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Warta Geologi

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Rubidium detected with X-ray fluorescence spectrometry: A new semi-quantitative assessment of clay content in sedimentary rocks

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Abstract: This paper deals with assessment of clay content in sedimentary rocks using portable X-ray fluorescence spectrometry. Whilst measuring trace metal content of sedimentary rocks, it was noted a positive, quasi-linear correlation existed between the rock's Rb concentration and both percentage of clay fraction, and also natural gamma ray radioactivity. Rb is relatively easy to measure with XRF and provides a semi-quantitative assessment of clay content. The measurement error of the tool is less than 10 %. Initial data indicate that the Rubidium content varies slightly in respect to clay mineral composition, given some samples deviate from others, by showing higher or lower-than-expected values. In clastic sediments, the Rb-XRF method can be used as an alternative to Gamma-Ray in determining clay content, such as to describe the cleanness of sand or carbonate. For industrial limestone mining, the XRF tool could be used to estimate cleanness of carbonates, hence rock strength. It is believed that XRF Rubidium measurements could also be carried out in the subsurface.

Keywords: X-ray fluorescence spectrometry, rubidium, clay

INTRODUCTION

The greater Miri (NW Sarawak, Borneo island) area is essentially formed by three rock types: the Oligocene-Miocene Setap shale, the Mid-late Miocene sandy Belait Group (Miri and Lambir formations), and the semi-consolidated Tukai Formation of Late Miocene to Pliocene age (Figure 1). In view of only limited occurrences of age-significant fossils within the named formation, absolute age of the mentioned remain imprecise. Furthermore, there are only little geochemical data available. In 2011, Curtin Sarawak purchased a portable XRF device (Niton), with the objective to develop a chemo-stratigraphy of the sedimentary formations of NW Borneo. Used during several field campaigns, the XRF tool helped to gather basic geochemical data in sedimentary rocks, starting with the Tukai Formation.

Encouraging and widespread data regarding the presence of rubidium prompted further studies. The concentration of some elements may be increased as a result of its adsorption by clay minerals. The latter, an alkaline metal (Rb) with similar chemical characteristics to sodium and potassium, occurs as one of the trace elements present in most clay minerals, in which it substitutes

potassium. In the Earth's crust, Rb is relatively rare at about 110 ppm (Wedepohl, 1995) compared to K and Na.

The Rb⁺ readily substitutes for K⁺ in aluminosilicate minerals and its enrichment relative to K is greater in mica (muscovite) and to a lesser extent, in K-feldspar such as microcline and orthoclase (Ekweke, 1985), as well as rarer minerals, such as lepidolite, carnallite and pollucite, in which it replaces Cs. Rubidium used to be retained in weathering largely by those clays having a structural position for the ion, although adsorption plays an important part in both clays and shales (Horstman, 1957). Particularly during weathering, ion exchange and differential adsorption mechanisms tend to concentrate Rb relative to K (Heier & Billings, 1970). Many types of shale and mudstone thus have high levels of Rb (160 ppm) mainly held in clay minerals, such as illite and montmorillonite, leading to lower K:Rb ratios than those of igneous rocks. The levels of Rb in shale, sandstone and carbonates 140, 60 and 3 ppm respectively (Horstman, 1957; Mielke, 1979) and impure limestone show higher Rb concentration than the pure limestones. In the oil industry, clay forms a sealing unit and can downgrade sandstone reservoir porosity or constitute baffles within

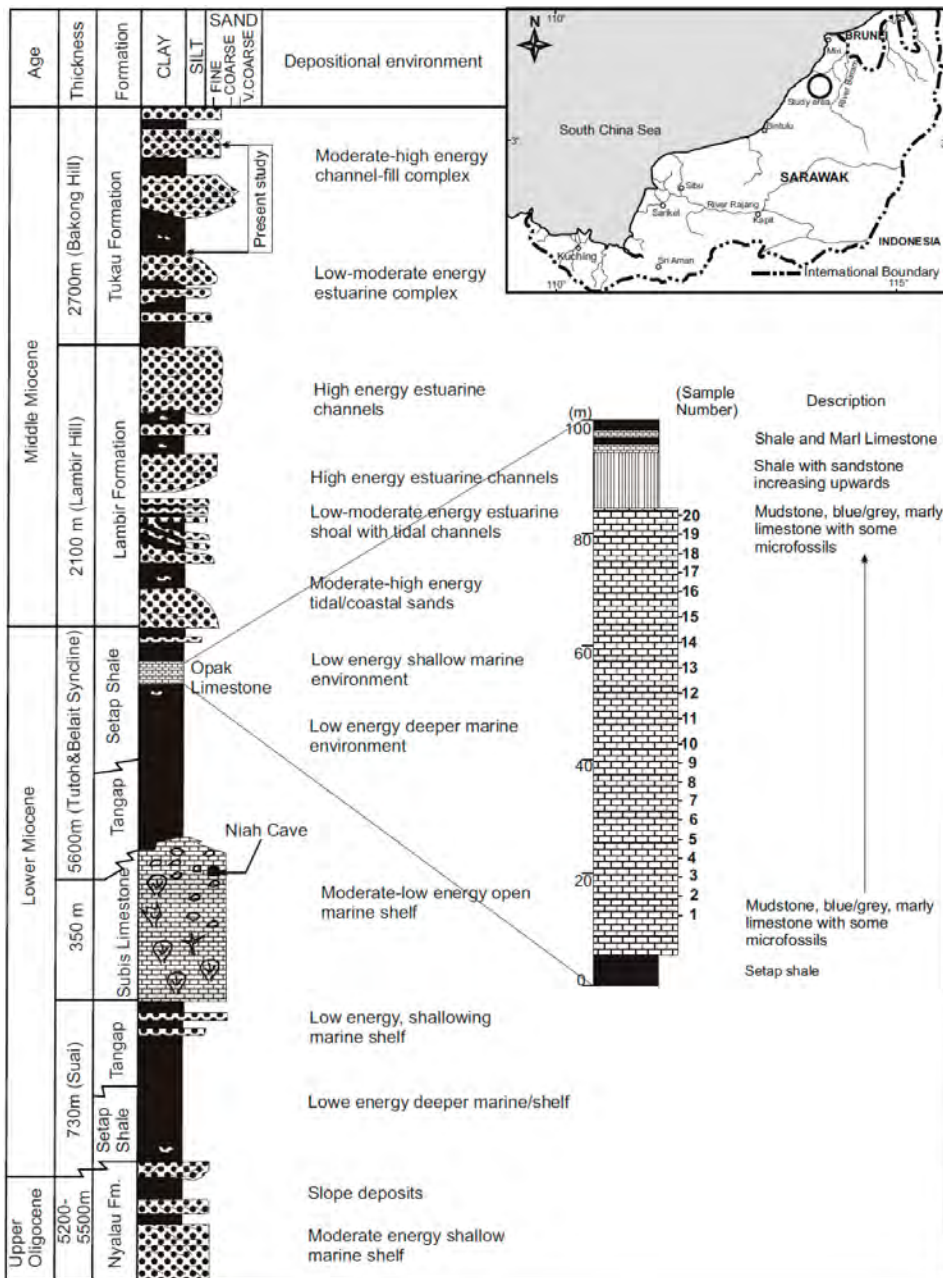


Figure 1: The stratigraphic profile of the molasses sediments as exposed along the Miri-Bintulu (inland) road. The principle sample locations (Tukau Formation and Opak limestone) for the XRF analysis are shown (modified after Hutchison 2005).

oil and gas reservoirs. In many parts of the world, hard limestones are used as construction material. The clay content in the limestone is often proportional to the strength of the material. Here, Rb can be used to quantify the clay content to estimate the rock strength. Rb/XRF detection for clay content does not suffer from cosmic radiation contamination, a problem encountered when using Gamma Ray in the field. Hence, determination of Rb with field portable XRF may form a handy tool to estimate limestone quality in quarries. The main aim of this study is that to assess the clay content by tracing Rb-concentration in sedimentary rocks using portable XRF as semiquantitative method.

STUDY AREA AND GEOLOGICAL SETTING

The geology of Sarawak has been divided into three distinct provinces: namely West Sarawak, Central Sarawak and North Sarawak. The North Sarawak region is occupied in North and East of the Rajang-Baram watershed. The adjacent offshore area is named the Luconia Block (Hutchison, 1989). This North Sarawak region is underlain by Neogene sediments of the NW Borneo Basin and the sediments are younging towards North and NNE with Oligocene base rocks. North Sarawak region is underlain by thick sequences of shallow and deep marine sediments, such as sand and shale formations respectively (Liechti et al., 1960). The formations which are: Nyalau, Setap,

Tanggap, Sibuti, Belait, Lambir, Miri and Tukai range in age from Oligocene to Pliocene. Based on the relative absence of planktic foraminifers Tukai Formation is considered to be formed under shallow marine to deltaic environments. The absence of foraminifers (except some brackish water forms), the presence of lignite layers and amber balls have lead Hutchison (2005) to conclude that the Tukai Formation was deposited in a coastal plain. The basal part of Tukai Formation conformably overlies the Lambir Formation near Sungai Liku in the eastern Lambir Hill where it is conformably overlain by the Liang Formation in Brunei.

The Neogene sediments, measured with XRF in this article, belong to the Miri Zone, a term coined by Hutchison (2005) for molasse sediments in the Sarawak foreland. The sediments are largely derived from the metamorphic Rajang Group deepwater clastics that form a mountain belt in the interior of Sarawak, of which an estimated 6000 m have been eroded until today (Kessler unpublished). The molasses sequence, several kilometers thick, starts with anchi-metamorphic shales (Black Setap shale), silty claystones with turbidite deposits (grey setap shale), reefal carbonates (Subis Fm at Batu Niah), clastics and carbonates (Sibuti Formation, including Kpg. Opak limestone, Figure 1), and is concluded with the shallow marine and brackish clastics of the Lambir, Miri and Tukai (Figure 1) formations. Current XRF measurements have been confined to the upper part of the sequence, namely samples belonging to the Kpg. Opak (Sibuti Fm.), and Tukai formations (Figure 2).

METHODOLOGY

Totally 85 Fresh clastic and carbonate sediment samples were collected from the outcrops of Tukai Formation and Kpg. Opak quarry respectively (Figure 1). The outcrops of Tukai Formation are located 25 km South of Miri and Kpg. Opak quarry is located 45 km SW of Miri. The sediment samples were washed thoroughly in distilled water to remove any contamination. These sediments were air dried and then ground in an agate mortar. The lithology of the sediments was classified as claystone, (n=32), clay interbedded sandstone (n=6); sandstone (n=30), and marly limestone (n=17). The Rb concentration of these sediments was determined using a semiquantitative portable XRF spectrometer analysis.

Portable XRF spectrometers are a handy tool both in the field and under laboratory conditions. In many countries, XRF tools are strictly controlled given they constitute a source of ionizing radiation (X rays). In the field, rock is measured from a distance of several centimetres, and quality measurements require a minimum of one minute of X-ray exposure. In the laboratory, rock is powdered and radiated from a close distance. The tool detects heavy atoms, it's sensitivity (detection level) however is highly material-dependant. We used the hand held, high performance NITON XLt portable X-ray fluorescence (XRF) tool, and values were measured

in ppm. The measurement error of the tool is less than 10 % (current data are indicative for 6.75% mean). Clay percentage in the sediments was determined by the pipette method, in accordance with the procedure adopted by Krumbein & Pettijohn (1938). The Gamma ray gamma-ray radioactivity was determined by Geiger counter measurements.

RESULTS AND DISCUSSION

Rock samples (sandstone, clay inter-bedded sandstone, marl, marly limestone, limestone; number of samples n=85) were collected in NW Sarawak (Neogene age), from a siliciclastic unit known as the Tukai Formation. Rb concentrations were found to be higher in claystone, (42-141 ppm; average with standard deviation $avg.82.9 \pm 21.9$ ppm; n=32), compared to clayey inter-bedded sandstone (31-60 ppm; $avg.45.8 \pm 11.2$ ppm; n=6); sandstone (5-80 ppm; $avg.31.7 \pm 18.9$ ppm; n=30), and marly limestone (21-38 ppm; $avg.29.8 \pm 5.7$ ppm; n=17). For comparison, the measured clay content (by wet analysis) was found to be higher in claystone (55-98%; $avg.76.8 \pm 10\%$) than clay inter-bedded sandstone (29-94%; $avg.70.6 \pm 25.5\%$); sandstone (0-89%; $avg.26.5 \pm 26.2\%$), and marly limestone (11-31%; $avg.22.7 \pm 4.9\%$). The gamma ray count also recorded higher in claystone (23-31; $avg.24.4 \pm 2.4$) than the clay inter-bedded sandstone (18-26; $avg.21.5 \pm 2.6$) and sandstone (14-31; $avg.18.9 \pm 4$).

When comparing the Rb values with the percentage of clay fraction obtained by classic grain separation, it was found that a strong paired sample correlation is observed between Rb concentration and clay percentage ($r=0.82$ with 2 tailed significance of 0.06) (Figure 3). Particularly, claystone shows high levels of Rb (82.9 ± 21.9 ppm) which is mainly held in clay minerals, such as illite/smectite leading to lower K:Rb ratios. This is also supported by the higher Rb content and high Rb/K ratios recorded from Setap Shale formation and Belait Formation, located in the Northern part of the Borneo (Burgan et al., 2008). The clay mineral assemblages in N Borneo based on the sediments from two rivers (Trusan and Baram Rivers) show a dominance of illite (75–85%, average 77%), with minor amount of chlorite (average 10%) and kaolinite (average 12%). Illite chemistry index in this subprovince decreases to 0.20–0.28 (Liu et al., 2012). This is seen to be indicative that the measurement of Rb is relatively sensitive to clay mineral concentration. The correlation is also deviating from linear in samples of both very high and also very low clay content, potentially pointing to a Beta-Function correlation rather than a true linear correlation. There is a moderate correlation between Rb values and gamma-ray radioactivity ($r=0.72$ with 2 tailed significance of 0.000000016) (Figure 4). As widely known, clay content and gamma-ray radioactivity have a significant relationship among them, which is confirmed by a moderate positive correlation between them ($r=0.64$; Figure 5). The good correlation between Gamma counts and clay concentration recorded in the outcrops are located



Figure 2: Upper portion of the Tukai Formation (moderate energy intertidal channel sequences) outcrops in the Sg. Rait valley.

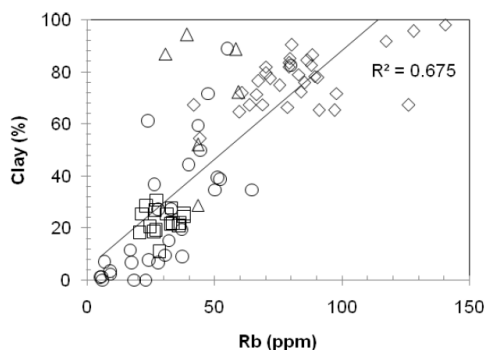


Figure 3: Rb vs. clay content (%) showing two clusters and show linear correlation between them for clastic and carbonate sediments (claystone - open diamond; clay interbedded sandstone - open triangle; marl limestone - open square; sandstone - open circle).

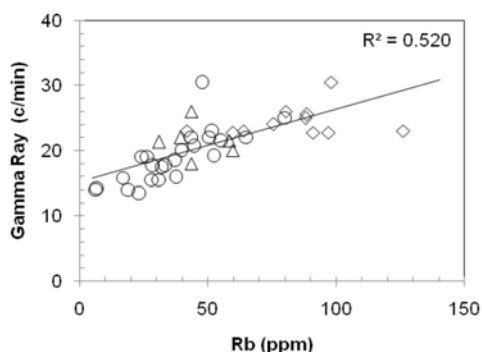


Figure 4: Rb (ppm) vs. gamma ray (c/min) showing a significant correlation for clastic and carbonate sediments (claystone - open diamond; clay interbedded sandstone - open triangle; marl limestone - open square; sandstone - open circle).

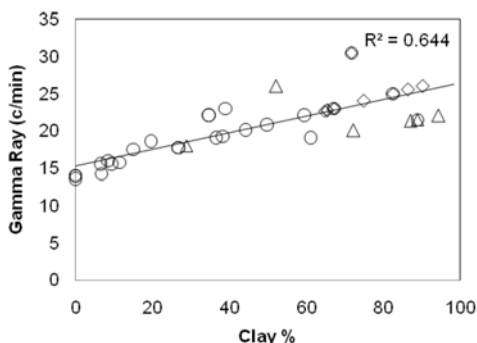


Figure 5: Clay (%) vs. gamma ray (c/min) showing a significant correlation for clastic and carbonate sediments (claystone - open diamond; clay interbedded sandstone - open triangle; marl limestone - open square; sandstone - open circle).

roughly at the same altitude, hence do not suffer from altitude-dependent cosmic gamma ray variation.

CONCLUSION

The analysed data suggests that XRF measurements of Rb concentration could semi-quantitatively determinate clay content in sedimentary rocks, both on surface and downhole applications. Further work should emphasize the correlation between Rb content and clay mineralogy. The improvement of accuracy of results must be developed further.

ACKNOWLEDGEMENT

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PERSATUAN GEOLOGI MALAYSIA
GEOLOGICAL SOCIETY OF MALAYSIA

**47th ANNUAL GENERAL MEETING
& ANNUAL REPORT 2012**



5th April 2013
Eastin Hotel, Petaling Jaya, Selangor



AGENDA

Date: 5th April 2013
Time: 5.30 pm
Venue: Eastin Hotel, Petaling Jaya, Selangor

The Agenda for the Annual General Meeting is as follows:

1. Welcoming Address by the President for Session 2012/2013
2. Confirmation of Minutes of the 46th AGM held on the 13th April 2012
3. Matters arising
4. Annual Report for Session 2012/2013
 - President's Report
 - Secretary's Report
 - Editor's Report
 - Treasurer's and Honorary Auditor's Reports
5. Election of Honorary Auditor
6. Other Matters
 - 6.1 GSM Endowment Fund
 - 6.2 K.M.Leong: Recognition for GSM Publications; Sabah Pre-Cretaceous Geology
7. Announcement of New Council for 2013/2014
8. Presidential Address for 2013/2014

**PERSATUAN GEOLOGI MALAYSIA
GEOLOGICAL SOCIETY OF MALAYSIA (GSM)**

MINUTES OF THE 46th ANNUAL GENERAL MEETING (AGM)

Date : 13th April 2012
Time : 5.30pm
Venue : Eastin Hotel, Petaling Jaya, Selangor

Members Present

- | | |
|-------------------------|---------------------------|
| 1 Ramli Mohd Osman | 9 Anil Nair |
| 2 Lim Choun Sian | 10 Joy Jacqueline Pereira |
| 3 Tan Boon Kong | 11 Ling Nan Ley |
| 4 Zakaria Endut | 12 Lee Chai Peng |
| 5 Dato' Yunus Abd Razak | 13 Robert Wong |
| 6 Ahmad Nizam Hasan | 14 Samsudin Hj Taib |
| 7 Iskandar Taib | 15 Ng Tham Fatt |
| 8 Ralph L. Kugler | |

The President of Geological Society of Malaysia and Chairperson of the AGM, Joy Jacqueline Pereira, called the meeting to order at 5.30 pm when the quorum of AGM was met. The President welcomed members to the AGM and commented that the last session was very productive with the materialisation of many institutional arrangements that would benefit the membership in the long-term.

1. Adoption of Agenda

The Chairperson tabled the following agenda to the AGM for acceptance:

1. Welcoming Address by the President for Session 2011/2012
2. Confirmation of Minutes of the 45th AGM held on the 15th April 2011
3. Matters arising
4. Annual Report for Session 2011/2012
 - President's Report
 - Secretary's Report
 - Editor's Report
 - Treasurer's and Honorary Auditor's Reports
5. Election of Honorary Auditor
6. Other Matters of which written notice is submitted to reach GSM Secretariat by the 5th April 2012 or by majority vote of the AGM
7. Announcement of New Council for 2012/2013
8. Presidential Address

The agenda was unanimously accepted.

2. Confirmation of Minutes of the Previous AGM

The Minutes of the 45th AGM was tabled for confirmation. As there was no amendment raised, Lee Chai Peng proposed that the minutes be confirmed and this was seconded by Dato' Yunus Abd Razak.

3. Matters Arising

3.1 Enhanced collaboration between universities

GSM in the past session has drafted a memorandum of agreement between GSM and Institute of Geology Malaysia. The MoA has incorporated all the elements brought up in the last AGM. A joint committee would be formed to initiate the collaboration between the universities that provide geology, earth science and geophysics knowledge.

3.2 PGCE Student Excellence Award

The Council has conveyed the wish of last AGM to PGCE2012 Organising Committee which is administering the award to also extend the awarding to the private universities offering geoscience course.

3.3 Enhancing student membership

The last session has seen a marked increase in the student membership. GSM has written to all the heads of geology departments to encourage the students to take up the membership and also to invite nomination for various GSM awards.

3.4 GEOSEA 2012 in Bangkok

Malaysia sent a strong delegation of 10-12 delegates to the GEOSEA 2012 which was well organised. One of the papers presented by the Malaysian delegates was on the Thailand-Malaysia joint border geological mapping. The keynote paper on the SMART tunnel was extremely well received. The AGM recorded its appreciation to Dato' Yunus Abd Razak for his unwavering support.

4.0 Annual Reports 2011/2012

4.1 President's Report

The President tabled the President's Report (Appendix 1). The AGM discussed the following matters:

- a. Tan Boon Kong commended the GEOSEA organiser for having waived the registration fee for the Malaysian delegates.
- b. Lee Chai Peng enquired on the progress of the publication of the last GEOSEA papers. The meeting was informed that the papers are being published as part of the regular Bulletin issues as they clear the peer review process.

Dato' Yunus Abd Razak proposed that the President's Report be accepted and this was seconded by Lim Choun Sian.

4.2 Secretary's Report

The Secretary tabled the Secretary's Report (Appendix 2). The AGM discussed the following matters:

- a. The President proposed the amount RM500.00 for the Best Student Award presently being awarded to students from UM and UKM be increased to RM1000.00. She also suggested that GSM should consider extending the award to other universities offering geoscience programme.
The meeting agreed to the proposed increase in the award amount.
The meeting further agreed to fund the award through the proposed Endowment Fund.
The AGM also suggested that GSM should consider extending the award to the private universities with geoscience programmes.

Action: Incoming Council

- b. Dato' Yunus Abd Razak applauded the effort of chairs of Working Groups and Regional Representatives in organising various activities. He suggested that the Secretary continue to liaise with the chairs of Working Groups and Regional Representatives so that more activities are organised for members at various regions.

Action: Incoming Council

- c. Anil Nair suggested that GSM should look into ways to promote geoscience in the schools so as to create awareness and interest among the students.
The meeting welcomed the idea. The Council would bring the idea to the proposed Joint Committee so that a systematic programme maybe devised for the said purpose.

Action: Incoming Council

Anil Nair proposed that the Secretary's Report be accepted and this was seconded by Samsudin Hj Taib.

4.3 Editor's Report

The Editor tabled the Editor's Report (Appendix 3).

The meeting agreed that GSM should push for Warta Geologi to be ISI indexed.

Tan Boon Kong proposed that the report be accepted and this was seconded by Samsudin Hj Taib.

4.4 Treasurer's and Honorary Auditor's Report

The Treasurer tabled the Treasurer's and Honorary Auditor's Report (Appendix 4).

Dato' Yunus Abd Razak proposed that the Treasurer's and Honorary Auditor's Report be accepted and this was seconded by Lee Chai Peng.

5. Election of Honorary Auditor

Mr Ahmad Nizam Hassan proposed to continue to appoint S.F Lee & Co as the Honorary Auditor for the year 2012. The AGM unanimously agreed to the appointment.

6. Other Matters

There was no other matter brought up for discussion.

7. Announcement of New Council for 2012/2013

The AGM was informed that nominations were called to fill the posts of President, Vice President, Secretary, Assistant Secretary, Treasurer, Editor and four 2-year Councillors posts. However, at the close of the said nomination, the election procedure was not executed for only a single nominee was received for each of the posts opened. Hence, the new Council was duly formed as in the following.

President	:	Prof Dr. Joy Jacqueline Pereira (UKM)
Vice-President	:	Dr. Mazlan Madon (Petronas Research Sdn Bhd)
Immediate Past President	:	Dato' Yunus Abdul Razak (JMG)
Secretary	:	Mr. Ling Nan Ley (JMG)
Assistant Secretary	:	Mr. Lim Choun Sian (UKM)
Treasurer	:	Mr. Ahmad Nizam Hasan (GeoSolution Resources)
Editor	:	Associate Prof. Dr. Ng Tham Fatt (UM)
Councillors (2 years)	:	Dr. Meor Hakif Amir Hassan (UM) Dr. Liaw Kim Kiat (BHP Billiton) Mr. Robert Wong (PETRONAS) Mr. Nicholas Jacob (JKR)
Councillors (1 year)	:	Mr. Tan Boon Kong (Freelance) Dr. Nur Iskandar Taib (UM) Dr. Gan Lay Chin (Freelance) Dr. Tanot Unjah (UKM)

8. Presidential Address

The re-elected President Prof. Dr. Joy Jacqueline Pereira thanked the members for their continuous support and confidence. She pledged that the incoming council would streamline the set-up and administration of the PGCE Endowment Fund. GSM would also pursue the memorandum of agreement between IGM and GSM in devising a collaboration mechanism with various geology-related agencies and institutions for the furtherance of geosciences in the country. The President also recorded a vote of thanks to outgoing council members Mr. Anil Nair and Dr. Samsudin Hj Taib for their contribution to the society.

The AGM was adjourned at 6:40pm.

LING NAN LEY

Secretary 2011/2012

3 May 2012

PRESIDENT'S REPORT 2012/2013

Since the 46th Annual General Meeting on 13th April 2012, the Geological Society of Malaysia (GSM) has strived to fulfill its objective of actively promoting the advancement of the geological sciences in the country and the surrounding region. Activities of GSM continued during the period 2012/2013 with the aim of strengthening the capacity of geoscientists. GSM also sought to formalize collaborations with key institutions within the geoscience fraternity.

The new cooperative framework between GSM and PETRONAS for the running of the Petroleum Geoscience Conference and Exhibition (PGCE) commenced in 2012. In the agreed framework, proceeds from the PGCE will be channeled to 'good causes': RM200,000 to the Yayasan UTP and another RM200,000 to the newly created GSM Endowment Fund. The terms of reference for this fund will be presented as a separate agenda item in this AGM. Upon its approval today, it will become legally binding on GSM and shall be incorporated as an item in the agenda of the AGM from now on. This is in line with the agreement of the 46th AGM, where GSM is to administer the fund as a separate account, to ensure that the principal sum is maintained in perpetuity, while the interest it generates are used to conduct capacity building activities. The initial principal sum deposited in the Fund is RM 600,000. Further deposits may be made at appropriate periods in the future. As soon as the fund is operational, the GSM Best Student Award will be extended to all public and private universities offering geoscience programmes in Malaysia.

Since the last AGM, the following flagship initiatives of GSM have been successfully implemented:-

- The 35th Petroleum Geoscience Conference and Exhibition (PGCE 2012) with the theme "Delivering Value: Realising Exploration & Development Potential", held on 23-24 April 2012 at Kuala Lumpur Convention Centre, co-organised with PETRONAS.
- The National Geoscience Conference 2012 (NGC 2012) with the theme "Geoscience in Everyday Life", held on 23-24 June 2012 at Pullman Hotel, Kuching, Sarawak, co-organised with the Minerals and Geoscience Department Malaysia.
- The 36th Petroleum Geoscience Conference and Exhibition (PGCE 2013) with the theme "Innovative Geoscience: Securing Energy Needs", held on 18-19 March 2013 at Kuala Lumpur Convention Centre, co-organised with PETRONAS.

The publication of the Bulletin of the Geological Society of Malaysia (No. 58) and 4 issues of *Warta Geologi* (Vol. 38, No. 1-4). The Malaysian Citation Centre in 2012 lists the Bulletin *Geologi Malaysia* and *Warta Geologi* in the top 50 most cited scientific publications in the country. The focus is now on upgrading the GSM website to enable online retrieval of GSM publications.

We thank everyone who contributed to the flagship initiatives. In particular, we thank the respective organising chairpersons, their committee members as well as partner organisations - PETRONAS and the Minerals and Geoscience Department Malaysia- and all other collaborators for their contribution, support and unwavering dedication to GSM.

The Working Groups of GSM and Regional Representatives have greatly supported the Society's efforts in enhancing the capability of local geoscientists through the organisation of 16 technical talks, 1 short course and a field visit. As requested by members during the last AGM, the Secretary has continued close liaison with the chairs of the Working Groups and Regional Representatives and this has resulted in more activities.

The long-established linkages between GSM and national and international institutions, such as the IGM, COSTAM, AAPG and EAGE, have been maintained and strengthened during 2012/2013. Linkage has also been maintained with the Academy of Sciences Malaysia (ASM), specifically with respect to the Committee on Linkage with S&T Organisations and Professional Bodies. Through this linkage, in support of GSM's efforts to nurture young geoscientists for the country, the ASM sponsored for the first time 12 geoscience students from six public and private universities that offer geoscience programmes in Malaysia to present their research papers at the National Geoscience Conference 2012 in Kuching.

The Society is signing an agreement with the Institute of Geology Malaysia (IGM) to establish a joint committee on the advancement of geoscience education and knowledge. The committee will focus mainly on ensuring the delivery of quality geoscience education programmes. Once the agreement is signed, the committee will discuss ways to promote geoscience in a comprehensive and systematic manner, and to create awareness among various target groups, including students and the general public.

The GSM Council Members have been a source of tremendous support in steering the range of activities and plans for the geoscience fraternity and I am grateful for their ideas and encouragement. On behalf of the Council, I thank again the Organising Chairs of all GSM events, as well as the Working Group Chairs and Regional Representatives, for their contribution to GSM. The support and dedication of Ms. Anna Lee in the administration of GSM is also very much appreciated.

Joy Jacqueline Pereira
President

SECRETARY'S REPORT 2012/13

1.0 Introduction

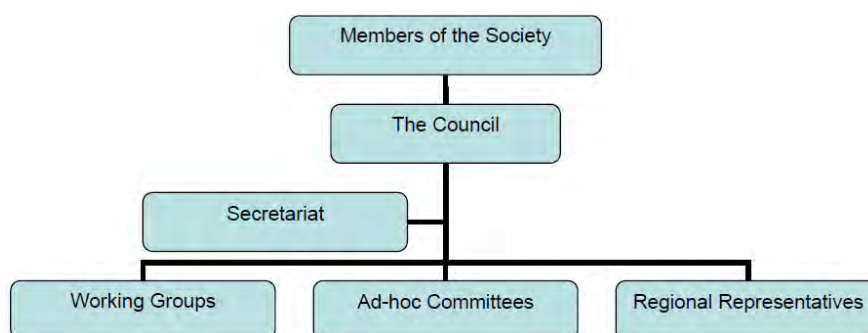
On behalf of the members of the Council of the Geological Society of Malaysia (GSM), it is my pleasure to present the Secretary's Report for the session 2012/2013.

2.0 Society structure

The Society's stakeholders are the members of the Society led by an elected Council. The Council's main functions are to set directions to promote the advancement of geosciences, endorse activities and provide guidance for the execution of the activities of the Society.

The Council is supported by 6 Working Groups and 6 Regional Representatives. The Working Groups' main function is to promote advancement and exchange of knowledge in specific geoscience areas. The Regional Representatives' main function is to promote geosciences and implement the mission of the society within their respective geographical areas.

The Council is assisted by the Secretariat. The Secretariat assisted the Society in the administration of day-to-day activities of the Council, Working Groups and Regional Representatives.



Organisation Chart of the Society

3.0 Membership

The support for GSM by the geoscience fraternity has grown tremendously over the year. As at 31st December 2012, the total number of members in the Society stands at 791. There is a huge surge in membership in the Student, Full and Life Categories, almost entirely from Malaysia, with an overall jump of 271 which is about 52 % over the previous year total of 520. The table below presents the breakdown in membership categories and their geographical breakdown.

Breakdowns of Membership

COUNTRY	Hon.	Life	Full	Assoc.	Student	Inst.	Total 2011	Total 2012	Variance (2012-2011)
Malaysia	2	234	213	10	258	5	447	722	+275
Australia	-	13	-	-	-	-	19	13	-6
Brunei	-	2	-	-	-	-	1	2	+1
Canada	-	3	-	-	-	-	3	3	0
Europe	-	8	1	-	-	-	10	9	-1
Hong Kong	-	1	-	-	-	-	1	1	0
Indonesia	-	9	-	-	-	-	8	9	+1
Japan	-	2	-	-	-	-	4	2	-2
Africa	-	-	-	-	-	-	1	-	-1
Middle East	-	6	-	-	-	-	4	6	+2
Philippines	-	2	1	-	-	-	2	3	+1
Singapore	-	6	2	1	-	1	10	10	0
Thailand	-	2	-	-	-	-	3	2	-1
USA	-	9	-	-	-	-	8	9	+1
TOTAL 2011	2	269	131	9	104	5	520		
TOTAL 2012	2	297	217	11	258	6		791	
Variance (2012-2011)	0	+28	+86	+2	+154	+1			

4.0 The Council

The Council for the Geological Society of Malaysia (GSM) for 2012/2013 session resumed their office after the 46th AGM on the 13th April 2012.

4.1 Council Members

The Council Members for 2012/2013 are as follows:

President:	Prof. Dr. Joy Jacqueline Pereira (UKM)
Vice President:	Dr. Mazlan Madon (PETRONAS)
Immediate Past President:	Dato' Yunus Abdul Razak (JMG)
Secretary:	Mr. Ling Nan Ley (JMG)
Assistant Secretary:	Mr. Lim Choun Sian (UKM)
Treasurer:	Mr. Ahmad Nizam Hasan (GeoSolution Resources)
Editor:	Associate Prof. Dr. Ng Tham Fatt (UM)
Councillors:	
(2012/2013)	Mr. Tan Boon Kong (Consultant) Dr. Nur Iskandar Taib (UM) Dr. Gan Lay Chin (Freelance)* Dr. Tanot Unjah (UKM)
(2012/2014)	Dr. Meor Hakif Amir Hassan (UM) Dr. Liaw Kim Kiat (BHP Billiton)** Mr. Robert Wong (PETRONAS) Mr. Nicholas Jacob (JKR)

*Dr. Gan Lay Chin tendered her resignation in July 2012 due to her other personal commitment. The Council co-opted Dr. Samsudin Hj Taib (UM) to fill the vacant post.

**Dr. Liaw Kim Kiat tendered his resignation in November 2012 due to his new overseas engagement. The Council co-opted Mr. Askury Abd Kadir (UTP) to fill the vacant post.

4.2 Council Meetings

During the 2012/2013 session, the Council met 7 times. The attendance of the council members to the meetings is presented in the table below. All the meetings were conducted at the meeting room of the Department of Geology, University of Malaya, Kuala Lumpur.

Attendance of Council Members at Council Meetings

NAME	24/5/12	10/7/12	6/9/12	16/10/12	6/12/12	19/2/13	28/3/13	Total
Prof. Dr. Joy J. Pereira	/	/	/	/	/	/	/	7/7
Dr. Mazlan Madon	0	0	/	/	0	0	/	3/7
Mr. Ling Nan Ley	/	/	/	0	/	/	/	6/7
Mr. Ahmad Nizam Hasan	/	/	0	/	0	/	/	5/7
Dr. Ng Tham Fatt	/	/	/	/	/	/	/	7/7
Mr. Lim Choun Sian	/	/	0	/	/	0	/	5/7
Dato' Yunus Abd. Razak	/	/	0	0	0	0	0	2/7
Mr. Tan Boon Kong	0	/	/	/	/	/	/	6/7
Dr. Nur Iskandar Taib	/	/	/	/	/	/	/	7/7
Dr. Gan Lay Chin	0	/	-	-	-	-	-	1/2
Dr. Samsudin Hj Taib	-	-	-	/	/	/	/	4/4
Dr. Tanot Unjah	/	0	/	/	0	/	0	4/7
Dr. Meor Hakif Amir Hassan	/	/	/	/	/	/	/	7/7
Dr. Liaw Kim Kiat	0	/	0	/	0	-	-	2/5
Mr. Askury Abd Kadir	-	-	-	-	-	-	0	0/1
Mr. Robert Wong	0	/	/	/	0	/	0	4/7
Mr. Nicholas Jacob	/	/	/	0	/	/	0	5/7

Note: / = present, 0 = absent with apology, - = resigned or prior to appointment

5.0 Working Groups

In the 2012/2013 session, the council decided to reactivate Working Group on Petroleum Geology. The Working Groups and the Chairs for Session 2012/2013 are as follows:

	WORKING GROUP	CHAIRMAN 2012/2013
1	Engineering Geology, Hydrogeology & Environmental Geology	Mr. Tan Boon Kong
2	Promotion of Geoscience & Young Geologists	Dr. Tanot Unjah
3	Economic Geology	Mr. Zakaria Endut
4	Regional Geology	Dr. Mohd Rozi Umor
5	Geophysics	Dr. Samsudin Hj Taib
6	Petroleum Geology	Mr. Robert Wong /Dr. Liaw Kim Kiat

6.0 Regional Representatives

The Society is trying to strengthen its delivery mechanism at the sub-national level through the appointment of Regional Representatives to work in conjunction with the local membership to advance geoscience in the respective regions. The Regional Representatives were appointed in January 2011, for a tenure of 2 consecutive sessions. The Regional Representatives are as follows:

	REGION	REPRESENTATIVE 2011/2013
1	Southern Peninsular Malaysia	Dr. Mohd For Mohd Amin (UTM)
2	Perak	Mr. Askury Abd Kadir (UTP)
3	Northern Peninsular Malaysia	Dr. Kamar Shah Ariffin (USM)
4	Eastern Peninsular Malaysia	Mr. Mohd Pauzi Abdullah* (JMG)
5	Sarawak	Dr. Richard Mani Banda (JMG)
6	Sabah	Dr. Baba Musta (UMS)

*In May 2012, the Council nominated Mr. Hamlee Ismail of JMG Terengganu to replace Mr. Mohd Pauzi Abdullah who was being transferred to work in Kuala Lumpur.

7.0 Activities

The Society has successfully organised Petroleum Geoscience Conference and Exhibition 2012 (PGCE 2012), National Geoscience Conference 2012 (NGC 2012), Petroleum Geoscience Conference and Exhibition 2013 (PGCE 2013), GSM Photographic Competition 2012 and other activities such as talks and short courses.

7.1 The Petroleum Geoscience Conference and Exhibition 2012 (PGCE 2012)

The prestigious event marks the 35th PGCE with a theme of '*Delivering Value: Realising Exploration & Development Potential*'. The conference was held on 23-24 April 2012 at the Kuala Lumpur Convention Centre. The event was co-organised with PETRONAS with the inaugural participation of European Association of Geoscientists & Engineers (EAGE) as the event manager. The event has been graciously officiated by the Chief Operating Officer & Executive Vice President of Downstream Sector PETRONAS, YBhg Datuk Wan Zulkiflee Wan Ariffin.

A total of 50 oral presentations and 42 technical posters, including a keynote address on the future global energy outlook were presented during the 2-day event. In 2012, PGCE set numerous new precedence, including registering for the first time more than 2000 delegates and 44 exhibitors from various parts of the world.

This PGCE marks for the first time, to make contributions of RM 200,000 each to Yayasan UTP and the newly established GSM Endowment Fund.

7.2 The National Geoscience Conference 2012 (NGC 2012)

With Minerals and Geoscience Department Malaysia as co-organiser, the National Geoscience Conference 2012 (NGC 2012) was successfully held from 23rd to 24th June 2012 at the Pullman Hotel, Kuching, Sarawak. The theme of NGC 2012 was *Geoscience in Everyday Life*. A total of 4 keynote papers, 50 orals and 47 posters were presented. A total of 175 geoscientists from academia as well as the public and private sectors attended the conference. The Pre-Conference fieldtrip was also successfully carried out.

7.3 The Petroleum Geoscience Conference and Exhibition 2013 (PGCE 2013)

The 36th Petroleum Geoscience Conference and Exhibition (PGCE 2013) was held at the Kuala Lumpur Convention Centre from 18-19 March 2013 with the theme ‘*Innovative Geoscience: Securing Energy Needs*’. The event was graciously officiated by the President and Chief Executive Officer PETRONAS, Y.Bhg. Tan Sri Dato’ Shamsul Azhar Abbas.

The PGCE 2013 technical programme included oral, poster and special sessions that focus on new ideas and technological advancement in the petroleum geoscience industry. A total of more than 100 papers were presented. For the very first time, this PGCE also included the Executive Programme which is a network event for the senior management from the region. Two field trips and 6 short courses were also organised.

The PGCE 2013 conference received a record registration of 2,360 participants. The PGCE is evidently emerging into a regional geoscience conference and exhibition with the participation from various countries all over the world.

7.4 GSM Photographic Competition 2012

The 2012 Photography Competition announcement was put up in Warta Vol.38 No.2 (April-June 2012) issue and the deadline for submission was 31 December 2012. However, the response was not encouraging.

7.5 Other Activities

During the session, the Council with the cooperation of Working Groups, Regional Representatives, and in collaboration with UKM, UM and JMG were able to organise a total of 16 technical talks, 1 short course and a site visit.

7.5.1 Technical Talks

Summary of Technical Talks

Date	Activity	Topic	Speaker	Venue	Collaborator
25.4.12	Technical Talk	Tectono-stratigraphy and development of the Miocene delta systems on an active margin of Northwest Borneo, Malaysia	Dr Allagu Balaguru Sabah Exploration, Talisman Energy, Malaysia	UKM	Geology Programme, UKM
23.5.12	Technical Talk	Geobencana Gempa bumi & Tsunami – Peringatan daripada Al-Quran & Al-Hadis	Prof Madya Dr Tajul Anuar Jamaluddin, Program Geologi, UKM	UKM	Geology Programme, UKM
30.5.12	Malam EG Practice	1. Geologist’s Input in Hillside Development in Malaysia 2. Engineering Geology Practice in Hong Kong	1. Philip Tiong (G&P) 2. Jack Pan (G&P)	UM	-
18.7.12	Malam Sekitaran 2012	1. Development of mini geotechnical centrifuge in UKM 2. Application of Geology – from environmental industry perspective	1. Wan Zuhairi Wan Yaacob (UKM) 2. Ng Hon Seng (AECOM)	UM	-
5.9.12	Malam Sekitaran II 2012	1. Partitioning coefficient parameter of heavy metals for groundwater contaminant transport modeling 2. Integrated study on the distribution of groundwater contamination flow path at a waste disposal site in Malaysia	1. Wan Zuhairi Wan Yaacob (UKM) 2. Kamarudin Samuding (MNA)	UM	-
15.10.12	Technical Talk	The Mengkuang Dam, Penang	Ir. Khor Chai Huat (Consultant)	UM	-
21.11.12	Technical Talk	Sea-level changes in two geologically different environments: Peninsular Malaysia and Sabah	Prof Emeritus Dr Tjia H.D	UKM	Geology Programme, UKM
5.12.12	Technical Talk	The Important of Geophysical Information in Ex-mining Land Development	Zuhar Zahir Tuan Harith	UKM	Geology Programme, UKM
7.12.12	Technical Talk	The Pahang-Selangor Interstate Water Transfer Tunnel	Takayuki MATSUMOTO (Shimizu Corp.)	UM	-
9.1.13	Chairman’s Lecture No. 18	Slope Failures Associated with Water Tank and Reservoir Sites – Some Case Studies in the Kuching Area, Sarawak	Tan Boon Kong	UM	-

PERTEMUAN PERSATUAN (MEETINGS OF THE SOCIETY)

31.1.13	Technical Talk	Geological Structural Data Collection & Application in Rock Engineering	Mogana Sundaram (Aurecon, Brisbane.)	UM	-
6.3.13	Technical Talk	Palekbang dari aspek Geologi, Arkeologi dan Sejarahnya	Mohd Hariri Arifin (UKM) Muhammad Iddham Rasyid (Kelab Pencinta Sejarah Kelantan)	UKM	Geology Programme, UKM
13.3.13	Technical Talk	Listen, Listen, Listen, GROUNDWATER is definitely better	Ir. Dr. Azuhan Mohamed (Erinco)	UM	-
22.3.13	Technical Talk	Form and Distribution of Organic Matter-Hosted Pores, Marcellus Formation (Devonian), Pennsylvania, USA	Dr. Kitty L Milliken University of Texas at Austin	UM	Department of Geology, UM
03.04.13	Technical Talk	Mapping Natural and Man-Made Landslides Susceptibility in an Area undergoing Development, Kota Kinabalu, Sabah	Dr Norbert Simon (UKM)	UKM	Geology Programme, UKM
06.04.13	Geologists' Night	Gold Exploration in Bau Mining area, Sarawak	Mr. Charles P. Molujin, North Borneo Gold	Four Points, Kuching	JMG Sarawak

7.5.2 Site Visit

A total of 18 members participated in the visit to Penjom Gold Mine, Kuala Lipis, Pahang on 12th May 2012 (Saturday). The site visit was organised by Economic Geology Working Group.

7.5.3 Short Course

In collaboration with Department of Geology, University of Malaya, a short course on Seismic Stratigraphy was organised. The short course was conducted by Jan de Jager, Professor, Regional and Petroleum Geology, Utrecht University, The Netherlands.

8.0 Other Major Upcoming Events

8.1 The National Geoscience Conference 2013 (NGC 2013)

The National Geoscience Conference 2013 (NGC 2013) will be held from the 8th to 9th June 2013 at the Kinta Riverfront Hotel and Suites, Ipoh. The theme of NGC 2013 is *Geoscience for Environmental Wellbeing*. The Organising Committee of the Conference is chaired by Dr. Kamaludin Hassan of Minerals and Geoscience Department, Perak and co-chaired by Mr. Askury Abd Kadir of UTP. Pre-Conference Fieldtrip: Kinta Valley area on 7 June 2013.

9.0 GSM Awards

GSM has set up numerous awards for members as follows:

9.1 Honorary Membership

No nomination was received for this session.

9.2 PGCE Student Excellence Award

PGCE Student Excellence Awards are given to outstanding students studying for a degree in Geology or Geophysics at Malaysian universities. Top students from 8 universities were awarded in PGCE 2012 and PGCE 2013.

9.3 Best Student Awards

These awards of value RM1000.00 each are administered by the Geology Departments of UM & UKM.

In 2012, UM divided the award and gave the award as:

Geological Society of Malaysia Award (RM500): Ling Hwei Chih (First Class)

Langkawi Award (RM500): Norzarifah Kamaruzaman (First Class)

UKM gave the award as:

Hadiah Persatuan Geologi Malaysia (RM1000): Azrin Azmi

9.4 Young Geoscientist Award

The Council did not receive any nomination for this award.

9.5 Geoscientist Award

Geoscientist Award would be awarded to Prof. Dato' Dr. Ibrahim Komoo in NGC 2013 who has contributed significantly to the development of Malaysian geology.

10.0 Linkages and Collaborations

GSM maintained linkages with national and international institutions such as:

- Institute of Geology Malaysia
- Confederation of Scientific and Technological Association of Malaysia (COSTAM) – represented by two Council members: Mr. Tan Boon Kong and Mr. Nicholas Jacob
- Formation Evaluation Society Malaysia (FESM)

- American Association of Petroleum Geology (AAPG)
 - AAPG House of Delegates: represented by Dr. Mazlan Madon of PETRONAS. Mr. Askury Abd. Kadir of University Teknologi Petronas is the alternative representative
- EAGE
- Academy of Sciences Malaysia, specifically the Committee on Linkage with S&T Organisations and Professional Bodies
 - The President represents GSM in the ASM
- GEOSEA
 - GSM is the present host of the permanent Secretariat
 - The President of GSM which is the present GEOSEA Secretariat has written a letter to Myanmar Geological Society to invite them to organise GEOSEA 2014

For the Student's Geological Club Collaboration, only AAPG Student Chapter of University of Malaya is collaborating with GSM at present.

11.0 Acknowledgement

The Society would like to record its utmost appreciation to all the individuals and organisations in organising the Society's numerous activities during the session. Special mention must be made of the tremendous support by the Head and staff of the Geology Department, University of Malaya especially in the use of its premises for most of the Society's meetings and activities. The continued co-operation and support extended by JMG, PETRONAS, UKM, UTP and IGM is recorded with gratitude. The unwavering support of Ms. Anna Lee in the administration of GSM is also very much appreciated. Last but not least, the Council also wishes to record its appreciation to all GSM members for their advice, guidance and support throughout the session.

Ling Nan Ley
Secretary

ASSISTANT SECRETARY'S REPORT 2012

The sales of the Society publications and the list of organizations and institutions that were exchanging publications with GSM are presented in the following tables.

Sales and stock of publications for 2012

Publications	Sales 2012	Stock remaining by end of 2011	Stock remaining by end of 2012
Bulletin 2	8	185	177
Bulletin 3	8	164	156
Bulletin 4	9	81	72
Bulletin 6	9	405	396
Bulletin 7	8	256	248
Bulletin 13	10	14	4
Bulletin 17	0	0	0
Bulletin 18	7	7	0
Bulletin 19	8	381	373
Bulletin 20	8	338	330
Bulletin 21	20	150	130
Bulletin 22	8	210	202
Bulletin 23	8	224	216
Bulletin 24	9	382	373
Bulletin 25	9	94	85
Bulletin 26	9	192	183
Bulletin 27	9	68	59
Bulletin 28	8	112	104
Bulletin 29	7	112	105
Bulletin 30	7	117	110
Bulletin 31	7	113	106
Bulletin 32	7	89	82
Bulletin 33	7	251	244
Bulletin 34	8	68	60
Bulletin 35	0	0	0
Bulletin 36	10	109	99
Bulletin 37	9	166	157
Bulletin 38	9	234	225
Bulletin 39	0	0	0
Bulletin 40	12	93	81
Bulletin 42	15	42	27
Bulletin 43	9	146	137

Bulletin 44	11	109	98
Bulletin 45	10	115	105
Bulletin 46	0	19	19
Bulletin 47	12	63	51
Bulletin 48	0	52	52
Bulletin 49	13	325	312
Bulletin 50	5	344	339
Bulletin 51	6	252	246
Bulletin 52	7	245	238
Bulletin 53	7	342	335
Bulletin 54	8	297	289
Bulletin 55	7	313	306
Bulletin 56	9	375	366
Bulletin 57	6	93	87
Abstract (Bull 6)	0	0	0
Proceeding AGC 2000	7	27	20
Proceeding AGC 2001	8	160	152
M'sian Stratigraphic guide	9	258	249
Lexicon of stratigraphy	24	39	15
Stratigraphic correlation	0	0	0
Rocks poster	65	65	0
Geology of Borneo (CD)	45	264	219
Geology of Borneo (Map)	25	883	858
Geol. Evolution of SEA	45	898	853
Geology of P. M'sia	123	1177	1054

List of organizations and institutions that are exchanging publications with GSM

Item	Organization	Country
1	New South Wales Dept of Mineral Resources	Australia
2	Geologica Belgica a.s.b.I	Belgium
3	Ministry of Development	Brunei
4	University of Geosciences	China
5	The Episode	China
6	Nanking Institute of Geology	China
7	National Geological Library	China
8	Peking College of Geology	China
9	SOPAC Secretariat	Fiji
10	Suomalainen Tiedakatemia	Finland
11	Freie Universitat Berlin	Germany
12	National Museum of Natural History	Holland
13	Geological Society of Japan	Japan
14	Dept Mineral & Planetary Science, Hiroshima	Japan
15	Museum of Nature & Human Activities	Japan
16	National Science Museum	Japan

PERTEMUAN PERSATUAN (MEETINGS OF THE SOCIETY)

17	Natural History Museum and Institute	Japan
18	Institute of Geosciences	Japan
19	Geological Society of Korea	Korea
20	Dewan Bahasa dan Pustaka	Malaysia
21	Minerals and Geoscience Department Malaysia, Headquarters	Malaysia
22	Minerals and Geoscience Department Malaysia, Ipoh	Malaysia
23	Minerals and Geoscience Department Malaysia, Kuching	Malaysia
24	Minerals and Geoscience Department Malaysia, Kota Kinabalu	Malaysia
25	Kementerian Dalam Negeri	Malaysia
26	Perpustakaan Negara Malaysia	Malaysia
27	Library PETRONAS Berhad	Malaysia
28	Pusat Sumber Maklumat Negeri Sarawak	Malaysia
29	Perpustakaan Tun Sri Lanang, UKM	Malaysia
30	Program Geologi, UKM	Malaysia
31	Library, UM	Malaysia
32	Library, USM	Malaysia
33	Malaysian Institute of Nuclear Technology	Malaysia
34	Library of Congress, USA Embassy	Malaysia
35	Institute of Ecological & Nuclear Science	New Zealand
36	National Library	Singapore
37	Central Geological Survey	Taiwan
38	American Museum of Natural History, New York	USA
39	CIGESE Library	USA
40	Oklahoma Geological Survey	USA
41	US Geological Survey	USA
42	University of Kansas	USA
43	AAPG Foundation Library	USA
44	Faculty of Agriculture & Natural Resources, Africa University	Zimbabwe

Lim Choun Sian
Assistant Secretary

EDITOR'S REPORT 2012/2013

Four issues of *Warta Geologi* (Volume 38) and one volume of *Bulletin* (Volume 58) were published last year. The *Bulletin* was jointly edited by guest editor Dr. Melissa Johansson.

The Society is collaborating with Universiti Teknologi PETRONAS to publish selected full papers presented at the Integrated Petroleum Engineering and Geosciences Conference 2012 (ICIPEG2012) and with Center for Global Archeological Research, USM for full papers presented at the International Conference on Archeogeology of Meteorite Impact at Bukit Bunuh Area, Lenggong, Malaysia. These papers will be published in the *Bulletin*.

The Society is grateful to authors for their contribution, and guest editor, members of the editorial board and reviewers for their time and effort to improve the quality of the Society's publications.

Ng Tham Fatt
Editor

TREASURER'S REPORT 2012

For the Financial Year 2012, the society's posted a financial surplus of RM 339,477.00 lower compared to year 2011 RM 679,443.00. Nevertheless, the net current asset showed increase from RM 1,865,655.00 for 2011 to RM 3,457,242.00 for year 2012.

Operating revenue posted lower compared to year 2011 which is total income of RM 778,335.00 to RM 446,635.00 for year 2012. Petroleum Geoscience Conference & Exhibition 2012 (PGCE 2012) posted net total collection of RM 407,906.00. The revenue posted for Subscription shows higher from RM 15,070.00 of year 2011 to RM 24,908.00, Non from Sales of Geology Peninsular Malaysia posted and Sales of publications shows lower from RM 3,253.00 of year 2011 to RM 1,672.00 for year 2012.

Total operating expenditure for Financial Year 2012 shows slightly increase from RM 98,892.00 for year 2011 to RM 107,158.00. The increasing was recorded mainly from printing of Geology of Peninsular Malaysia (GPM), Warta Geologi, Photo competition and development of Website. National Geological Conference (NGC 2012) that was held in Kuching, Sarawak shows a cost neutral compare to deficit from previous year 2011 of RM 5,945.00.

The Hon.Treasure would like to express great appreciation to the organising committee of PGCE 2012 led by Mr Peter Majid that again contributed a tremendous income, NGC 2012 by Dr Richard Mani Banda, Deputy Director of JMG Sarawak whose committee has successfully managed a self funded conference. Last but not least the donors and sponsor for their contributions and supports throughout the year.

Ahmad Nizam Hasan
Treasurer

NOTES

1. The RM 52,649.00 is still held in trust for the Formation Evaluation Working Group and RM 5,765.00 are AAPG-UM student chapter fund to finance their activities.
2. Young geoscientist award fund of RM 3,143.00 still held as no candidates nominated.
3. Fund account of Petroleum Geology Conference And Exhibition 2013 (PGCE 2013) of RM 1,732,977.00 are the income that gain through year 2012 and would be closed by end of year 2013.
4. Hence, fund of National Geoscience Conference 2012 was created to manage a balance of RM 6,917.00 from income of NGC 2012 contribute by Akedemi Sains Malaysia (ASM) to student presenting papers.

**PERSATUAN GEOLOGI MALAYSIA
(GEOLOGICAL SOCIETY OF MALAYSIA)**
(Registered in Malaysia)

REPORT AND ACCOUNTS
31 DECEMBER 2012

S.F. LEE & CO.
CHARTERED ACCOUNTANTS

**PERSATUAN GEOLOGI MALAYSIA
(GEOLOGICAL SOCIETY OF MALAYSIA)
(Registered in Malaysia)**

MEMBERS INFORMATION

President	:	Prof. Dr. Joy Jacqueline Pereira (UKM)
Vice President	:	Dr. Mazlan Madon (PETRONAS)
Immediate Past President	:	Dato' Yunus Abdul Razak (JMG)
Secretary	:	Mr. Ling Nan Ley (JMG)
Assistant Secretary	:	Mr. Lim Choun Sian (UKM)
Treasurer	:	Mr. Ahmad Nizam Hasan (GeoSolution Resources)
Editor	:	Associate Prof. Dr. Ng Tham Fatt (UM)
Councillors (2012/2013)	:	Mr. Tan Boon Kong (Freelance) : Dr. Nur Iskandar Taib (UM) : Dr. Gan Lay Chin (Freelance)* : Dr. Tanot Unjah (UKM)
(2012/2014)	:	Dr. Meor Hakif Amir Hassan (UM) : Dr. Liaw Kim Kiat (BHP Billiton)** : Mr. Robert Wong (PETRONAS) : Mr. Nicholas Jacob (JKR)

*Dr. Gan Lay Chin tendered her resignation in July 2012 due to her other personal commitment. The Council co-opted Dr. Samsudin Taib (UM) to fill the vacant post.

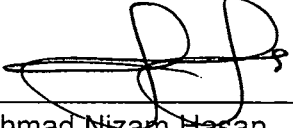
**Dr. Liaw Kim Kiat tendered his resignation in November 2012 due to his new overseas engagement.

PERSATUAN GEOLOGI MALAYSIA (GEOLOGICAL SOCIETY OF MALAYSIA)
STATEMENT BY THE COUNCIL

We, Joy Jacqueline Pereira and Ahmad Nizam Hasan, being the President and Treasurer respectively, of the Persatuan Geologi Malaysia (Geological Society Of Malaysia) do hereby state that, in the opinion of the Council, the financial statements set out pages 4 to 9 are properly drawn up in accordance with applicable approved accounting standards so as to give a true and fair view of the financial position of the Persatuan Geologi Malaysia (Geological Society of Malaysia) as at 31 December 2012, and of the result and cash flows for the year then ended.



Joy Jacqueline Pereira
President



Ahmad Nizam Hasan
Treasurer

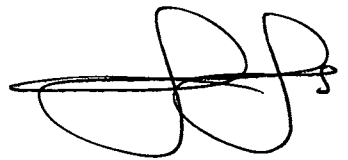
Kuala Lumpur

Dated : **21 MAR 2013**

PERSATUAN GEOLOGI MALAYSIA (GEOLOGICAL SOCIETY OF MALAYSIA)
DECLARATION BY THE OFFICER PRIMARILY RESPONSIBLE FOR THE
FINANCIAL MANAGEMENT OF THE SOCIETY

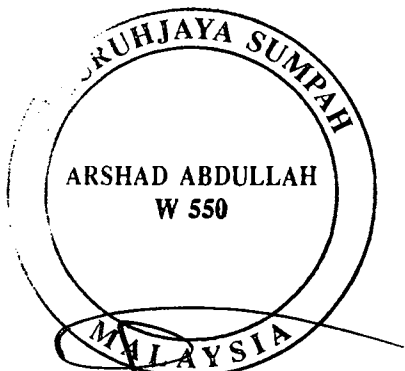
I, Ahmad Nizam Hasan, the officer primarily responsible for the financial management of the Persatuan Geologi Malaysia (Geological Society Of Malaysia), do solemnly and sincerely declare that the accompanying financial statements set out on pages 4 to 9 are, to the best of my knowledge and belief correct, and I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the Statutory Declarations Act, 1960.

Subscribed and solemnly declared by)
the abovenamed Ahmad Nizam Hasan)
at Kuala Lumpur in Wilayah Persekutuan)
on **21 MAR 2013**)



Ahmad Nizam Hasan

Before me,



NO. 102 & 104 1st FLOOR BANGUNAN
PERSATUAN YAP SELANGOR
JALAN TUN HS LEE
50000 KUALA LUMPUR
Commissioner for Oaths



S.F. LEE & CO (AF: 0670)

REPORT OF THE AUDITORS TO MEMBERS OF THE
PERSATUAN GEOLOGI MALAYSIA (GEOLOGICAL SOCIETY OF MALAYSIA)

We have audited the financial statements set out on pages 4 to 9. These financial statements are the responsibility of the Council Members of the Society. It is our responsibility to form an independent opinion, based on our audit, on those financial statements and to report our opinion to you, as a body, and for no other purpose. We do not assume responsibility to any other person for the content of this report.

We conducted our audit in accordance with approved auditing standards in Malaysia. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by the Council Members, as well as evaluating the overall financial statements presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the financial statements give a true and fair view of the statement of assets and liabilities of the Society as at 31 December 2012 and of its statement of income and expenditure and cash flows for the financial year ended 31 December 2012 in accordance with the MASB approved accounting standards in Malaysia.

S.F. LEE & CO. (AF 0670)
Chartered Accountants

LEE SIEW FATT
(1179/9/14J)
Chartered Accountant

Kuala Lumpur

Date : **21 MAR 2013**

**PERSATUAN GEOLOGI MALAYSIA
(GEOLOGICAL SOCIETY OF MALAYSIA)
(Registered in Malaysia)**

STATEMENT OF ASSETS AND LIABILITIES AS AT 31 DECEMBER 2012

	Note	2012 RM	2011 RM
FUND ACCOUNTS			
GENERAL FUND	3	1,655,135	1,315,658
STUDENT LOAN FUND		656	656
EVALUATION FORMATION WORKING GROUP FUND		52,649	26,745
YOUNG GEOSCIENTIST AWARD FUND		3,143	3,143
AAPG-UM STUDENT CHAPTER FUND		5,765	(567)
PETROLEUM GEOLOGY CONFERENCE AND EXHIBITION 2013		1,732,977	520,020
NATIONAL GEOSCIENCE CONFERENCE 2012		6,917	-
		<u>3,457,242</u>	<u>1,865,655</u>
Represented by:			
NON-CURRENT ASSETS			
PLANT AND EQUIPMENT	4	23,411	24,236
CURRENT ASSETS			
Inventories	5	30,390	35,118
Other receivable		-	2,765
Deposits		600	600
Fixed deposits with licensed bank	6	1,393,580	293,580
Cash and bank balances		2,009,261	1,509,356
		<u>3,433,831</u>	<u>1,841,419</u>
NET CURRENT ASSETS		3,433,831	1,841,419
		<u>3,457,242</u>	<u>1,865,655</u>

The accompanying notes are an integral part of these statements

PERSATUAN GEOLOGI MALAYSIA
(Registered in Malaysia)

STATEMENT OF INCOME AND EXPENDITURE FOR THE YEAR ENDED
31 DECEMBER 2012

INCOME	2012	2011
	RM	RM
Entrance fee	1,750	1,300
Fixed deposits interest income	8,963	6,936
Subscription	24,908	15,070
Sales of publications	1,672	3,253
Petroleum Geology Conference	407,906	748,253
Photostat	-	734
Short course : Jan de Jager	1,111	-
Advertisement (Warta Geologi)	-	600
Geology of Peninsular Malaysia	-	2,189
Working Groups	325	-
	<u>446,635</u>	<u>778,335</u>
 EXPENDITURE		
Annual dinner	2,060	2,480
Annual General Meeting	503	348
Audit fee	1,100	900
Bank charges	64	78
Depreciation on plant and equipment	2,845	2,999
Geology of Peninsular Malaysia (GPM)	3,234	-
Honorarium	23,340	21,000
Income tax	742	1,200
National Geological Conference	-	5,303
Petroleum Geology Conference and Exhibition (PGCE)	5,040	-
Photo competition	2,300	-
Photostat	343	-
Postages	2,493	5,945
Printing and Stationery		
- Miscellaneous	-	524
- Warta Geologi	37,027	31,290
- Bulletin	9,100	12,025
Refreshment	303	750
Speakers' account	2,724	7,393
Subscription to COSTAM	100	200
Sundry expenses	6,406	4,063
Students' award	1,000	-
Telefax	309	780
Telephone	1,025	1,614
Website development	5,100	-
	<u>107,158</u>	<u>98,892</u>
Surplus for the year	<u>339,477</u>	<u>679,443</u>

**PERSATUAN GEOLOGI MALAYSIA
(Registered in Malaysia)**

CASH FLOW STATEMENT FOR THE YEAR ENDED 31 DECEMBER 2012

	2012 RM	2011 RM
Cash flows from operating activities		
Surplus of income over expenditure for the year	339,477	679,443
Adjustments for:-		
Depreciation on plant & machinery	2,845	2,999
Interest income	(8,963)	(6,936)
Surplus before working capital changes	<u>333,359</u>	<u>675,506</u>
Increase in National Geology Fund	6,917	-
Increase in Petroleum Geology Fund	1,212,957	520,020
Decrease / (Increase) in receivable	2,765	(2,765)
Decrease in inventories	4,728	9,041
Increase / (Decrease) in AAPG-UM Student Chapter Fund	6,332	(2,262)
Increase / (Decrease) in Evaluation Formation Working Group Fund	<u>25,904</u>	<u>10,538</u>
Cash generated from operations	<u>1,592,962</u>	<u>1,210,078</u>
Purchase of plant and equipment	(2,020)	-
Interest income	<u>8,963</u>	<u>6,936</u>
Net cash generated from operating activities	<u>1,599,905</u>	<u>1,217,014</u>
Net increase in cash and cash equivalents	1,599,905	1,217,014
Cash and cash equivalents at beginning of the year	1,802,936	585,922
Cash and cash equivalents at end of the year	<u>3,402,841</u>	<u>1,802,936</u>
Cash and cash equivalents comprised of:		
Deposits held with licensed banks	1,393,580	293,580
Cash and bank balances	<u>2,009,261</u>	<u>1,509,356</u>
	<u>3,402,841</u>	<u>1,802,936</u>

**PERSATUAN GEOLOGI MALAYSIA
(Registered in Malaysia)**

NOTES TO THE FINANCIAL STATEMENTS - 31 DECEMBER 2012

1. PRINCIPAL OBJECTIVES

The objective of the Society is to promote the advancement of the geological sciences in Malaysia.

2. ACCOUNTING POLICIES

(a) Basic of Accounting

The financial statements have been prepared under the historical cost convention and comply with applicable Approved Accounting Standards issued by the Malaysian Association Standards Board.

(b) Plant and Equipment

Plant and equipment is stated at historical cost less accumulated depreciation. Depreciation on plant and equipment is computed on the reducing balance basis calculated to write-off the cost of the assets over their estimated useful lives. The principal annual rates used are:-

Office equipment	10%
Computer	20%

The carrying values of the assets are reviewed for impairment when there is an indication that the assets might be impaired. Impairment is measured by comparing the carrying values of the assets with their recoverable amounts.

An impairment loss is charged to the income and expenditure account immediately, unless the asset is carried at revalued amount. Any impairment loss of a revalued asset is treated as a revaluation decrease to the extent of previously recognised revaluation surplus for the same asset.

Subsequent increase in the recoverable amount of an asset is treated as reversal of the previous impairment loss and is recognised to the extent of the carrying amount of the asset that would have been determined (net of amortisation and depreciation) had no impairment loss been recognised. The reversal is recognised in the income statement immediately, unless the asset is carried at revalued amount.

(c) INVENTORIES

Inventories consists of compass and maps valued at the lower of cost and net realizable value.

**PERSATUAN GEOLOGI MALAYSIA
(Registered in Malaysia)**

d) **INCOME RECOGNITION**

Membership subscription is payable annually at the beginning of the financial year. All subscriptions received during the financial year are recognised as income.

Income from sale of publications is recognised upon delivery of goods.

Income from organising conference is recognised on received and receivable basis.

Fixed deposit interest income is recognised on an accrual basis.

3. GENERAL FUND	2012 RM	2011 RM
At 1 January	1,315,658	636,215
Surplus for the year	339,477	679,443
At 31 December	<u>1,655,135</u>	<u>1,315,658</u>

4. PLANT AND EQUIPMENT

	<u>Cost</u>			<u>Balance at 31/12/2012</u>
	<u>Balance at 1/1/2012</u>	<u>Additions</u>	<u>Disposal</u>	
	RM	RM	RM	RM
Office equipment	130,155	2,020	-	132,175
Computer	5,078	-	-	5,078
	<u>135,233</u>	<u>2,020</u>	<u>-</u>	<u>137,253</u>

	<u>Accumulated depreciation</u>			<u>Balance at 31/12/2012</u>
	<u>Balance at 1/1/2012</u>	<u>Charge for the year</u>	<u>Disposal</u>	
	RM	RM	RM	RM
Office equipment	108,120	2,405	-	110,525
Computer	2,877	440	-	3,317
	<u>110,997</u>	<u>2,845</u>	<u>-</u>	<u>113,842</u>

<u>Net Carrying Amount</u>	2012 RM	2011 RM
Office equipment	21,650	22,035
Computer	1,761	2,201
	<u>23,411</u>	<u>24,236</u>

**PERSATUAN GEOLOGI MALAYSIA
(Registered in Malaysia)**

5. INVENTORIES	2012	2011
	RM	RM
Maps	2,850	3,091
Compass	12,278	14,918
Magazines	15,262	17,109
	<u>30,390</u>	<u>35,118</u>

6. FIXED DEPOSITS WITH LICENSED BANK

The fixed deposits with licensed bank have a maturity of between 3 to 15 months (2011 : 3 to 15 months). Interest rates for the deposits ranged from 3.05% to 5% (2011 : 3.75% to 5%) per annum.

6. Other Matters:

6.1 GSM Endowment Fund

The AGM in 2012 approved the proposal of the Council to create the PGCE Endowment Fund that will be administered by GSM in a separate account, where the principal sum remains in perpetuity with the interest to be used to build capacity in petroleum geoscience. The seed money for the fund is accrued from the net profits from the Petroleum Geoscience Conference and Exhibition (PGCE), co-organised with PETRONAS since the late 1970s. A new cooperative framework for PGCE commenced in 2012, whereby net profits will be channelled to the PGCE Endowment Fund and Yayasan UTP. Since the last AGM, meetings were held with the Honorary Auditor and lawyers engaged by the Society to implement the proposal. The following aspects were highlighted:-

- As the fund is intended to remain in perpetuity, it cannot be named after an event. Thus, the name “PGCE Endowment Fund” should be renamed. **The Council proposes the name “GSM Endowment Fund”**
- As reflected in the change of name, the source of capital for the fund is now not limited to profits from PGCE. **The Council proposes that GSM formally applies for “tax deductible” status to encourage donations directly into the “GSM Endowment Fund”.**
- As the initial principal amount of the fund is intended to be increased periodically, from sources not limited to profits from PGCE, it was proposed that the interest should not be restricted to build capacity in petroleum geoscience. **The Council proposes that the interest portion accrued, be used to meet expenses incurred in the implementation of programmes run by the Society.**
- The establishment of the “GSM Endowment Fund” in perpetuity requires a change in the GSM Constitution. An administrative alternative is to first table a Terms of Reference at the AGM and report it as a mandatory item in every subsequent AGM. **The Council requests the AGM to accept and endorse the following Terms of Reference prepared by Advocates and Solicitors, Messrs Yeap, Yong and Amy.**

TERMS OF REFERENCE FOR GSM SPECIAL ENDOWMENT FUND

1. The Geological Society of Malaysia (hereinafter referred to as “the Society”) shall maintain a GSM Endowment Fund (hereinafter referred to as “the fund”) subject to the approval of a majority of the members of the Society present at the next Annual General Meeting of the Society.
2. If such approval shall be forthcoming, an account shall be opened at an appropriate bank (hereinafter referred to as “the account”) for the sum of RM600,000.00 (hereinafter referred to as the “the initial principal amount”), which shall remain the minimum amount to be kept in the account at all material times. The initial principal amount may be increased at the discretion of the Council Members of the Society, subject to approval of a majority of members present at an Annual General Meeting of the Society.
3. The fund shall be maintained in perpetuity and shall be overseen by the Council Members of the Society, who shall have the absolute discretion to withdraw the interest portion accruing from the account to meet expenses incurred in the implementation of programmes run by the Society.
4. The Council Members of the Society shall render an account of the fund to all members present at each Annual General Meeting of the Society.
5. The fund shall be subject to an annual audit and the findings reported by the Treasurer of the Society to the members present at each Annual General Meeting of the Society.
6. These Terms of Reference shall be legally binding and incorporated as part of the agenda of every Annual General Meeting of the Society, unless and until a majority of the members of the Society decide otherwise by ballot.

6.2 K.M.Leong: Recognition for GSM Publications; Sabah Pre-Cretaceous Geology

First, Congratulations to GSM President and Council for securing recognition of GSM Publications in Malaysian Citation Centre. It is a significant development. During 2012, several Members and Council Members had advised me to ‘forgive’ late Emeritus Professor Dr C.S. Hutchison. Geologists are People. The advice is welcome although the matter was not entirely person-to-person.

Jurassic/Triassic K:Ar ages determined from granitic rocks in Ulu Segama area, Sabah in Geological Survey of Malaysia (Minerals and Geoscience) publications (Kirk 1964, 1968; Leong 1971, 1974) had been dismissed as ‘have to be spurious’ (synonymous with false, fake, fraudulent, forged-Leong 1998, 2009) (Warta 24, 35) in GSM 1996 Edition of Hutchison (1989). Dismissal of Sabah Jurassic/Triassic K:Ar ages would restore Tectogene Hypothesis, basis Sabah oldest rocks were Cretaceous ophiolites (Hutchison 1966, 1968)-Leong (1974). An older metamorphosed gabbros, volcanic rocks predating Jurassic/Triassic K:Ar dated granitic rocks, and it follows older than the Cretaceous ophiolites had been postulated in Leong (1974, p.79)-(to be later discussed). However, Priority now is to reaffirm Pre-Cretaceous Geology exists in Sabah.

The good news are the scientific integrity of Geological Survey Jurassic/Triassic K:Ar ages from granitic rocks in Ulu Segama area Sabah is intact and the Sabah K:Ar ages vindicated by Jurassic radiometric age determined from granite by USA oil co. ARCO team in 1995 (Swauger, Hutchison et al 1995; Graves, Hutchison et al 2000).

An offer of Hutchison (1989) was made to GSM in 1996, with free reprinting and marketing rights, which GSM accepted (AGM 2010).

In Hutchison et al (2000), Jurassic radiometric age had been used to revise the tectonic evolution of Sabah (Leong 2009). The statement in Graves, Hutchison et al (2000) reads: ‘The oldest K:Ar radiometric age determined from a granitoid.....is 210 Ma \pm 3 Ma (Early Jurassic)(Leong 1974). We have added some additional dating....which supports a Jurassic age..’ (granite 185 Ma). From PETRONAS (2007) in reference to Holt (1998): ‘Gravity and magnetic interpretations suggest continental metamorphics with granite basement exist below the ohiolitic complex (Leong 1974; Holt 1998)’.

The GSM 1996 Edition of Hutchison (1989) shares a similarity to GSM Geology of Borneo Island Map (2001) compiled by late R.B.Tate, in which Sabah Pre-Cretaceous Geology had apparently been excluded. For-sale GSM Geology of Borneo Island Map (2001) will be further perused.

ANNOUNCEMENT OF NEW COUNCIL FOR 2013/2014

Upon the closing of nominations, single nominations were received respectively for the positions of President, Vice President, Secretary, Treasurer, Assistant Secretary and Editor, and four nominations for the four 2-year Councillor positions.

The Council for 2013/2014:

President	:	Prof. Dr. Joy Jacqueline Pereira (UKM)
Vice-President	:	Dr. Mazlan Madon (PETRONAS)
Immediate Past President	:	Dato’ Yunus Abdul Razak (JMG)
Secretary	:	Mr. Ling Nan Ley (JMG)
Assistant Secretary	:	Mr. Lim Choun Sian (UKM)
Treasurer	:	Mr. Ahmad Nizam Hasan (GeoSolution Resources)
Editor	:	Associate Prof. Dr. Ng Tham Fatt (UM)
Councillors (2 years)	:	Mr. Tan Boon Kong (Consultant) Dr. Nur Iskandar Taib (UM) Dr. Tanot Unjah (UKM) Dr. Samsudin Hj Taib (UM)
Councillors (1 year)	:	Dr. Meor Hakif Amir Hassan (UM) Mr. Robert Wong (PETRONAS) Mr. Nicholas Jacob (JKR) Mr. Askury Abd Kadir (UTP)*

*Co-opted by the Council after the resignation of Dr. Liaw Kim Kiat (BHP Billiton)

Persatuan Geologi Malaysia Geological Society of Malaysia



NATIONAL GEOSCIENCE CONFERENCE 2013

Kinta Riverfront Hotel and Suites, Ipoh
8-9th June 2013

Co-organizers:



ORGANIZING COMMITTEE

CHAIRMAN	:	DR. KAMALUDIN B. HASSAN (JMG PERAK)
TECHNICAL CHAIRMAN	:	MR. HJ. ASKURY B. ABD. KADIR (UTP)
TREASURER	:	MR. AHMAD NIZAM B. HASAN (GSM)
SECRETARY/MEDIA	:	MS SUZANNAH BT AKMAL (JMG PERAK)
ASST. SECRETARY	:	MR. MOHD. SHAHRIZAL B. MOHAMED SHARIFODIN (JMG PERAK)
REGISTRATION	:	MR. LING NAN LEY (JMG MALAYSIA) MS ANNA LEE (GSM)
PRE-CONFERENCE FIELDTRIP AND SPOUSE PROGRAM	:	MR. HAJI ISMAIL B. IMAN (JMG PERAK)
SPONSORSHIPS	:	MR AHMAD ZUKNI B. AHMAD KHALIL (JMG MALAYSIA)
TEXT FOR SPEECHES	:	TUAN RUSLI B. TUAN MOHAMED (JMG PERAK)
HOTEL AND ACCOMODATION	:	MR. MOHAMAD SARI B. HASAN (JMG PERAK)
PROTOCOL AND SOUVENIRS	:	MS. MARLINDA BT DAUD (JMG MALAYSIA)
COMMITTEE MEMBERS	:	MR. YUSNIN B. ZAINAL ABIDIN (IPOH CITY COUNCIL) MR SAW LID HAW (PERAK QUARRIES ASSOC.)

NATIONAL GEOSCIENCE CONFERENCE 2013

Kinta Riverfront Hotel and Suites, Ipoh • 8-9 June 2013

Message from the Chairman

Dr. Kamaludin bin Hassan

The National Geoscience Conference (NGC) is a yearly affair of the Geological Society of Malaysia (GSM) that serves as a platform for geoscientists to present and discuss new findings and interesting researches. It especially encourages new and budding geoscientists to present their research outcomes in an official forum. Apart from that, it actually serves as an annual gathering and meeting of geoscientists nationwide.

This year's NGC (NGC 2013) has chosen Ipoh as the venue for the conference. The NGC 2013 organising committee is represented by members from the Minerals and Geoscience Department (JMG), University Technology Petronas (UTP) and the GSM. The committee has decided that the venue of the conference to be at the Kinta Riverfront Hotel & Suites where memories of what Ipoh was initially built upon would reel in and for that matter, the role and contribution of geosciences in the tin mining industry. It is apt that our meeting venue will be at the Pusing and Gopeng Halls - well known places among the tin fraternity.

The NGC 2013 has been overwhelmingly received and had attracted 107 technical papers from diverse geosciences fields. To be fair with the submitters and to promote the science to the newcomers and the audience, the organizing committee has accepted all the papers. The papers have been selected for either oral or poster presentation. As in previous NGC's, the conference is a two days event and has two parallel sessions running simultaneously.

The organizing committee would like to thank the authors and writers for their interests and the support given by the various Universities and organizations concerned. May the deliberations elevate the science to a higher level and at the same time benefit the people and the nation. To the conference sponsors we indeed appreciate the contributions and sponsorships provided. To the conference committee members I would like to express my sincere gratitude for the help and assistance to make the conference a success.

On behalf of the NGC 2013 organizing committee I would like to cordially welcome the participants of the NGC 2013 to Ipoh - a city that was built upon tin and its spillover industries. Please do look around, enjoy your stay and participate actively.



NATIONAL GEOSCIENCE CONFERENCE 2013

Kinta Riverfront Hotel and Suites, Ipoh • 8-9 June 2013

**Ucapan Aluan Presiden Persatuan Geologi Malaysia
Prof Dr. Joy J. Pereira**

Salam Sejahtera dan Salam 1Malaysia! Selamat datang ke Persidangan Geosains Kebangsaan 2013 yang bertemakan “Geoscience for Environmental Wellbeing”

Telebih dahulu, izinkan saya mengucapkan ribuan terima kasih kepada Y.A.B. Datuk Seri Dr. Zambry Bin Abdul Kadir, Menteri Besar Perak kerana sudi melapangkan masa untuk menghadiri Majlis ini dan seterusnya merasmikan Persidangan Geosains Kebangsaan 2013.

Untuk makluman Y.A.B. Datuk, sejak Persatuan Geologi Malaysia (GSM) ditubuhkan pada tahun 1967, Persatuan ini telah menjadi penyumbang terbesar kepada perkembangan ilmu geosains di Malaysia. Justeru hingga ke hari ini, Persatuan telah menganjurkan lebih daripada 100 perjumpaan di peringkat kebangsaan mahupun di peringkat antarabangsa. Persatuan juga telah menerbitkan hampir 60 Buletin dan 40 jilid Warta Geologi. Malah kedua-dua penerbitan ini merupakan antara 50 penerbitan teknikal terbaik dalam negara daripada segi sebutan (citation). Justeru, semua pembentang di Persidangan ini adalah digalakkan untuk menerbitkan kertas kerja mereka dalam Buletin Persatuan Geologi Malaysia, agar sumbangan mereka termaktub dalam khazanah ilmu negara.

Pada masa kini, bidang geologi sedang berkembang dengan pesat. Bilangan universiti awam dan juga universiti swasta yang menawarkan program geosains semakin bertambah. Oleh itu, isu kualiti pendidikan geosains menjadi semakin meruncing. Dalam Mesyuarat Agung Persatuan Geologi Malaysia pada bulan April yang lalu, Persatuan telah menandatangani memorandum perjanjian dengan Institut Geologi Malaysia untuk menubuhkan suatu Jawatankuasa Bersama bagi menilai kurikulum pendidikan geosains dalam Negara. Hasil penilaian tersebut dijangka memberi panduan bagi meningkatkan kualiti pendidikan geologi untuk dikemukakan kepada pihak Lembaga Geologis Malaysia. Yang pastinya, aspek kesejahteraan alam sekitar perlu diterapkan dalam sistem pendidikan geologi agar geosaintis sentiasa menyumbang kepada kelestarian masyarakat.

Semua aktiviti yang dijalankan oleh Persatuan memerlukan sumber kewangan yang mencukupi dan berterusan. Justeru itu, Mesyuarat Agung Persatuan Geologi Malaysia pada bulan April yang lalu juga telah bersetuju untuk mewujudkan dana endowmen GSM. Dana tersebut akan ditadbir sebagai akaun yang berasingan dan dipantau oleh Mesyuarat Agung, untuk memastikan bahawa jumlah dana pokok dikekalkan untuk selama-lamanya, manakala keuntungan yang dijana pula digunakan untuk inisiatif membina keupayaan para geosaintis khususnya geosaintis muda dalam negara. Jumlah dana pokok awal dalam dana endowmen ini adalah sebanyak RM600,000 dan merupakan keuntungan yang diraih daripada Persidangan Petroleum Geoscience Conference (PGCE) yang dianjurkan bersama PETRONAS. Pihak Persatuan akan terus berusaha untuk meningkatkan jumlah dana tersebut pada masa hadapan dan dimasa yang sama mengalu-alukan mana-mana pihak yang ingin menyumbang kepada dana tersebut.

Persatuan Geologi Malaysia bukan sahaja aktif di dalam negara tetapi juga giat meningkatkan jangkauan global dan khususnya di tahap serantau. Persatuan Geologi Malaysia merupakan Sekretariat Tetap untuk Kongres Geologi, Mineral dan Sumber Tenaga di Asia Tenggara (GEOSEA). Untuk makluman para hadirin, Kongres GEOSEA ke-13 akan diadakan di Myanmar pada bulan Februari tahun depan.

Justeru itu, Presiden Persatuan Geologi Myanmar telah mohon agar saya menyampaikan jemputan kepada semua ahli Persatuan Geologi Malaysia untuk mengadiri Kongres tersebut. Beliau menyatakan bahawa pihak Myanmar Geological Society sedang mengusahakan program Kongres khususnya kerjalapangan yang cukup menakjubkan. Beliau juga menjemput para geosaintis dari Malaysia untuk berkongsi amalan terbaik geosains dari negara kita, khususnya dalam aspek geologi kejuruteraan dan pemuliharaan alam sekitar.

Di kesempatan ini, saya bagi pihak Persatuan Geologi Malaysia ingin mengucapkan setinggi-tinggi penghargaan kepada Jawatankuasa Penganjur Persidangan Geosains Kebangsaan 2013 yang telah bertungkus lumus untuk merealisasikan Persidangan ini. Terima kasih juga diucapkan kepada penganjur bersama persidangan ini iaitu pihak Jabatan Mineral dan Geosains Malaysia dan Universiti Teknologi Petronas serta bantuan pihak Majlis Bandaraya Ipoh dan Persatuan Kuari Perak yang telah membantu menjayakan persidangan ini.

Sekalung penghargaan dan jutaan terima kasih juga kepada Kerajaan Negeri Perak atas sokongan padu yang telah diberikan. Turut tidak dilupakan, ucapan berbilang-banyak terima kasih kepada rakan kongsi yang memberi sumbangan derma untuk menjayakan penganjuran Persidangan kali ini. Kepada semua pihak yang terlibat sama ada secara langsung atau pun tidak langsung dalam membantu penganjuran persidangan ini, terima kasih daun keladi. Jasa baik tuan/puan pastinya tidak akan dilupakan. Akhir sekali, semoga kita semua mendapat faedah daripada Persidangan ini.

Sekian, terima kasih.

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PROGRAMME

2000-2200	ICEBREAKER – FRIDAY 7 JUNE 2013 (sponsored by JMG)	
DAY ONE, SATURDAY 8 JUNE 2013		
0830-1000	Opening ceremony	
1000-1030	Keynote I Mohd Shafeea Leman (UKM) - Proposed Kinta Valley Geopark – Utilizing Geological Resources for Environmental Quality Improvement and Society Well Being Enhancement	
1030-1100	Tea break	
	TECHNICAL SESSION A1	TECHNICAL SESSION B1
1100-1120	A01 Jasmin Saw, Chow Weng Sum and Bernard J. Pierson: Potential Impact Of Pollution By Oil Spills On Coastal Facies In Pulau Pangkor, Malaysia	B01 Noraisyah Sapon, Rosnan Yaacob, Peter R. Parham, Lokman Husain & Rokiah Suriadi: Volumetric Changes And Sediment Characteristics At Selected Beaches Of Terengganu, Malaysia
1120-1140	A02 Lee Qiao Yun, Sahibin Abd Rahim, Wan Mohd Razi Idris, Zulfahmi Ali Rahman & Tukimat Lihan: Soil Erosion Potential From Sungai Paya Merapuh Sub-Catchment To Lake Chini, Lake Chini, Pahang	B02 Sanudin Hj Tahir, Baba Musta, Hafzan Eva Mansor, Fauziah Hanis Hood and Dayang Nor Asyilla Abang Abdullah: Facies Analysis Of The Late Miocene Sedimentary Sequence In Sabah, Malaysia
1140-1200	A03 Mohamad Yusof Che Sulaiman, Ismail Yusoff & Muhammad Aqeel Ashraf: Environmental Impacts of Batik Industry Effluents in Kota Bharu, Kelantan	B03 Mohamed Hilmi Mohamed Khassim, Abdul Hadi Abdul Rahman, Ahmad Munif Koraini: Sedimentary Facies and Depositional Environments of the Nyalau Formation (Oligocene - Middle Miocene) North Bintulu Area, Sarawak
1200-1220	A04 Hazirah Hatar, Sahibin Abd Rahim, Wan Mohd Razi Idris, Fathul Karim Sahrani: Pencirian fiziko kimia air saliran lombong berasid di kawasan lombong terpilih di Malaysia	B04 Junaidi Asis & Basir Jasin: Miocene Larger Benthic Foraminifera from the Kalumpang Formation, Tawau, Sabah: preliminary interpretation
1220-1240	A05 Kamaludin Hassan, Tuan Rusli Tuan Mohamed, Suzannah Akmal, Kadderi Md Desa, Habibah Jamil & Yongqiang Zong: Paleo sea level change at Merang, Kuala Terengganu	B05 Basir Jasin: Posidonia (Bivalves) from northwest Peninsular Malaysia and its significance
1240-1300	A06 Tjia H.D.: Evidence of Holocene and historical changes of sea level in the Langkawi Islands	B06 Rokiah Suriadi, Peter R. Parham, Noraisyah Sapon, Behara Satyanarayana., Mohd Lokman Husain, Wan Nurzalia Wan Saelan: Sub-Surface And Infaunal Foraminifera Of Kelantan Delta, East Coast Of Peninsular Malaysia: Their Potential For Interpretation Of Sea Level Change
1300-1400	LUNCH AND DZUHOR PRAYER	
	TECHNICAL SESSION A2	TECHNICAL SESSION B2
1400-1420	A07 Mohd Shafeea Leman, Mokhtar Saidin & Islahuda Hani Sahak: The Occurrence of Pre-historic Kitchen Wastes at Gunung Panjang, Ipoh, Perak and Their Bearings on the Age of the Gua Tambun Pre-historic Rock Paintings	B07 Siti Nur Fathiyah Jamaludin and Manuel Pubellier: Interpretations On Seismic Volume Over Two Miocene Carbonate Platforms In Central Luconia, Sarawak
1420-1440	A08 Tuan Rusli Muhamad, Kamaluddin Hassan, Mohd Shafeea Leman, Saiful Abdullah & Ahmad Khairut Tarmizi Mohd Daud: Geotapak Kompleks Kars Gunung Datok dan potensinya sebagai tunggak pembangunan Geopark Kebangsaan Lembah Kinta, Perak, Malaysia	B08 Siti Hafizah Ramli, Abdul Rahim Samsudin, Mokhtar Saidin, Nur Hamizah Mohd Jafar, Umar Hamzah & M Shyeh Sahibul Karamah: Magnetic signature of impact structure at Lenggong Perak, Malaysia

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1440-1500	A09 Nur Liayana Che Jamil, Dony Adriansyah Nazaruddin, Elvaene James, Hafzan Eva Mansor, Mohammad Muqtada Ali Khan: Geoheritage Of Lata Renyok Cascade: A Potential Geotourism Development In Jeli District, Kelantan	B09 Nadiah Hanim Shafie, Abdul Rahim Samsudin, Tjia Hong Djin, Abd Rahim Harun, Ibrahim Abdullah, Wan Zuhairi Wan Yaacob & Kamal Roslan Mohamad: Geological Analysis Of GPS Data: Malaysian Case Study
1500-1520	A10 Dony Adriansyah Nazaruddin, Arham Muchtar Achmad Bahar, Nor Arina Binti Muhamad Aris: Geotourism Potentials Of Jeli District, Kelantan	B10 Peter R. Parham, Yoshiki Saito, Noraisyah Sapon, Rokiah Suriadi, Noor Azariyah Mohtar: An Early Mid-Holocene Coral Reef And Extensive Marine Deposits On The Terengganu Mainland, Peninsular Malaysia: Implications For Maximum Holocene Transgression
1520-1540	A11 Ismail Ibrahim, Md Muzayin Alimon and Salmah Baharuddin: The recovery of fine cassiterite from metasedimentary rock	B11 Muhammad Hatta Roselee, Azman Abdul Ghani, Kyaw Kyaw Nyien, Fatin Izzani Hazad. Ahmad Farid Abu Bakar, Khairul Azlan Mustapha: Petrology and geochemistry of A-type igneous from Teluk Ramunia, Southeastern of Johor
1540-1600	A12 Rosmalia D. Nugraheni, W. S Chow, Abdul Hadi A. Rahman, Mohd Faisal Abdullah: Challenges Of Tertiary Coal-Bearing Heterolithic Packages As Low permeability Source And Reservoir Rocks In The Balingian Sub-basin, Sarawak, Malaysia	B12 Aftab Alam Khan, Wan Hasiah Abdullah, Meor Hakif Amir Hassan and Nasim Ferdous: An overview on the tectonics and sedimentation of Kuching – Lundu – Sematan transect of South-West Sarawak Basin, Malaysia
1600-1620	Tea Break	
1620-1640	A13 KK Cheang, Kamar Shah Ariffin, Hareyani Zabidi, Mohd. Yaras Basattu and Nor Amni Adira Abdul Moin: Micron-Sized Gold Particles from Resistates in the Straights Creek area, Gua Musang, Kelantan	B13 Abang Caspian Abang Thairani & Wan Zuhairi Yaacob: Virtual Geological Fieldwork App For eLearning
1640-1700	A14 Haniza Zakri and Azimah Hussin: The Evaluation Of Quartz Deposit In Kg. Padang Biawas, Negeri Sembilan As A Source Of High Purity Quartz	B14 Aye KoAung and Mustafa Kamal Shuib: Similarities In Middle-Late Permian Fossils From Myanmar And Malaysia And Its Paleogeographic Implications
1700-1720	A15 Ramli Mohd Osman: Rate of Development of Ex-Mining Land in Peninsular Malaysia	B15 Abdul Rahim Samsudin, Mokhtar Saidin, Abdul Rahim Harun, Mohd Hariri Ariffin, Umar Hamzah, Dewandra Bagus Eka Putra & M Shyeh Sahibul Karamah: A possible structure of impact crater at Lenggung Perak: Gravity evidences
1720-1740	C01 Mohamad Tarmizi Mohamad Zulkifley, et al.: Effects of soil fillers, vegetation lateral variation and basin 'dome' shape on tropical lowland peat stabilization.	D01 Nor Ashikin Binti Shaari, Mohammad Muqtada Ali Khan, Arham MuchtarAchmad Bahar and Dony Adriansyah bin Nazaruddin: Infiltration rate assessment of some major soil types in Kota Bharu, Kelantan, Malaysia
1740-1800	C02 Ida Ayu Purnamasari*, Hilfan Khairy, Abdelaziz Lotfy Abdeldayem: Rock Physics Modeling For Lithology Prediction Using Hertz-Mindlin Theory	D02 Muhammad Murtaza, Abdul Hadi Abdul Rahman & Chow Weng Sum: The marginal marine successions of the Balingian Formation (Upper Miocene), Mukah Area, Sarawak: Facies, Stratigraphic Characteristics and Paleoenvironmental Interpretation
1800-1820	C03 Ali Rahman, Z., Hasan Ashari, N. H., Abd Rahim, S., Lihan, T. & Idris, W. M. R.: Cirian Geoteknik Tanah Baki Terawat Abu Sekam Padi (ASP)	D03 Rahman Yaccup and Peter Brabham: The use of the Ground Electromagnetic Survey (GEM-2) technique to map the contaminant dispersion in the subsurface at Barry Docks, Wales, UK
2030-2230	Conference Dinner Hosted by YAB MB Perak (Sponsored by the State Government of Perak)	

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DAY TWO SUNDAY 9 JUNE 2013		
0830-1030	Poster Session I (P01-P22)	Poster Session II (P23-P45)
1030-1050	Keynote II Prof. Dr. M. Pubellier , Dean, Geoscience & Petroleum Engineering Faculty, UTP: Re-exploring the formation processes of SE Asian Basins, from rifting to mountain belts	
1050-1120	Tea break	
	TECHNICAL SESSION A3	TECHNICAL SESSION B3
1120-1140	A16 Choong Chee Meng, Manuel Pubellier, Chow Weng Sum, Abdelaziz Lotfy Abdelaziz Abdeldayem: Deformation Styles and Structural History of the Paleozoic Limestone: Kinta Valley, Perak, Malaysia	B16 Juna Azleen Abdul Ghani, Syed Fuad Saiyid Hashim: The importance of K and β values for Scaled Distance technique for prediction of ground vibrations level induced during granite quarry blasting for Peninsular Malaysia
1140-1200	A17 Ahmad Faiz Salmanfarsi, Mustaffa Kamal Shuib: Kinematic study of the Bok Bak Fault at Bina Quarry, Bukit Perak, Kedah	B17 Tan Boon Kong: Engineering Geology of the Ipoh-Simpang Pulai-Gopeng Segments of the North-South Highway, Peninsular Malaysia
1200-1220	A18 Tang Hung Yung & Zaiton Harun: Perbandingan Lineamen Foto Udara dengan Surihan Retakan dalam Formasi Setul di Kuari Kang Giap, Perlis	B18 Hareyani Zabidi, Abdul Ghani Mohd Rafek & Kamar Shah Ariffin: Evaluating ground conditions ahead of a tunnel face using probe drilling data at NATM-1, Karak, Malaysia
1220-1240	A19 Mustaffa Kamal Shuib: Paleoearthquakes and active faulting in Cameron Highlands	B19 Kamar Shah Ariffin and Hareyani Mohd Zabidi: Preventive evaluation of the limestone quarry face safety at the Khantan Cement Work, Chemor, Perak
1240-1300	A20 Mohd Razlan Abd Rahman, Askury Abd Kadir: Fractured Granite & Meta-sediment at Pulau Redang: an outcrop analogue to The Fractured Basement in Anding Field and its Relation to Fractured Reservoir Modelling	B20 Kennedy Hj. Mohd Imran Aralas and Ramli Mohd Osman: Discontinuity Survey of Bukit Memaloh, Kanowit, Sibul Division, Sarawak
1300-1400	LUNCH AND DZUHOR PRAYER	
	TECHNICAL SESSION A4	TECHNICAL SESSION B4
1400-1420	A21 Gan Wei Di: Integrated 3d reservoir characterization through simultaneous inversion: qualitative and quantitative approaches	B21 Azman A Ghani, C.-H Lob & S.-L Chung: Ar Ar Geochronology of Volcanic Rocks from Eastern Part of Peninsular Malaysia
1420-1440	A22 Mohammed I. I. Abu Shariah and Baleid Ali Hatem: Subsurface Fracture Zone and Hot Springs Detection in Hardrock Aquifer Using Electrical Resistivity Tomography Techniques at Hulu Langat, Selangor	B22 Hamzah Hussn, Tajul Anuar Jamaluddin & Muhammad Fadz: Potensi Aliran Puing di Bukit Panji, Kuala Terengganu: Penilaian Bahaya dan Langkah Mitigasi Yang Sesuai, Ibin Deraman:
1440-1500	A23 Yuniarti Ulfa, Mardiana Samsuardi, Nur Fathin Mohd: The use of Ground Penetrating Radar to Detects Stratigraphy and Structure in a rock slope	B23 Abdul Ghani Rafek & Amiruddin Rosni: Influence Of Water On Buckling Failure Of Thinly Stratified Phyllite Rock Mass At Kampung Jeram Bungor, Kuala Lipis, Pahang Darul Makmur
1500-1520	A24 Andy A. Bery, Rosli Saad and Mark Jinmin: Seismic Refraction Tomography Application for Environmental Study	B24 Frederick Francis Tating, Robert Hack, Victor Jetten: Quantification of rock mass deterioration process for cut slope design in humid tropical areas – case study Northern Kota Kinabalu, Sabah Malaysia

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1520-1540	A25 Soni Satiawan, Hilfan Khairy, Zuhar Zahir bin Tn. Harith: Amplitude versus Offset and Azimuth (AVOZ) Study for Fractured Characterization: a Basis Tool for Velocity versus Offset (VVO) Analysis	B25 Mohd Khairul Nizar Shamsuddin, Hafizan Juahir, Wan Nor Azmin Sulaiman, Azrul Normi, Saim Suratman: Determining the Interaction between Geostatistical and Geochemical Analysis of Rivers, Lakes and Groundwater at a Small Bank Infiltration Study Site in Jenderam Hilir, Selangor
1540-1600	A26 Abdul Halim Abdul Latiff, Deva Prasad Ghosh, Zuhar Zahir Tuan Harith: Seismic Illumination Analysis of Different Shallow Gas Cloud Velocities by Focal Beam Method	B26 Kamarudin Samuding, Mohd Tadza Abdul Rahman and Roslanzairi Mostapa Application of Environmental Isotope Techniques in Groundwater Study
1600-1630	Closing Ceremony	
1630-1700	Tea break	

POSTERS

P01	Achmad Rodhi	Indikator-indikator struktur di dalam zon ricih plastik di Jalur Timur Semenanjung Malaysia
P02	Gan Wei Di	Sand fraction and pore fraction inversion through acoustic impedance data: tools for qualitative thin-bed reservoir characterization and net pay volumetric estimation.
P03	Rosmalia Dita Nugraheni, Chow Weng Sum, Abdul Hadi A. Rahman	Burial Diagenesis of Coal-Bearing Mudrock and Its Relationship to The Evolution of Pore Types and Abundance
P04	Nur Susila Md. Saaid & Basir Jasin, Md. Saaid Nur Susila	Occurrence of pyroclastic rock in the Kubang Pasu Formation, Northwest Peninsular Malaysia
P05	Rezal Rahmat & Shariff A.K. Omang	Jujukan Batuan Kompleks Ofiolit Marudu Bay (KOTM) : Cerapan Lapangan & Petrografi
P06	Muhamad Nur Hafiz Sahar & Azimah Hussinsir Hafiz Sahar	Cirian fiziko-kimia bahan geologi semulajadi dan sintetik yg digunakan sebagai bahan pozolan dalam pembuatan mortar
P07	Hazerina Pungut, Junaidi Asis, Muhammad Abdullah, Haezerina Pungut	Heavy Metals Distribution of Nukakatan Valley River Sediments, Tambunan, Sabah
P08	Kamar Shah Ariffin, Hareyani Mohd Zabidi, KK Cheang	Gold mineralization prospect within upper Sg. Galas-Tan See vicinity, Ulu Galas, Kelantan
P09	Nur Hannani S. Ali, Dony Adriansyah Nazaruddin, Elvaene James, Mohammad Muqtada Ali Khan, Hafzan Eva Mansor	Geoheritage And Geotourism Potential Of Gunung Reng And Its Surroundings, Jeli District, Kelantan
P10	Nurul Atiqah Ahmad Zahudi, Dony Adriansyah Nazaruddin, Mohammad Muqtada Ali Khan, Elvaene James, Hafzan Eva Mansor	Geotourism Potential Of Jeli Hot Spring, Kelantan
P11	Atiqah Abdul Samad, Che Aziz Ali dan Kamal Roslan Mohamed Atiqah Abdul Samad	Sebaran Dan Mineralogi Sedimen Delta Sungai Pahang.
P12	Muhammad Afiq B. Md Ali, Meor Hakif bin Amir Hassan and Azhar Hussin Muhammad Afiq Ali	Reef Facies Distribution, Destruction and Rejuvenation: Salang and Soyak Island, Tioman Island, Pahang
P13	Fatin 'Izzani Hazad, Azman A. Ghani. Fatin Hazad	Geochemistry And Petrology Of Dioritic Rocks From Pulau Aur, Mersing, Johor
P14	Norbert Simon, Mairead de Roiste, Michael Crozier, Abdul Ghani Rafek, Rodeano Roslee, Norbert Simon	Using Stepwise Logistic Regression To Select Important Landslide Causal Factors In Landslide Susceptibility Mapping
P15	Mohammed Ismail Abu-Shariah and Ahmed Adam Wady.	Detection Hydrosphere Contamination in Hard-Rock by Using Electrical Resistivity Tomography Technique at Hulu Langat Basin, Selangor, Malaysia
P16	Mohammed Ismael Abu-Shariah and Sawan Kamel Shariah	Detection The Groundwater Flow Using Electrical Resistivity Tomography Technique
P17	Joel Ben-Awuah and Eswaran Padmanabhan, Joel BEN-AWUAH	Extraction Potential Of Different Solvents In The Study Of Organic Matter Concentrations In The Environment

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P42	Suraya Hilmi Hazim & Mohd Rozi Umor	Pencirian Granit Kuantan, Pahang Secara Lapangan, Petrografi dan Geokimia
P43	Nazatul Athirah bt Abdul Khalil & Mohd Rozi Umor	Kajian Batuan Igneus di Air Terjun Berkelah, Gambang, Kuantan, Pahang dari Aspek Pemetaan Terperinci, Petrografi dan Geokimia.
P44	Sofia Ehsan, Mohd Shafeea Leman, Rawshan Ara Begum & Ibrahim Komoo	Geotouristic Attitude Of The Tourists Towards Scientific Value Of Geological Heritage: The Case Of Langkawi Global Geopark
P45	Muhd Nur Ismail Abdul Rahman & Sanudin Hj. Tahir	Kajian Fasies Formasi Crocker Dan Formasi Temburong, Tenom Dan Pedalaman Beaufort
P46	Muhammad b Abdullah & Sanudin Tahir	Analisis Fosil Surih Formasi Crocker dan Formasi Meligan di Sipitang, Sabah
P47	Muhammad b Abdullah & Sanudin Tahir	Analisis Sekitaran Kuno Formasi Meligan Berdasarkan Struktur Endapan di Sipitang, Sabah
P48	Ismail Abd Rahim	Anggaran sokongan berdasarkan system Pengelasan Jasad Batuan: Kajian kes di terowong keretapi Tenom, Sabah



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P18	Nurainisyamimi Mohd Bistamim, Sahibin Abd Rahim, Wan Mohd Razi Idris, Zulfahmi Ali Rahman & Tukimat Lihan Sahibin Abd Rahim	Komposisi Logam Berat Di Dalam Beras Dan Dalam Tanah Sawah Tercemar Tanah Ultrabes Di Ranau, Sabah, Malaysia
P19	Tanot unjah, Kadderi Md Desa & Ibrahim komoo, Tanot Unjah	Kepelbagaian Landskap Granit Langkawi
P20	Romziah Azit, Mohd Ashraf Mohamad Ismail, Romziah Amir	Analysis Of Rock Burst Potential In Critical Section Of Pahang-Selangor Raw Water Transfer Tunnel Project
P21	Mohd Amir Asyraf , Nur Atikah, Umar Hamzah, Wan Zuhairi Wan Yaacob & Abdul Rahim Samsudin, Amir Asyraf	Pengukuran Pola Migrasi Bahan Cemar LNAPL Menggunakan Teknik Keberintangan Elektrik Dua Matra Dalam Makmal
P22	Elvaene James, Hamzah Mohamad, Shariff A.K. Omang, Mohd Rozi Umor	Penentuan Usia Mutlak Batuan Granit Hornblend Gunung Kinabalu Menggunakan Kaedah U – Pb Zirkon.
P23	Elvaene James, Hamzah Mohamad, Shariff A.K. Omang, Mohd Rozi Umor	Ciri-Ciri Batuan Igneus Jenis Intrusif Di Bahagian Barat Daya, Gunung Kinabalu: Kajian Petrografi Dan Geokimia.
P24	Pongga Wardaya	To see the deep inside digital rocks: assessing the micro scale pore space heterogeneity on carbonate and Berea sandstone
P25	Zainey Konjing, Abdul Hadi Abdul Rahman and Ahmad Munif Koraini, Zainey James	Facies And Stratigraphic Successions Of Marginal Marine To Shallow Marine Deposits Of The (Upper Oligocene-Middle Miocene) Nyalau Formation, South Bintulu, Sarawak, Malaysia
P26	Babangida S.Y.D, Wanhasia Abdullah, Abubakar M.B, Babangida Moh'd S.Y.D	Biomarker characteristics of heat affected sediments from the Lower Bima Member (Lower Cretaceous) in the Yola Sub – basin, Northern Benue Trough Nigeria.
P27	Muhammad Ashahadi Dzulkafli, Basir Jasin & Mohd Shafeea Leman	Zon Himpunan Radiolaria Pseudoalbaillella Globosa (Roadian, Awal Perm Tengah) Dari Sekitar Pos Blau, Ulu Kelantan
P28	MAHMOUD KHAKI, ISMAIL YUSOFF AND NUR ISLAMI, MAHMOUD KHAKI	Electrical Resistivity Imaging to detection of bedrock in Langat Basin, Malaysia
P29	NAUFAL BAKHUDIN, FRANK PITTARD, T. MATSUMOTO, AL-ADZAM SHAH, LEE KHYE KEAT NAUFAL BAKHUDIN	Geophysical Application for Predicting Geological Condition and the Correlation of Evaluated Rock Mass Properties with Rock Mass Classification (PSRWT Tunnel, Malaysia)
P30	HARDIANSHAH SALEH & ABDUL RAHIM SAMSUDIN, HARDIANSHAH SALEH	Potensi Aquifer Dalam Formasi Ganduman Di Semenanjung Dent, Lahad Datu, Sabah Dengan Menggunakan Kaedah Keberintangan.
P31	DAYANG NOR ASYILLA ABANG ABDULLAH & SANUDIN TAHIR DAYANG NOR ASYILLA ABANG ABDULLAH	Lithofacies Of The Paleogene And Neogene Formations In Klias Peninsula, Sabah
P32	Muhammad Azfar Mohamed, Abdelaziz L. Abdeldayem & Abd. Hadi A. Rahman, Azfar Mohamed	Facies and Sedimentary Succession of the West Crocker Formation (Oligocene-Early Miocene), Kota Kinabalu, Sabah
P33	NOORAIN MOHD ISA AND AHMAD ZAHARIN ARIS, NOORAIN MOHD ISA	Geostatistical analysis using principal component analysis in observing the groundwater quality changes in Kapas Island
P34	Numair Ahmed Siddiqui, Abdul Hadi bin Abd Rahman, Manoj Joseph Mathew, Numair Siddiqui	Facies characteristics and reservoir sandstone quality of shallow marine sandstones, Nyalau Formation, Sarawak, East Malaysia
P35	Shama Mohammed Balulla and E. Padmanabhan, Shama Balulla	Variation Of Hydrocarbon Distribution In The Devonian Marcellus Shales
P36	Nuur Hani Bte Mohammed Honey	Characterization Physico-Chemical Of Schist And Grabite And The Effect Addition Of Bentonit As A Liner Material
P37	Norbert Simon, Mairead de Roiste, Michael Crozier, Abdul Ghani Rafek, Norbert Simon	Using Stepwise Logistic Regression To Select Important Landslide Causal Factors In Landslide Susceptibility Mapping
P38	L. X. Quek, A. A. Ghani, Long Xiang Quek	Pyroxene-bearing microgranular enclaves from Taiping pluton amphibole-bearing granite, Main Range Granite Province, Peninsular Malaysia
P39	Sivappriya Bhubalan, Tanaskumar Kanesan, E. Padmanabhan	Dissolution Kinetics Of A Carbonate Rock From The Subis Limestone, Sarawak.
P40	Goh T. L., Ghani Rafek, A. & Hariri, A. M.	Perbandingan Perkadaran Jasad Cerun dengan Analisis Kegagalan Cerun & Ujian Kemiringan
P41	Kyaw Kyaw Nyein, Azaman A. Ghani, Wan Fuad Wan Hassan & Aye Ko Aung Kyaw Nyein	Geochemical Characters of the Langkawi Granite

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Technical Talk cum Geologists' Night, Sarawak

The Technical Talk cum Geologists' Night, Sarawak was held in collaboration with Minerals and Geoscience Department, Sarawak on 5 April 2013 at Heliconia, Kuching, Sarawak. The programme was organised by Dr. Richard Mani Banda, the GSM Regional Representative for Sarawak, together with Mr. Freddy Anak Heward Chinta and Ms. Delen. Mr. Abdul Rahim Abdullah of Four Points by Sheraton Kuching, Sarawak, has graciously served as the patron for the night.

Mr. Charles P. Molujin, Senior Exploration Geologist of Besra Gold Inc. gave an informative talk on "Gold exploration in Bau mining area, Sarawak". A total of 53 participants comprising geologists and their spouses attended the event. Among the geologists presented were from Minerals and Geoscience Department Sarawak, Sarawak Energy Berhad, Sarawak Natural and Environmental Board, Besra Gold Inc., Jurutera Jasa (Sarawak) Sdn. Bhd, Antap Georesources Sdn Bhd, Geoservices Sdn Bhd, and Sarawak Coal Board.

Reported by Dr. Richard Mani Banda & Mr. Freddy Anak Heward Chinta.



At the registration counter.



Dr. Richard Mani Banda with Mr. Nathan Achuk and Mr. Freddy.



Presentation of souvenir to the guest speaker, Mr. Charles P. Molujin by Mr. Alex Unya Ambun, the Director of JMG Sarawak and Dr. Richard Mani Banda, the GSM Regional Representative for Sarawak.



Some of the accompanying spouses of the geologists present.



Some young Malaysian and Pilipino geologists of Besra Gold Inc.



Sumptuous dinner on the offer for the participants after the talk.

CERAMAH TEKNIK TECHNICAL TALK

Engineering Considerations for Sustainable Infrastructure: A Case History of Northern Rail Double Track Project

Ooi Lean Hock (Gamuda)

22 May 2013

Department of Geology, University of Malaya

The talk on “Engineering Considerations for Sustainable Infrastructure: A Case History of Northern Rail Double Track Project” was delivered by Ir. Dr. Ooi Lean Hock (GAMUDA) on 22nd May 2013, at Dept. of Geology, Univ. Malaya, K.L.

The railways traverse numerous soil/rock formations, ranging from soft marine clays, limestone to hard granite. Engineering works include various soil stabilization works for the soft soils and tunnelling through granite, in addition to the construction of the railways. An interesting or unique feature of this project is the incorporation of various environmental management measures during the implementation of the project so as to minimize the adverse impact on the environment. This was successfully carried out since detailed studies had been conducted during the early planning stage of the project.

As usual, lively discussions followed the presentation.

Tan Boon Kong,

Chairman, W/G on Engineering Geology, Hydrogeology & Environmental Geology



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UPCOMING EVENTS

September 1-5, 2013: Foundations of Petrophysics, Abu Dhabi, UAE. Tel: +43 3842 43053-0; Fax: +43 3842 43053-1; Email: training@hoteng.com; www.hoteng.com

September 2-4, 2013: Building Strong Continents: Evolution of the Continental Crust: Growth, Stabilisation, Preservation and Recycling, University of Portsmouth, UK. Contact: Craig Storey: craig.storey@port.ac.uk; Mike Fowler: mike.fowler@port.ac.uk; www.port.ac.uk/special/buildingstrongcontinents/

September 2-6, 2013: Advanced Seismic Stratigraphy: A Sequence – Wavelet Analysis Exploration – Exploitation Workshop, Kuala Lumpur, Malaysia. Tel: +603 21664751; email: asiapacific@petroskills.com

September 2-6, 2013: 15th Annual Conference of the International Association for Mathematical Geosciences, Madrid, Spain. Contact: Carolina Guardiola Albert, Tel: +34 91 349 5829; Fax: +34 91 349 5929; email: c.guardiola@igme.es; e.pardo@igme.es

September 3-6, 2013: Reservoir Characterisation: Modern-Day Analogues of the Aquitaine Basin (SW France), Bordeaux Area, France. Tel: +43 3842 43053-0; Fax: +43 3842 43053-1; Email: training@hoteng.com; www.hoteng.com

September 4-6, 2013: 12th European Geopark Conference. Geoparks: an innovative approach to raise public awareness about geohazard, climate change and the sustain-able use of our natural resources. Ascea-Velia-Elea, southern Italy. <http://egnconference2013.cilentoediano.it/index.asp?ref=pagine&id=109&lan=ita>

September 8-11, 2013: AAPG 2013 International Conference & Exhibition, Cartagena Convention Center, Cartagena. Email: convene@aapg.org

September 8-11, 2013: Second South African Geoheritage meeting. Oudtshoorn, South Africa. Field excursions will highlight the geology and geomorphology of the Cape Fold Belt; the meeting will address various aspects of geoheritage in South Africa and globally, with special interest on the Klein Karoo. Email: info@gssa.org.za

September 8-12, 2013: Reservoir Engineering for Non-Reservoir Engineers, Dubai, UAE. Tel: +43 3842 43053-0; Fax: +43 3842 43053-1; Email: training@hoteng.com; website: www.hoteng.com

September 9-13, 2013: Petroleum Geology for Early Career Geoscientists and Engineers and field trip, Weymouth, UK. Tel: +603 21664751; email: asiapacific@petroskills.com

September 16-20, 2013: Naturally Fractured Reservoirs: Geologic and Engineering Analysis, London, UK. Tel: +603 21664751; email: asiapacific@petroskills.com

September 22-24, 2013: Energy Elevated, Salt Lake City, Utah, USA. Email: kalyea@aapg.org

September 23-27, 2013: Production Geology for Other Disciplines, Kuala Lumpur, Malaysia. Tel: +603 21664751; email: asiapacific@petroskills.com

September 26-28, 2013: Medical Geology meeting, University of Johannesburg. The meeting will consist of 2 days short course by Prof Jose Centeno (USA) and collaborators, followed by 1 day presentations, with a possibility of a 1day excursion. Email:Hassina Mouri at: hmouri@uj.ac.za

October 7-11, 2013: Seismic Interpretation, Kuala Lumpur, Malaysia. Tel: +603 21664751; email: asiapacific@petroskills.com

October 7-11, 2013: Seismic Velocities and Depth Conversion, Kuala Lumpur, Malaysia. Tel: +603 21664751; email: asiapacific@petroskills.com

October 14-18, 2013: Carbonate Reservoirs, London, UK. Tel: +603 21664751; email: asiapacific@petroskills.com

October 14-18, 2013: Petroleum Geochemistry: Tools for Effective Exploration and Development, London, UK. Tel: +603 21664751; email: asiapacific@petroskills.com

October 19-21, 2013: 2nd G-EVER International Symposium and the 1st IUGS & SCJ joint International Workshop on Natural Hazards, Sendai, Tohoku, Japan. <http://g-ever.org/en/symposium/symposium2.html>

October 20-24, 2013: Production Logging and Reservoir Monitoring, Doha, Qatar. Tel: +43 3842 43053-0; Fax: +43 3842 43053-1; email: training@hoteng.com; www.hoteng.com

October 21-25, 2013: Analysis of Structural Traps in Extensional Settings, Las Vegas, USA. Tel: +603 21664751; email: asiapacific@petroskills.com

October 21-25, 2013: Introduction to Petroleum Prospect Appraisal, Vienna, Austria. Tel: +43 3842 43053-0; Fax: +43 3842 43053-1; email: training@hoteng.com; www.hoteng.com

October 21-25, 2013: Geochemical Techniques for Solving Reservoir Management and Field Development Problems, London, UK. Tel: +603 21664751; email: asiapacific@petroskills.com

October 27–30, 2013: Geological Society of America (GSA) Annual Meeting & Exposition 2013, Denver, Colorado USA. GSA is celebrating its 125th anniversary in 2013 with a yearlong series of events focusing on Celebrating Advances in Geosciences. <http://www.geosociety.org/meetings/2013/>

October 27-31, 2013: Introduction to Open Hole Log Analysis, Doha, Qatar. Tel: +43 3842 43053-0; Fax: +43 3842 43053-1; email: training@hoteng.com; www.hoteng.com

October 28 – November 1, 2013: Dee-water Turbidite Depositional Systems and Reservoirs, Houston, USA. Tel: +603 21664751; email: asiapacific@petroskills.com

November 17-21, 2013: Integrated Petrophysics for Reservoir Characterisation, Dubai, UAE. Tel: +43 3842 43053-0; Fax: +43 3842 43053-1; email: training@hoteng.com; www.hoteng.com

November 18 - 21 2013: 26th International Applied Geochemistry Symposium Incorporating the 35th New Zealand Geothermal Workshop. Rotorua, New Zealand. <http://www.gns.cri.nz/iags/>

November 18-22, 2013: Basin Analysis and Petroleum Systems, Vienna, Austria. Tel: +43 3842 43053-0; Fax: +43 3842 43053-1; email: training@hoteng.com; www.hoteng.com

November 24-28, 2013: Carbonate and Fracture Petrophysics – A Roadmap. Tel: +43 3842 43053-0; Fax: +43 3842 43053-1; email: training@hoteng.com; www.hoteng.com

December 9-13, 2013: Pore Pressure, Fracture Pressure and Wellbore Stability Management, Vienna, Austria. Tel: +43 3842 43053-0; Fax: +43 3842 43053-1; Email: training@hoteng.com; www.hoteng.com

April 3-5, 2014: Soil-Waste-Water 2013 workshop, Landau, Germany. www.soil-waste-water.de

May 11 – 16, 2014: 5th Edition of the International Congress on Arsenic in the Environment will be held in Buenos Aires, Argentina. Details can be found at: <http://www.as2014.com.ar>

June 2 - 6 2014: World Landslide Forum III. China National Convention Center, Beijing. Theme: “Landslide Risk Mitigation Towards a Safer Geo-Environment”. <http://icl.iplhq.org/HomePage.aspx?TabID=4945&Site=Portal&Lang=en-US>

June 14 - 17 2014: Storm Warning. Water, Energy and Climate Security in a Changing World. Beijing, China. <http://www.iseis.org/sw2014/>

June 15 - 18 2014: Geohazards VI. Canadian Geotechnical Society. Kingston, Ontario, Canada. <http://www.geohazards6.ca/index.php>

September 1 – 5, 2014: The International Mineralogical Association 21st general meeting (IMA 2014 – Delving Deeper: Minerals as Mines of Information). Johannesburg, South Africa. <http://www.ima2014.co.za>

September 15-18, 2014: IAEG X11 Congress. Torino, Italy. Theme: “Engineering Geology for Society and Territory”. <http://www.iaeg2014.com/>

September 1 - 5 2014: 21st Business Meeting of the International Mineralogical Association (IMA2014), Johannesburg, South Africa. www.ima2014.co.za, email: info@ima2014.co.za

September 8 - 12 2014: 3rd Slope Tectonics Conference. Trondheim, Norway. <http://www.ngu.no/slopetectonics>

September 15 - 18 2014: IAEG XII (International Association of Engineering Geology and the Environment) Congress. Torino, Italy. <http://www.iaeg2014.com/>

September 24- 26 2014: XXth Congress of the Carpathian Balkan Geological Association. Tirana, Albania. email: info@cbga2014.org, www.cbga2014.org

September 27 - 30 2014: Society of Economic Geologists (SEG) 2014 Conference: Building Exploration Capability for the 21st Century, Keystone, Colorado, USA. www.seg2014.org

September 28 - 3 October 2014: 4th International Palaeontological Congress, Mendoza, Argentina. email: secretary@ipc4mendoza2014.org.ar, <http://www.ipc4mendoza2014.org.ar/>

November 12 – 19, 2014: IUCN World Parks Congress 2014, Sydney, Australia. The Congress will serve as a vital link to achieving IUCN’s overall vision of a “just world that values and conserves nature”. <http://www.iucn.org/>

May 4 - 8 2015: VI Cuban Earth Science Convention and Geoprospection Conference Palace, Havana, Cuba. www.cubacienciasdelatierra.com/

May 26 - 27 2015: The IIIrd International Geological Conference “AtyrauGeo - 2015” on CASPIAN SEA REGION: problems of structure and oil-and- gas occurrence of deep-seated complexes and pools and the genetic nature of hydrocarbons. Atyrau City, Kazakhstan. www.ongk.kz

September 13 - 17 2015: XVI ECSMGE 2015– Geotechnical Investigation for Infrastructure and Development, Edinburgh, United Kingdom. <http://xvi-ecsmge-2015.org.uk/>

August 27 to September 5 2016: The 35th International Geological Congress: Cape Town, South Africa. Danie Barnardo, Secretary-General: 35thIGC.barnardo@geoscience.org.za; <http://www.35igc.org>

ANNOUNCEMENT

Thirteenth Regional Congress on Geology, Mineral and Energy Resources of Southeast Asia

Yangon, Myanmar, March 2014



Green Resources – Shared Responsibility

The Myanmar Geosciences Society is organizing the GEOSEA XIII in Yangon in March 2014. The GEOSEA Congress will be held parallel to the GeoMyanmar 2014. The Congress offers an excellent opportunity to exchange scientific and technical information and advancement in geoscience, mineral and energy resources among geoscientists. The GEOSEA Congress is a premier geoscientific event in the region and has been well attended by the geoscientific community world-wide.

The technical program of GEOSEA XIII consists of oral and poster presentations on geoscience and related aspects of the GEOSEA core region of Southeast Asia as well as East Asia. Papers covering the 6 collective themes of common interest are welcome.

Other related activities include post-conference workshops and a geological fieldtrip to central and eastern Myanmar including Mt. Popa Volcano and Mogok Stone Tract. Social events and tours for delegates are also planned.

National collaborators of GEOSEA XIII are Department of Geological Survey and Mineral Exploration of Myanmar, Myanmar Oil and Gas Enterprise and University of Yangon. Regional collaborators from the GEOSEA core region have also been invited.

Make a note in your diary and join us in Yangon for GEOSEA XIII. For further information and to receive a copy of the GEOSEA XIII circulars

GEOSEA2014
GEOMYANMAR
10-11, March 2014
Sedona Hotel,
Yangon

Please contact:

The Organizing Committee, GEOSEA XIII
Myanmar Geosciences Society
MES Building, Hlaing Universities Campus
Tel: +(959) 204 2054
Fax: +(951) 552901
email: admin@myanmargeosciences.net www.myanmargeosciences.org



Photo: Mt. Popa dormant volcano in Central Myanmar

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- Bulletins 20** (1986). GEOSEA V Proceedings Fifth Regional Congress on Geology, Mineral and Energy Resources of SE Asia. Vol. II. 881 p. Edited by G.H. Teh & S. Paramanathan. Members: RM30.00; Non-members: RM60.00
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- Bulletin 58** (2012). Collection of geological papers. 96 p. Edited by T.F. Ng & M. Johansson. Price: RM30.00.
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- Proceedings of the Workshop on Stratigraphic Correlation of Thailand and Malaysia. Volume 1 Technical papers**. (1983) Jointly published by Geological Society of Thailand and Geological Society of Malaysia. 383 p. (out of stock)
- Proceedings Annual Geological Conference 2000**. 435 p. Edited by G.H. Teh, Joy J. Pereira and T.F. Ng. Price: RM60.00.
- Proceedings Annual Geological Conference 2001**. 320 p. Edited by G.H. Teh, Mohd. Shafeea Leman and T.F. Ng. Price: RM50.00.
- Geology of Borneo Island (2001) (CD, Map (2 sheets) and explanatory notes**. Compiled by Robert B. Tate. Price: RM60.00.
- Stratigraphic Lexicon of Malaysia** (2004). By Lee Chai Peng, Mohd. Shafeea Leman, Kamaludin Hassan, Bahari Md. Nasib & Roshidah Karim. 162 p. Price: RM30.00.
- Geological Evolution of Southeast Asia** (1996) Reprinted Edition. By C. S. Hutchison. 368 p. (out of stock)
- Geological Evolution of Southeast Asia** (2007) (Second Edition) by C. S. Hutchison. 433 p. Price: RM100.00; Student: RM50.00.
- Geology of Peninsular Malaysia (2009)** 479 p. Hardcover. Edited by C.S. Hutchison & D.N.K. Tan. Inclusive of Geological Map of Peninsular Malaysia. Price: Member RM150.00; Student Member RM70.00; Non-Member RM200.00
- Geological Map of Peninsular Malaysia (2008)**. Scale 1:1 000 000. Price: RM50.00; Student: RM20.00.
- Warta Geologi** (Newsletter of the Geological Society of Malaysia). Price: RM5.00 per issue from July 1966.

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The paper can be written in Bahasa Malaysia (Malay) or English. For English papers, use either British or American spelling but not a combination of both. The paper should be checked thoroughly for spelling and grammar. The manuscript must be printed at 1.5 spacing in a single column on one side of A4 paper. All pages should be numbered. Length of paper should be between 3,000 and 6,000 words for the *Bulletin* and between 2,000 and 3000 words for *Warta Geologi*, excluding tables and illustrations. Metric units should be used and all non-standard symbols, abbreviations and acronyms must be defined.

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ABSTRACT

Abstract in both Malay and English, each in one paragraph and should not exceed 300 words. It should clearly identify the subject matter, results obtained, interpretations discussed and conclusions reached.

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Hutchison, C.S., 1989. *Geological Evolution of South-east Asia*. Clarendon Press, Oxford. 368 p.

Chapter of book and Symposium volume:

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