 2202097
Telex: (5521) 34975
Facs: (5521) 220-2305

MMIJ/IMM JOINT SYMPOSIUM, 1989, KYOTO
TODAY'S TECHNOLOGY FOR THE MINING AND METALLURGICAL INDUSTRIES

2-4 October 1989

The Mining and Metallurgical Institute of Japan (MMIJ) and The Institution of Mining and Metallurgy (IMM) are pleased to announce the MMIJ/IMM Joint Symposium, which is to be held in Kyoto, Japan, from 2 to 4 October 1989. On the occasion of the Joint Symposium, which is the first to be arranged by the two sponsoring bodies, the MMIJ 1989 Fall Meeting will also be held.

Topics

The MMIJ/IMM Joint Symposium 1989, Kyoto, will cover the following topics:

1. Mineral Economics
2. New Technology in Exploration
3. Rock Engineering (including Underground Technology)
4. Energy Resources
5. Automation and Monitoring in Mining (including Mine Safety)
6. Separation and Mineral Beneficiation
7. Metallurgy (including Rare and Precious Metals)
8. Materials Processing

Tours

Several technical visits and sightseeing tours will be held on 5 and 6 October.

Mailing address

All prospective authors and registrabts are requested to send their Reply Forms and Abstracts to:

The MMIJ/IMM Joint Symposium Office,
The Mining and Metallurgical Institute of Japan,
Nogizaka Bldg.,
9-6-41 Akasaka, Minato-ku,
Tokyo 107, Japan.

Phone: (03) 402-0541
Fax.: (03) 403-1776
Cable address: MMIJTYO

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

1989

September 1989 - November 1989

DRILLING OF GEOTHERMAL WELLS (Mexicali, Mexico). Annual 12-week seminar organized for Latin Americans by the Latin American Organization for Energy with financial assistance from Unesco. Language: Spanish. For Information: Organizacion Latino-americana de Energia (OLADE), P.O. Box 119, Quito, Ecuador.

September 1989 - November 1989

GEOTHERMAL RESERVOIR ENGINEERING (Mexicali, Mexico). Annual 9-week course organized for Latin Americans by the Latin American Organization for Energy with financial assistance from Unesco. Language: Spanish. For Information: Organizacion Latino-americana de Energia (OLADE), P.O. Box 119, Quito, Ecuador.

September 1989 - November 1989

GEOTHERMAL ENERGY (Kyushu, Japan). Annual short course organized by the Government of Japan and sponsored by Unesco. Language: English. For Information: Japan International Cooperation Agency (2nd Training Division, Training Affairs Department), P.O. Box 216, Shinjuku Mitsui Building, 2 - 1, Nishi-shinjuku, Shinkuku-ku, Tokyo 160, Japan.

September 1989 - July 1990

PETROLEUM EXPLORATION GEOLOGY (Headington, Oxford, U.K.). An annual diploma course designed by Oxford Polytechnic to prepare post-graduate geologists for the duties of geologists in oil exploration teams. For Information: M. Hoggins, Department of Geology and Physical Sciences, Oxford Polytechnic, Headington, Oxford OX3 0BP, U.K.

September 1989 - August/November 1990

AEROSPACE SURVEYS FOR: 1) GEOCHEMICAL SURVEY; 2) WATER RESOURCES SURVEY; 3) APPLIED GEOMORPHOLOGY AND ENGINEERING GEOLOGY (Enschede, The Netherlands). Annual post-graduate courses, organized by the International Institute for Aerospace Survey and Earth Sciences (ITC), with Unesco. Language: English. For Information: ITC Student Registration Office, P.O. Box 6, 7500 AA Enschede, The Netherlands.

September 1989 - August 1990

MINERAL EXPLORATION AND EXPLORATION GEOPHYSICS (Delft, The Netherlands). Annual diploma courses organized by the International Institute for Aerospace Survey and Earth Sciences with Unesco. Language: English. For Information: ITC Student Registration Office (ME), P.O. Box 6, 7500 AA Enschede, The Netherlands.

October 1989 - August 1989

HYDROLOGY AND HYDROGEOLOGY (Belgium). Language: French. For Information: Professeur Dr. ir. A. Monjoie, Directeur des Laboratoires de Géologie de l'Ingénieur, d'Hydrogéologie et de Prospection géophysique - Batiment B19, Faculté des Sciences Appliquées, Université de Liège - SART TILMAN, B-4000 Liège, Belgium.

October 1989 - November 1989

TECTONICS, SEISMOLOGY AND SEISMIC RISK ASSESSMENTS (Potsdam, D.D.R.). One-month training course organized annually by East German Academy of Sciences in collaboration with Unesco. Language: English. For Information: Prof. Dr. H. Kautzleben, Director, Central Earth's Physics Institute, Academy of Sciences of the German Democratic Republic, Telegraphenberg, DDR-500 Postdam, German Democratic Republic.

October 1989 - July 1990

ENGINEERING HYDROLOGY (Galway, Ireland). Annual diploma and post-graduate courses organized by the Dept. of Engineering Hydrology, University College, Galway, Ireland. Sponsored by Unesco-IHP and the World Meteorological Organization. For Information: Prof. J-E. Nash, Department of Engineering Hydrology, University College Galway, Galway, Ireland.

October 1989 - September 1990

WATER AND WASTE ENGINEERING FOR DEVELOPING COUNTRIES (Loughborough, England, U.K.). Twelve-month MSc. programme organized annually for engineers and scientists from developing countries by WEDC. For Information: John Pickford, WEDC, University of Technology, Loughborough, Leics, LE11 3TU, U.K.

October 1989 - September 1990

HYDRAULIC ENGINEERING AND HYDROLOGY (Delft, The Netherlands). Diploma courses organized annually by the International Institute for Hydraulic and Environmental Engineering and sponsored by Unesco for professionals from developing countries. Language: English. For Information: International Institute for Hydraulic and Environmental Engineering (IHE), Oude Delft 95, P.O. Box 3015, 2601 DA Delft, The Netherlands.

October 1989 - September 1991

FUNDAMENTAL AND APPLIED QUATERNARY GEOLOGY (Brussels, Belgium). Annually organized training course leading to a Master's degree in Quaternary Geology by the Vrije Universiteit Brussel (IFAQ) and sponsored by Unesco. Language: English. For Information: Prof. Dr. R. Paepe, Director of IFAQ, Kwartairgeologie, Vrije Universiteit Brussel, Pleinlaan 2, B-1050, Brussels, Belgium.

November 1989 - December 1989

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

November 1989 - June 1990

GEOTHERMICS (Pisa, Italy). Certificate course organized annually by the Istituto Internazionale per le Ricerche Geotermiche and sponsored by Unesco, UNDP and Italy. Language: English. For Information: Istituto Internazionale per le Ricerche Geotermiche, I Via Buongusto, 56100 Pisa, Italy.

November 1989 - October 1990

ENGINEERING GEOLOGY (Delft, The Netherlands). Annual post-graduate course organized by the International Institute for Aerospace Survey and Earth Sciences (ITC). Language: English. For Information: ITC Student Registration Office, P.O. Box 6, 7500 AA Enschede, The Netherlands.

1990

January 1990 - July 1990

GENERAL AND APPLIED HYDROLOGY (Madrid, Spain). An annual, 6-month course sponsored by Unesco. Language: Spanish. For Information: Centro de Estudios y Experimentacion de Obras Publicas y Urbanismo, Alfonso XII, Num. 3, Madrid 7, Spain.

January 1990 - July 1990

GROUNDWATER HYDROLOGY (Barcelona, Spain). An annual 6-month, post-graduate course sponsored by Unesco. Language: Spanish. For Information: Curso Internacional de Hidrologia Subterranea, Calle Beethoven, 15, 3^o, 08021 Barcelona, Spain.

February 1990

METALLOGENY (Quito, Ecuador). Annual 3-week training course for Latin Americans organized by Central University of Quito, the Autonomous University of Madrid (Spain), and Unesco. Language: Spanish. For Information: Director, Curso Internacional de Metalogenia, Escuela de Geologia, Minas y Petroleos, Division de Post-grado, Universidad Central, Apartado Postal 8779, Quito, Ecuador.

February 1990 - March 1990

GEOCHEMICAL PROSPECTING TECHNIQUES (Tervuren, Belgium). Annual course sponsored by the Royal Museum of Central Africa and UNDP. Language: French. For Information: Musée royal de l'Afrique centrale, Steenveg op Leuven, 13, B-1980 Tervuren, Belgium.

February 1990 - April 1990

INTRODUCTION TO DIGITAL IMAGE PROCESSING (Enschede, The Netherlands). Annual course organized by the International Institute for Aerial Survey and Earth Sciences, Enschede, The Netherlands, with Unesco. Language: English. For Information: Student Registration Office, ITC, P.O. Box 6, 7500 AA Enschede, The Netherlands.

February 1990 - June 1990

MINERAL EXPLORATION (Leoben, Austria). Diploma course organized annually by the University of Mining and Metallurgy in Leoben and sponsored by Unesco. Language: English. For Information: University for Mining and Metallurgy, Post-graduate course on mineral exploration, Montanuniversität, Leoben, A-8700, Austria.

February 1990 - July 1990

HYDROLOGY (Budapest, Hungary). An annual six-month, post-graduate course organized by the Research Centre for Water Resources Development (Budapest) and sponsored by Unesco. Language: English. For Information: VIITUKI International Post-Graduate Course on Hydrology, H-1453 Budapest, Pf. 227 Hungary.

February 1990 - August 1990

HYDROLOGY (Padova, Italy). An annual, 6-month, postgraduate course sponsored by Unesco. Language: English. For Information: Professor A. Ghetti, Centro Internazionale di Idrologia "Dino Tonini," via sette Chiese, 35043 Monselice, Italy.

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.

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.

KALENDAR (CALENDAR)

1989

July 31 - August 3, 1989

EROSION AND VOLCANIC DEBRIS FLOW TECHNOLOGY (International Symposium), Yogyakarta, Indonesia. (Mr. Hartono Pramudo, Tromol Pos 23/KBT Kebayoran Baru, Jakarta Selatan, Indonesia).

August 1-3, 1989

PLATINUM (5th International Symposium), Espoo, Finland. Co-sponsored by IAGOD. (Prof. H. Papunen, Department of Geology, University of Turku, SF-20500 Turku, Finland).

August 2-4, 1989

PREPAREDNESS, MITIGATION AND MANAGEMENT OF NATURAL DISASTERS (Symposium), New Delhi, India. Language: English. (Dr. R.C. Agrawal, Symposium PMND, c/o Dept. of Earthquake Engineering, University of Roorkee, Roorkee-247667, India).

August 3-12, 1989

WATER-ROCK INTERACTION (6th IAGC International Symposium), Malvern, England. (Dr. W.M. Edmunds, British Geological Survey, Wallingford, Oxon OX10 8BB, U.K.).

August 7-10, 1989

PACIFIC NEOGENE STRATIGRAPHIC, PALEOCEANOGRAPHIC AND ANDEAN EVENTS (IGCP-246 Meeting), Vina del Mar, Chile. (IGCP-246, Pacific Science Association, VI Inter-Congress, Box 14187, Suc. 21, Santiago, Chile).

August 13-18, 1989

SOIL MECHANICS AND FOUNDATION ENGINEERING (12th International Conference), Rio de Janeiro, Brazil. (Organizing Committee, XII ICSMFE, Caixa Postal 1559, 2000 Rio de Janeiro PJ, Brazil).

August 14-17, 1989

PRECAMBRIAN GRANITOIDS: Petrogenesis, Geochemistry, and Metallogeny (IGCP 217 and 247 Symposium), Helsinki, Finland. (Precambrian Granitoids Symposium, Department of Geology, University of Helsinki, P.O. Box 115, SF-00171 Helsinki, Finland).

August 14-29, 1989

SPELEOLOGY (10th International Congress), Budapest, Hungary. (10th International Congress of Speleology, c/o Magyar Karszt -es Barlangkutatas Tarsulat, Anker köz 1, H-1061 Budapest, Hungary).

August 21-25, 1989

INTERNATIONAL ASSOCIATION FOR HYDRAULIC RESEARCH (23rd Congress), Ottawa, Canada. (IAHR Secretariat, National Research Council, Building M-58, Montreal Road, Ottawa, Ontario, Canada K1A 0R6).

August 21 - September 1, 1989

IASPEI (25th General Assembly), Istanbul, Turkey. Co-sponsored by ICL. (Dr. Otkay Ergunay, Earthquake Research Division, Ministry of Public Works and Settlement, Yuksel Cad No. 7/F, Ankara, Turkey).

August 22-25, 1989

CLASTIC TIDAL DEPOSITS (2nd International Research Symposium), Calgary, Alberta, Canada. (Ray Rahmani, Canadian Hunter Exploration Ltd., 435 - 4th Avenue S.W., Calgary, Alberta, Canada T2P 3A8).

August 28 - September 2, 1989

AIPEA (9th International Clay Conference), Strasbourg, France. (Prof. Dr. Yves Tardy, Institut de Géologie, 1 rue Blessig, 67084 Strasbourg, France).

August 30 - September 2, 1989

ROCK AT GREAT DEPTH (Symposium), Pau, France. (Symposium, Elf Aquitaine, CSTCS, Bat. L5, 64018 Pau Cedex France).

August 31 - September 6, 1989

PALEOLIMNOLOGY (5th International Symposium), Ambleside, Cumbria, U.K. (Prof. Frank Oldfield, Department of Geography, University of Liverpool, P.O. Box 147, Liverpool L69 3BX, U.K.).

September 3-9, 1989

GEOMORPHOLOGY (2nd International Conference), Frankfurt/Main, F.R.G. (Prof. Dr. Arno Semmel, Institut für Physische Geographie, Universität Frankfurt, Senckenberganlage 36, Postfach 11 19 32, D-6000 Frankfurt/Main, F.R. Germany).

September 4-7, 1989

CHALK (International Symposium), Brighton, U.K. (Dr. R.N. Mortimore, Department of Civil Engineering, Brighton Polytechnic, Moulsecoomb, Brighton BN2 4GJ, U.K.).

September 4-8, 1989

NON-METALLIC MINERALS (2nd World Congress), Beijing, China. (Prof. Xu Changyou, Wuhan University of Technology, Wuhan, Hubei Province, P.R. China).

September 4-8, 1989

COASTAL EVOLUTION, MANAGEMENT AND EXPLORATION IN SOUTHEAST ASIA (IGCP-274 International Symposium), Ipoh, Malaysia. (Dr. H.D. Tjia, Jabatan Geologi, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia).

September 4-9, 1989

ANALYSIS OF SEISMICITY AND SEISMIC RISK (4th International Symposium), Bechyne, Czechoslovakia. (Dr. Z. Schenkova, Geophysical Institute, Bocni II, 14131 Progue 4, Czechoslovakia).

- September 4-13, 1989
MICROPALEONTOLOGICAL COLLOQUIUM (26th), Budapest, Hungary. IPA. (Dr. A. Nagymarosy, Department of Geology, "Eötvös L." University, Budapest VIII, Muzeum krt. 4/A H-1088, Hungary).
- September 10-14, 1989
QUATERNARY ENGINEERING GEOLOGY (Conference), Edinburgh, U.K. Cosponsored by IAEG. (Dr. J.A. Little, Dept. of Civil Engineering, Heriot-Watt University, Riccarton, Edinburgh EH14 4AS, Scotland, U.K.)
- September 10-15, 1989
GEOLOGY AND RESERVOIR HETEROGENEITY (Symposium), Banff, Alberta, Canada. (Mrs.) Pat Larlham, Faculty of Extension, University of Alberta, Edmonton, Alberta, Canada T6G 2G4).
- September 10-16, 1989
PALAEOCEANOGRAPHY (3rd International Conference), Cambridge, U.K. (N.J. Shackleton, Department of Earth Sciences, University of Cambridge, Downing Street, Cambridge CB2 3EQ, U.K.).
- September 11-22, 1989
ARCHEAN - PROTEROZOIC TRANSITION (Field Conference), Harare, Zimbabwe. Co-sponsored by IGCP and IUGS. (Apt 89, Geological Society of Zimbabwe, P.O. Box 8427, Causeway, Harare, Zimbabwe).
- September 12-15, 1989
COAL: Formation, Occurrence and Related Properties (International Meeting), Orléans, France. (P. Bertrand, Unité de Recherche en Pétrologie, Organique, Université d'Orléans, 45067 Orléans, Cedex 2, France).
- September 14-19, 1989
EDITING INTO THE 90's (Joint CBE, EASE, AESE Meeting), Ottawa, Canada. (Conference Office, National Research Council of Canada, Ottawa, Ontario, Canada K1A 0R6).
- September 17-24, 1989
AGGLUTINATED FORAMINIFERA (3rd International Workshop), Tübingen, F.R.G. (Dr. C.H. Leben, Geologisches Institut der Universität, Sigwartstrasse 10, D-7400 Tübingen, Federal Republic of Germany).
- September 17-24, 1989
ENERGY (14th World Congress), Montreal, Quebec, Canada. (World Energy Conf., 34th St. James's Street, London SW1A 1HD, U.K.).
- September 18-22, 1989
ORGANIC GEOCHEMISTRY (14th International Congress), Paris, France. (Ms. Yolande Rondot, Institut Français du Pétrole, B.P. 311, 92506 Rueil-Malmaison cedex, France).
- September 24-30, 1989
CARBONIFEROUS STRATIGRAPHY (IUGS Subcommission Biennial Field and General Meeting), Utah/Nevada, U.S.A. (Walter L. Manger, Department of Geology, University of Arkansas, Fayetteville, AK 72701, U.S.A.).
- September 25-28, 1989
MINING LATIN AMERICA (IMM Conference and Exhibition), Rio de Janeiro, Brazil. (The Institution of Mining and Metallurgy, 44 Portland Place, London W1N 4BR, U.K.).
- October 1-4, 1989
SINKHOLES AND THE ENGINEERING AND ENVIRONMENTAL IMPACTS OF KARST (3rd Multidisciplinary Conference), St. Petersburg, Florida, U.S.A. (Conference, Florida Sinkhole Research Institute, University of Central Florida, Orlando, FL 32816, U.S.A.).
- October 1-6, 1989
GEOCHEMICAL EXPLORATION (13th International Symposium) and BRAZILIAN GEOCHEMICAL CONGRESS (2nd), Rio de Janeiro, Brazil. Co-sponsored by AEG. Languages: Symposium - English; Congress - Portuguese. (D.C. Bruni, 13th IGES, P.O. Box 2432, 20010, Rio de Janeiro, R.J., Brazil).
- October 2-4, 1989
FLUVIAL SEDIMENTOLOGY (4th International Conference), Barcelona, Spain. (C. Puigdefàbregas, Servei Geològic de Catalunya, carrer Diputació 92, 08015 Barcelona, Spain).
- October 2-5, 1989
GROUNDWATER MANAGEMENT: QUANTITY AND QUALITY (International Symposium), Benidorm, Alicante, Spain. Language: English. (Secretary General, IAHS, Institute of Hydrology, Wallingford, Oxon. OX10 8BB, U.K.).
- October 16-20, 1989
EARTHQUAKE PROGNOSTICS (4th International Seminar). Beijing, P.R. China. Language: English. (Prof. Wu Yilin, Crustal Deformation Department, Institute of Seismology, State Seismological Bureau of China, Xiao Hong Shan, Wuhan, P.R. China).
- October 16-20, 1989
MATHEMATICAL METHODS IN GEOLOGY (IANG Symposium), Příbram, Czechoslovakia. Sekretariat symposia, Hornická Příbram ve Vede a Technice, post. schr. 41,261 02 Příbram, Czechoslovakia).
- October 18-20, 1989
STRUCTURAL AND TECTONIC MODELLING AND ITS APPLICATION TO PETROLEUM GEOLOGY (Meeting), Stavanger, Norway. (Norwegian Petroleum Society, P.O. Box 1897 - Vika, 0124 Oslo, Norway).
- October 22-25, 1989
WORLD GOLD '89 (Meeting), Reno, Nevada, U.S.A. (Society of Mining Engineers, P.O. Box 625002, Littleton, CO 80162, U.S.A.).

October 23-27, 1989

COAL SCIENCE (International Conference), Tokyo, Japan. Language: English. (Secretariat for ICCS, Coal Conversion Department, New Energy Development Organization (NEDO), Sunshine 60 Building, 1-1, Higashi-Ikebukuro 3-chome, Toshima-ku, Tokyo 170, Japan).

October 29 - November 2, 1989

SOCIETY OF EXPLORATION GEOPHYSICISTS (Annual Meeting), Dallas, Texas, U.S.A. (Convention Assistant, SEG, P.O. Box 3098, Tulsa, OK 74101, U.S.A.).

November 6-9, 1989

GEOLOGICAL SOCIETY OF AMERICA (Annual Meeting), St. Louis, Missouri, U.S.A. (Meetings Department, GSA, P.O. Box 9140, Boulder, CO 80301, U.S.A.).

November 13-15, 1989

MINERAL EXPLORATION PROGRAMME '89 (Symposium), Madrid, Spain. (MEP '89, 4 Brandon Road, London N7 9TR, England, U.K.).

November 14-16, 1989

WORLD WATER (Conference), Wembley, London, U.K. (World Water '89, Conference, Office, Institution of Civil Engineers, 1 - 7 Great George Street, Westminster, London SW1P 3AA, U.K.).

November - December 1989

PETROLEUM GEOLOGY SEMINAR '89, Kuala Lumpur, Malaysia. (c/o Organizing Chairman, Geological Society of Malaysia, Geology Department, University of Malaya, 59100 Kuala Lumpur, Malaysia).

December 4-8, 1989

AMERICAN GEOPHYSICAL UNION (Fall Meeting), San Francisco, Calif., U.S.A. (AGU Meetings, 2000 Florida Avenue NW, Washington, DC 20009, U.S.A.).

1990

January, 1990

ANNUAL CONFERENCE '90, GEOLOGICAL SOCIETY MALAYSIA (Organising Chairman, Geological Society of Malaysia, c/o Geology Dept., University of Malaya, 59100 Kuala Lumpur, Malaysia):

January 15-27, 1990

OMAN OPHIOLITE, STRUCTURE, PETROLOGY, STRATIGRAPHY (International Symposium), Muscat, Sultanate of Oman. (Secretary, Hilal Azry, Ministry of Petroleum and Minerals, P.O. Box 551, Muscat, Oman).

February 5-9, 1990

BRACHIOPODS (2nd International Congress), Dunedin, New Zealand. (J.D. Campbell, Geology Department, University of Otago, P.O. Box 56, Dunedin, New Zealand).

April 18-20, 1990

OROGENESIS IN ACTION: Tectonics and Processes in the West Equatorial Pacific Margin (Meeting), London, U.K. (R. Hall, Department of Geological Sciences, University College London, Gower Street, London WC1E 6BT, U.K.).

May 6-12, 1990

PACIFIC RIM 90 (International Congress), Gold Coast, Queensland, Australia. (The AusIMM-Pacrim 90, P.O. Box 731, Toowong Qld 4066, Australia).

May 14-18, 1990

WORLD MINING (14th Congress), Beijing, P.R. China. (China Organizing Committee, 14th World Mining Congress, 54 Sanlihe Road, Beijing, People's Republic of China).

May 29 - June, 1990

EUROPEAN ASSOCIATION OF EXPLORATION GEOPHYSICISTS (52nd Annual Meeting), Copenhagen, Denmark. (J. Tychsen, Miljoministeriet, Amaliegade 13, DK-1265, Copenhagen K, Denmark).

June 1990

GEOCHEMISTRY OF WEATHERING (2nd International Symposium), Aix-en-Provence, France. Sponsored by IAGC. (B. Hitchon, Alberta Research Council, Box 8330, Station F. Edmonton, Alberta, Canada T6H 5X2).

June 3-6, 1990

AAPG/SEPM (Annual Meeting), San Francisco, California, U.S.A. (Convention Department, AAPG, Box 979, Tulsa, OK 74101, U.S.A.).

June 25-30, 1990

GEOSCIENCE INFORMATION (4th International Conference), Ottawa, Canada. (A. Bourgeois, Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario, Canada K1A 0E8).

June 28 - July 3, 1990

INTERNATIONAL MINERALOGICAL ASSOCIATION (15th General Assembly), Beijing, P.R. China. (Prof. Huang Yunhui, c/o Institute of Mineral Deposits, Chinese Academy of Geological Sciences, Baiwan-zhuang Road 26, Fuchengmenwai, Beijing, P.R. China).

July, 1990

CAMBRIAN SYSTEM (3rd International Symposium), Novosibirsk, U.S.S.R. (Dr. J.W. Cowie, Department of Geology, University of Bristol, Queen's Building, University Walk, Bristol BS8 1RJ, England).

- July 19-28, 1990
INTERNATIONAL UNION OF CRYSTALLOGRAPHY (15th Congress), Bordeaux, France. (Stefan S. Hafner, University of Marburg, 3550 Marburg, F.R. Germany).
- July 29 - August 3, 1990
CIRCUM-PACIFIC ENERGY AND MINERALS RESOURCES (Conference), Honolulu, Hawaii. (Mary Stewart, Circum-Pacific Council on Energy and Mineral Resources, 5100 Westheimer Road, Houston, TX 77056, U.S.A.).
- 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, U.S.A.).
- August 6-10, 1990
IAEG (6th International Congress), Amsterdam, The Netherlands. Language: English and French. (Dr. L. Primel, L.C.P.C., 58 Boulevard Lefebvre, 75732 Paris Cedex 15, France).
- 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 15-17, 1990
ARCTIC GEOLOGY AND PETROLEUM POTENTIAL (Meeting), Troms, Norway. (Norwegian Petroleum Society, Box 1897-Vika, 0124 Oslo 1, Norway).
- August 26 - September 1, 1990
SEDIMENTOLOGY (13th International IAS Congress), Nottingham, U.K. (I.N. McCave, Department of Earth Sciences, University of Cambridge, Downing Street, Cambridge CB2 3EQ, U.K.).
- August 26 - September 8, 1990
LATIN AMERICAN CONODONT SYMPOSIUM, La Paz, Bolivia and San Juan, Argentina. (Mario Hunicken, Academia Nacional de Ciencias, Casilla Correo 36, 5000 Cordoba, Argentina).
- August 27 - September 1, 1990
WATER RESOURCES IN MOUNTAINOUS REGIONS (International Symposium and IAH 22nd Congress), Lausanne, Switzerland. (Dr. A. Parriaux, Laboratory of Geology EPFL (GEOLEP), CH-1015 Lausanne, Switzerland).
- September 1990
GEOCHEMICAL EXPLORATION (13th International Symposium), Prague, Czechoslovakia. Joint IAGC and AEG meeting. (B. Hitchon, Alberta Research Council, P.O. 8330, Station F. Edmonton, Alberta, Canada T6H 5X2).
- September - October 1990
IPA GRAPTOLITE WORKING GROUP (4th International Conference), Nanjing, P.R. China. (Chen Xu, Nanjing Institute of Geology and Palaeontology, Academia Sinica, Chi-Ming-Sau, Nanjing, P.R. China).
- September 3-8, 1990
VOLCANOLOGY (International Congress), Mainz, F.R.G. (G. Brey, Max Planck Institut für Chemie, Abtl. Kosmochemie, Saarstrasse 23, 6500 Mainz, Federal Republic of Germany).
- September 4-7, 1990
DEEP SEISMIC REFLECTION PROFILING OF THE CONTINENTAL LITHOSPHERE (4th International Symposium), Bayreuth, F.R.G. (C. Reichert, DEKORP, NLFb, Postfach 510153, D-3000 Hannover 51, F.R. Germany).
- September 17-21, 1990
ARCHAEN (Symposium), Perth, Australia. (D.I. Groves, Department of Geology, University of Western Australia, Nedlands, Western Australia 6009).
- September 23-27, 1990
SOCIETY OF EXPLORATION GEOPHYSICISTS (Annual Meeting), San Francisco, U.S.A. (Convention Assistant, SEG, P.O. Box 3098, Tulsa, OK 74101, U.S.A.).
- September 24-29, 1990
GEOCHRONOLOGY, COSMOCHRONOLOGY AND ISOTOPE GEOLOGY (7th International Conference), Canberra, Australia. (Organizing Committee, ICOG 7, Research School of Earth Sciences, Australian National University, GPO Box 4, Canberra, ACT 2601, Australia).
- September 28 - October 2, 1990
BENTHIC FORAMINIFERA (4th International Symposium), Sendai, Japan. (Dr. Yokichi Takayanagi, Institute of Geology and Paleontology, Tohoku University, Sendai, 980 Japan).
- October 29 - November 1, 1990
GEOLOGICAL SOCIETY OF AMERICA (Annual Meeting), Dallas, Texas, U.S.A. (GSA, P.O. 9140 Boulder, CO 80301, U.S.A.).
- November 1990
MEDITERRANEAN NEOGENE (9th International Congress), Barcelona, Spain. Cosponsored by IUGS. (Prof. Jordi Martinell, Fac. de Geologia, Univ. de Barcelona, Zona Universitaria de Pedralbes, 08028 Barcelona, Spain).

1991

March, 1991

ECONOMIC EVALUATION OF MINERAL RESOURCES (International Conference), Kosice, Czechoslovakia. Languages: Russian and English. (Intergeoekonomika 1991 CSSR, GEOFOND Bratislava-branch Kosice, Eng. St. Richter, Garbanova 1, 040 11 Kosice, Czechoslovakia).

April 7-10, 1991

AAPG/SEPM (Annual Meeting), Dallas, Texas, U.S.A. (Convention Department, AAPG, Box 979, Tulsa, OK 74101, U.S.A.).

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 27-29, 1991

GAC/MAC (Joint Annual Meeting), Toronto, Canada. (J. Fawcett, Department of Geology, University of Toronto, Toronto, Ontario, Canada M5S 1A1).

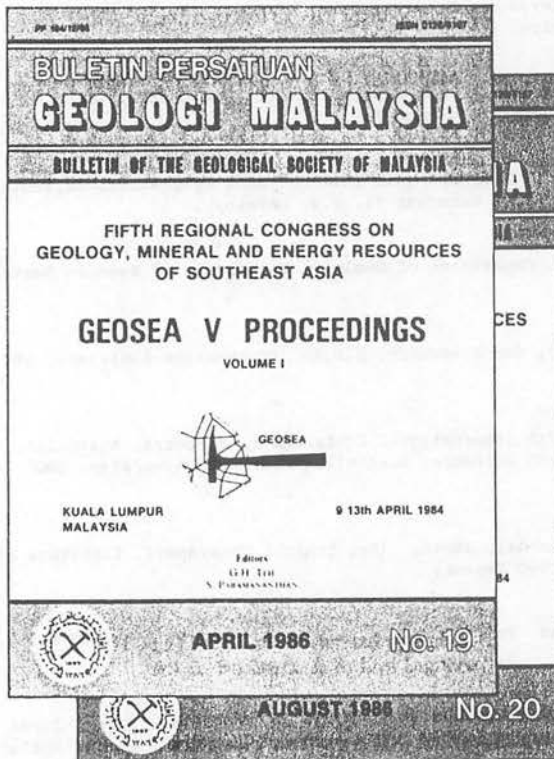
August 2-9, 1991

QUATERNARY RESEARCH (13th International Congress), Beijing, P.R. China. (Secretariat, 13th INQUA Congress, Chinese Academy of Sciences, 52 Sanlihe, Beijing 100864, P.R. China).

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(Bulletin Geological Society of Malaysia Nos. 19 & 20)



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- 1 **Seismic stratigraphic interpretation for the thin layers: case studies**
Kuo-An Lin, Shi-Chu Fuh & Hsiung-Mao Chen
- 23 **Interactive interpretation of 2D seismic data**
Alistair Brown
- 37 **The Dipmeter Advisor — A dipmeter interpretation workstation**
Gordy G. Shanor
- 55 **The nature and significance of regional unconformities in the hydrocarbon-bearing Neogene sequence offshore West Sabah**
B.K. Levell
- 91 **Palaeobathymetrical changes in NW Sarawak during the Oligocene to Pliocene**
Hans Hageman
- 103 **Computer-assisted interpretation of depositional palaeoenvironments based on foraminifera**
Philip Lesslar
- 121 **Marine statics**
Chiem Boon Hong
- 133 **Tinggi field — analyzing the DHIs**
Harun Mohd. Noor
- 151 **Use of SEISLOG for basin evaluation and field development**
R.C. Mummery
- 177 **Trap styles of the Tenggol Arch and the southern part of the Malay Basin**
Ng Tong San
- 195 **Depositional controls of reservoir thickness and quality distribution in Upper Miocene shallow marine sandstones (Stage IVD) of the Erb West Field, Offshore Sabah, NW Borneo**
H.D. Johnson, S. Levell & A.H. Mohamad
- 231 **Derivation of seismic depth sections**
H. Buchholtz & W. Houba
- 251 **Superimposed deformations and vergence of lower Tertiary sediments near Tatau, Sarawak**
H.D. Tija, Borhan Sidi & Teoh Chuen Lye

Editor
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- Bulletin 18** (1985). 209 p. Special Issue on Petroleum Geology. Edited by G.H. Teh & S. Paramanathan. Price: M\$30.00 (US\$14.00).

Bulletins 19 & 20 (1986). GEOSEA V Proceedings Vols. I & II, Fifth Regional Congress on Geology, Mineral and Energy Resources of Southeast Asia, Kuala Lumpur, 9–13 April 1984. Edited by G.H. Teh & S. Paramanathan. Price for both Bulletins 19 & 20: Members — M\$50.00 (US\$21.90), Non-members — M\$125.00 (US\$53.20).

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Field Guide 1 (1973). A 7-day one thousand mile, geological excursion in Central and South Malaya (West Malaya and Singapore). 40 p. by C.S. Hutchison. Price: M\$5.00 (US\$2.50).

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- 1 Slumping at the late Miocene shelf-edge offshore West Sabah: a view of a turbidite basin margin
B.K. Levell & Awang Kasumajaya
- 31 Aspects to the resolving power of 3-D seismic surveys
Wolfgang Houba
- 55 The mechanics of progressive deformation in crustal plates—a working model for S.E. Asia
B.G.M. Wood
- 101 LITHO, a computerized approach to lithofacies determination
Ali R. Somturk & S. Des Ligneris
- 119 Assessment of undiscovered conventionally recoverable petroleum resources in Tertiary sedimentary basins of Malaysia and Brunei
Keith Robinson
- 133 Seismic HC reservoir prediction: a (critical) review on the determination of lithological parameters from seismic data
Burkhard Buttkus
- 151 Seismic evidences of relative changes of sea level in the Tertiary depositional sequences near Taiwan
C.H. Liu & Y.S. Pan
- 167 Review of principal hydrocarbon-bearing basins around the South China Sea
Ernest P. Du Bois

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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 *Bulletins* 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.

