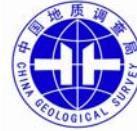




MLR



**CCOP/ICB-PETRAD-CNOOC-MLR-CGS
Seminar on CO₂ Issues in Petroleum E&P
23-25 November 2006, Guilin, China**

Date and Venue:

The seminar was held in Guilin, China from 23rd to 25th November 2006 at the Sheraton Guilin Hotel Address: 15 Bin Jiang Road, Guilin, Guangxi, Guangxi 541001, China

Tel:86-773-282 5588, Fax:86-773-282 5589 Website: <http://www.guilinsheraton.com/>

E-mail: sheraton.guilin@sheraton.com

Partner Organizer: PETRAD-International Programme for Petroleum Management and Administration, CNOOC-China National Oil Corporation, MLR-Ministry of Land and Resources, China, CGS-China Geological Survey

In Cooperation Organizations and Institutions: GEUS-Geological Survey of Denmark & Greenland, SINTEF Petroleum Research, ASCOPE-ASEAN COUNCIL ON PETROLEUM , TNO Built Environment and Geoscience, National Geological Survey, Netherland.

Local Organizer: CNOOC-limited, Zhanjiang

Participants:

Thirty one (31) geoscientists from Cambodia, China, Indonesia, Korea, Malaysia, Papua New Guinea, The Philippines, Thailand and Vietnam, nine (9) CCOP Member Countries attended the seminar. Among them, nine (9) participants are female.

The detailed list of participants is attached as Annex 1.

Program:

The seminar is designed for knowledge transfer, experience sharing and new technology introducing on CO₂ issues. The seven distinguished lecturers from China, Indonesia, Malaysia, Vietnam, GEUS, SINTEF, TNO were invited as the speakers. The detailed program of the seminar are provided as Annex 2.

Background of the Seminar:

As we are aware, the CO₂ has increasingly become one of the most crucial issues in the petroleum industry. It is not only the matter of the petroleum exploration and production but also of the potential environmental impacts. This issue, especially in the Southeast Asia offshore area (one of the ICB-CCOP1 Project case study area), became more and more outstanding. Therefore, it was raised during the implementing of ICB-CCOP1 Project case study workshops in February 2006. In this connection, the experts from Norway, Denmark, our CCOP Member Countries and ASCOPE Members have been invited to discuss on these issues together for the purpose of preparing to meet the emerging challenges, sharing the information and experience, transferring the existing technology, building the capacities and enhancing future cooperation.

The Seminar was organized by the ICB-CCOP1 Project, PETRAD, CNOOC and closely co-operated with Ministry of Land and Resources (MLR) and China Geological Survey (CGS). In-kind contribution on cost sharing was provided by PETRAD and CNOOC.

The objectives of the seminar are as followed:

1. To introduce, deliver and transfer knowledge on CO₂ issues in petroleum exploration and development as well as mitigate its environmental impact;
2. To share the existing knowledge experience on CO₂ issues in the field of Petroleum E&P ;
3. To exchange the geoscientific views through the discussion during the seminar;
4. To enhance the cooperation relationship, establish the academic linkage and develop the friendship among the geoscientists from the CCOP Member Countries, GEUS, SINTEF, ASCOPE and TNO as well as promoting the future cooperation.

Record of the Seminar:

The Opening Ceremony was started with Welcome Speeches by Mr. Cai Dong Sheng, Vice President, CNOOC Limited - Zhanjiang Branch (Annex 3), and Welcome Addresses by Ms. Yang Tiantian, on behalf of Prof. Dr. Zhang Hongtao, Permanent Representative of China to CCOP, Deputy Director-General, China Geological Survey (CGS) (Annex 4), Mr. Fei Yue on behalf of Mr. Ma Yongzheng, Deputy Permanent Representative of China to CCOP, Deputy Division Director, Department of International Cooperation, Science and Technology, Ministry of Land and Resources (MLR) (Annex 5), Mr. Chen Shick Pei, Director, CCOP Technical Secretariat (Annex 6), and Dr. Øystein Berg, Managing Director, PETRAD. The Official Opening Address was given by Mr. Søren Lütken, Counsellor (Development Affairs), Embassy of Denmark, Beijing, People's Republic of China.

The scope of the seminar was aspects that are related to the CO₂ which is an important issue in the petroleum industry nowadays. Resource persons from the CCOP Member Countries such as China, Indonesia, Malaysia and Vietnam, presented topics related to the various studies on the geochemistry, origin of generation, occurrences, and controlling factors in the distribution

of CO₂. The resource persons from the Norway, Denmark, and Netherlands presented topics related to CO₂ storage and handling and the risks involved as well as technologies and practices for CO₂ capture and injection for EOR. The main topics of the discussion are the source of CO₂ and generate mechanism, relationship between CO₂ and hydrocarbon in generation and accumulation process, relationship among CO₂ percentage in reservoir with reservoir property, seal, structure relief, fault system, relationship among CO₂ and high pressure and high temperature, how to identify CO₂ with seismic data, how to detect CO₂ percent in drilling by mud log and cable log, exploration methods and use of CO₂.

China Keynote Presentation was made by Guest Speaker from CNOOC, Dr. Huang Baojia, CNOOC Limited – Zhanjiang, the topic on “Geochemistry, origin, and accumulation of inorganic CO₂ in the Yinggehai and Qiongdongnan Basins, offshore South China Sea”. Following aspects have been included in his presentation

- High inorganic CO₂ than organic CO₂ in Yinggehai-Qiongdongnan basin
- Source/caused- diagenetic decomposition of carbonate minerals in siliciclastic rocks
- Mantle derived
- Mantle – crustal transition
- The Yinggehai basin – from tertiary calc-shales & carbonates
- The Qiongdongnanbasin – from volcanic-magmatic gases
- CO₂ migration to quarternary – seepage in Y-basin is the same isotope signature as in the Y-basin reservoir

The keynote focused on the Availability of Resources, Technical Challenges, Operational Challenges. Outcome of the Seminar was to present the new technology and knowledge transfer in the CO₂ Issues in Petroleum Exploration and Production and Completion New Technology, and development of the petroleum sector, which are developing at a rapid pace.

Dr. Azlina Anuar, PERONAS, Malaysia, made a presentation on “The generation and occurrence of CO₂ in the Malay basin, Malaysia”. The high CO₂ trend south – north of the Malay basin and the high relief prospects tend to have high CO₂ while low relief have moderate CO₂ . These issues have been presented in her presentation.

Mr. Pande Made Oka Iriana, PERTAMINA, Indonesia, presented “The CO₂ distribution and its controlling factors, case study from NW Java basin, Indonesia”.

Ms. Tran Chau Giang, VPI, Vietnam, gave her presentation on “The primary results of study on CO₂ origin and distribution in the Song Hong basin, Vietnam”. She expatiated on the following aspects:

- High CO₂ are found in the south of the Song Hong basin- as shown by expression of gas chimneys in the seismic sections
- Why CO₂ in the south? The area has experienced sea floor spreading involving volcanism that resulted in the release of CO₂
- Heat flow study has revealed high temperature gradient in the basin

Mr. Ing. Bert Van Der Meer, TNO, Netherlands, presented the following aspects:

- Policy- Climate change mitigation
- CO₂ storage strategies – oil & gas reservoirs when economically depleted
- Re-injection of CO₂ into an offshore gas reservoir (Project)
- Enhance gas recovery (EGR) – compensates for CO₂ injection
- REPOCOL Project in Poland wherein CO₂ is injected into coal resulted in increased coal bed methane (CBM)
- EGR project improves the economics of the field even without incentives from the state
- CO₂ monitoring – subsurface storage to reduce CO₂ in atmosphere. Monitoring is primarily for safety issues. Storage can be aquifers, oil/gas reservoir, coal, etc.
- Imaging techniques – use of synthetic seismic models and matching with real seismic data

Dr. Erik Lindeberg, SINTEF Petroleum Research, Norway made his presentation on the following items:

- The technology is already available (even before the oil crisis of early 70's)
- CO₂ for EOR – increase oil production around 8-12%
- Viability at oil price around \$40/bbl
- Would be competitive to coal-to-liquid if price stays above \$40/bbl

Mr. Niels Peter Christensen, GEUS, Denmark, gave his comprehensive presentation on

- Strategy for 0-emission with twin track solutions: one is carbon capture, and another is improved efficiency
- EU-China cooperation, geocapacity – mapping of CO₂ sources & evaluation of aquifers & petroleum fields for possible storage

The Certificate Ceremony was presented **Mr. Chen Shick Pei**, Director, CCOP Technical Secretariat and **Dr. Øystein Berg**, Managing Director, PETRAD, and the Gifts to all participants presented by **Mr. Ioannis Abatzis**, Senior Geophysical Advisor, Representative of Denmark to CCOP, GEUS, and **Mr. Liu Liqun**, CCOP-ICB1 Project Coordinator, CCOP Technical Secretariat.

Mr. Søren Lütken, Counsellor (Development Affairs), Embassy of Denmark, Beijing, People's Republic of China, attended the whole session of the seminar. At the closing ceremony of the seminar, he gave a very good appraisal on the seminar for the dissemination of knowledge and sharing of experience for capacity building. Finally, he said that the ICB-CCOP1 Project is going very well and funding is utilized properly. Consequently, Ms. Wang Yan, Manager, CNOOC Ltd. Beijing made the closing speech (Annex7).

Panel Meeting was conducted by Ms. Wang Yan, Manager, CNOOC Ltd. Beijing, and our Guest Speakers. The Panel Meeting gave great opportunities for the Participants and guest speakers to share expertise and experiences. The future cooperation had been discussed and

required for further implementation and funding sources. Many constructive proposals and comments have been made as followed:

- Case studies/projects on CO₂ from E & P activities in the CCOP Member Countries to be shared. The CCOP Technical Secretariat is in good position and has the mandate to facilitate the sharing of data, information, and knowledge
- Expert group in CO₂ should be organized to promote active networking. Again the CCOP Technical Secretariat would be in good position to be the center of the network
- Mapping of CO₂ legal framework in CCOP Member Countries
- Identifying Oil & Gas fields with potential for EOR projects- tapping on the opportunities offered by the CDM under the Kyoto Protocol
- The CCOP Member Countries should map out available techniques to identify CO₂-prone areas in order to assist the exploration companies- helping the companies to avoid conducting drilling operations in CO₂ areas
- Mapping of the gas types in the CCOP Member Countries sedimentary basins, which involve basin modeling practice

The participants expressed sincere thanks for the excellent seminar. This was an opportunity for participants to get an overview of CO₂ Issues in Petroleum Exploration and Production, and get the networking in the future development. Participants would like to thank CCOP-ICB1, PETRAD, CNOOC and Guest Speakers for their great efforts for this high level seminar.

In this two-day seminar, participants were informed of the current situation of technology and engineering on CO₂ Exploration and Production in Norway, Netherlands, and Denmark oil industry which is amongst the most advanced technology leaders in the world oil industry. Participants learnt a lot and felt that it was urgently needed and necessary to import and share such technologies, analyze the key points, strengthen basic technology system to support CO₂ Issues in Petroleum Exploration and Production and technology development. Annex 8 is the evaluation summary of the seminar.

The cooperation between CCOP and ASCOPE Members in the petroleum sector is continuously improving, and the door is further opened through this seminar.

In addition, the ICB-CCOP1 Project Chinese and Vietnamese case study team members also took this opportunity to hold a side meeting to have a good discuss on the joint case study of the Yinggehai-Song Hong basin. Annex 9 showed the minutes of the meeting in detail.



MLR



**CCOP/ICB-PETRAD-CNOOC-MLR-CGS
Seminar on CO₂ Issues in Petroleum E&P
23-25 November 2006, Guilin, China**



Group photo of all participants



*Opening
Ceremony on 23rd
November, 2006.*

**CCOP/ICB-PETRAD-CNOOC-MLR-CGS
Seminar on CO₂ Issues in Petroleum E&P
23-25 November 2006, Guilin, China**



Dr. Huang Baojia Made Presentation



Dr. Azlina Anuar Made Presentation



Mr. Pande Made Oka Iriana Made Presentation



Ms. Tran Chau Giang Made Presentation



Mr. Ing. Bert Van Der Meer Made Presentation



Dr. Erik Lindeberg Made Presentation

**CCOP/ICB-PETRAD-CNOOC-MLR-CGS
Seminar on CO₂ Issues in Petroleum E&P
23-25 November 2006, Guilin, China**



Mr. Niels Peter Christensen Made Presentation



Question & Discussing



Certification



Certification



Certification



Certification

CCOP/ICB-PETRAD-CNOOC-MLR-CGS Seminar on CO₂ Issues in Petroleum E&P

23-25 November 2006, Guilin, China



Director of CCOP TS Present Book of CCOP to VIP



Comments on Seminar from Mr. Soren Lutken



Closing Ceremony



Panel Meeting



Excursion in Guilin



Excursion on the Li River

ANNEX 1

CCOP/ICB-PETRAD-CNOOC-MLR-CGS

Seminar on CO₂ Issues in Petroleum E&P

23-25 November 2006, Guilin, China

DISTINGUISHED GUESTS

| NAME | POSITION / ADDRESS |
|--------------------|---|
| MR. SØREN LÜTKEN | Counsellor (Development Affairs), Embassy of Denmark, Beijing San Li Tun, Dong Wu Jie 1 Beijing 100600, People's Republic of China Tel. +86 (10) 8532 9900, Fax +86 (10) 8532 9999 E-mail: soelue@um.dk |
| MS. YANG TIAN TIAN | On behalf of Prof. Zhang Hongtao, Permanent Representative of China to CCOP Deputy Director-General, China Geological Survey (CGS) 24 Guangsi Dajie, Xicheng District Beijing 100011, People's Republic of China Tel. (86-10) 5163 2806 (DL), Fax. (86-10) 5163 2907 Email: sylvia2006w325@163.com |
| MR. FEI YUE | On behalf of Mr. Ma Yongzheng, Deputy Permanent Representative of China to CCOP Deputy Division Director, Department of International Cooperation, Science and Technology Ministry of Land and Resources (MLR) No. 64, Funei Street, Xicheng District Beijing 100812, People's Republic of China Tel: 86-10-66558418, Fax: 86-10-66127247 Email: yfei@mail.mlr.gov.cn |
| MR. CAI DONG SHENG | Vice President, CNOOC Limited - Zhanjiang P.O. Box 22, Potou, Zhanjiang, Guangdong, P.R. of China Tel. (86-0759) 3910969, Fax. (86-0759) 3910 969 E-mail: caidsh@cnooc.com.cn |
| MR. CHEN SHICK PEI | Director, CCOP Technical Secretariat 24 th Floor, Thai CC Tower, Suite 244-245, Sathorn Tai Road, Sathorn, Bangkok 10120, Thailand Tel: (66-2) 672 3080 to 81, Fax: (66-2) 672 3082 E-mail: spchen@ccop.or.th , Website: www.ccop.or.th |

| NAME | POSITION / ADDRESS |
|-------------------------------|---|
| DR. ØYSTEIN BERG | Managing Director International Programme for Petroleum Management and Administration (PETRAD) Prof. Olav Hanssens vei 10, P.O. Box 600 N-4003, Stavanger, Norway Tel: (47-51) 876 139, Fax: (47-51) 876 428 E-mail: oystein.berg@petrad.no |
| MR. IOANNIS ABATZIS | Senior Geophysical Advisor Interactive Interpretation Section Leader Representative of Denmark to CCOP GEUS, Geological Survey of Denmark & Greenland Oester Voldgade 10, 1350 Copenhagen K Tel. +45-38142516, Mobile: +45-20307012 Fax. +45-38142050 E-mail: ia@geus.dk |
| MS. SUN WENJIE | Director Division of Oil & Gas Management Department Geological Exploration, Ministry of Land and Resources(MLR) No.64 Funei Street, Xicheng District, Beijing, China Tel: 0086-10-66558371, Fax:0086-10-66558576 Email: wjsun@mail.mlr.gov.cn |
| MRS. WANG YAN | Manager CNOOC Limited No. 25 Chaoyangmenbei Doncheng District, Beijing, P.R. of China Tel: (86 10) 8452 1498, Fax: (86 10) 6460 2563 E-mail: wangyan1@cnooc.com.cn |
| INVITED GUEST SPEAKERS | |
| DR. HUANG BAOJIA | Chief Geologist CNOOC Limited - Zhanjiang P.O. Box 22, Potou, Zhanjiang, Guangdong, P.R. of China Tel: (86 759) 390 1782, Fax: (86 759) 391 0300 E-mail: huangbj@cnooc.com.cn |
| MR. NIELS PETER CHRISTENSEN | Director of International Ventures Geological Survey of Denmark and Greenland (GEUS) Øster Voldgade 10, DK-1350 Copenhagen K Denmark, Fax: +45 38142050 E-mail: npc@geus.dk |

| NAME | POSITION / ADDRESS |
|-----------------------------|---|
| MR. PANDE MADE OKA IRIANA | Senior Geologist/ Stratigraphy Specialist EP Technology Center PT. PERTAMINA JI. Medan Merdeka Timur 6, Kwarnas Bld. 15th Floor Jakarta 11000 Tel: (62 21) 350 2131, Fax: (62 21) 352 2365 E-mail: madeoka@pertamina.com |
| DR. AZLINA ANUAR | Staff Basin Modeler/ Petroleum Geochemistry Group Research, Research & Technology Division, PETRONAS Lot 3288 & 3289, Off Jalan Ayer Itam, Kawasan Institusi, Bangi, 43000 Kajang, Selangor Darul Ehsan, Malaysia Tel: (603) 8928 1372, Fax: (603) 8925 4620 E-mail: azlinaa@petronas.com.my |
| DR. ERIK LINDEBERG | Chief Scientist, Reservoir Technology SINTEF Petroleum Research N-7465 Trondheim, Norway Visiting address: S.P. Andersens v. 15 B Phone: +47 73 59 11 00 / + 47 73 59 13 12 Fax: +47 73 59 12 46 E-mail: erik.lindeberg@iku.sintef.no Web: http://www.iku.sintef.no/ |
| MS. TRAN CHAU GIANG | Senior Petroleum Geologist Vietnam Petroleum Institute (VPI) Yen Hoa, Cau Giay, Hanoi, VIETNAM Tel: (84-4) 784 3061/ 136, Fax: (84-4) 784 4156 E-mail: giangtc@vpihn.pv.com.vn |
| ING. BERT VAN DER MEER | Senior Reservoir Engineer TNO Built Environment and Geoscience National Geological Survey Princetonlaan 6, PO Box 80015 3508 TA Utrecht, The Netherlands Tel: +31 30 256 4635, Fax: +31 30 256 46 05 E-mail: Bert.vanderMeer@tno.nl |
| LIST OF PARTICIPANTS | |
| CAMBODIA | |
| 1) MR. CHEA SOCHEAT | Deputy Chief Officer Cambodian National Petroleum Authority 13-14 Russian Blvd., Phnom Penh, Cambodia Tel: (855) 1285 2780, Fax: (855)23 885 989 E-mail: socheat63@hotmail.com |

| NAME | POSITION / ADDRESS |
|----------------------|--|
| CHINA | |
| 2) MR. YANG JIHAI | Exploration Manager Exploration & Development Department CNOOC Ltd- Zhanjiang Branch 22P.O. Box, Potou ,Zhanjiang, Guangdong, P.R. of China Tel. 86-759-3900702, E-mail: yangjh@cnooc.com.cn |
| 3) MR. MI HONGGANG | Chief Engineer Exploration & Development Department CNOOC Ltd- Zhanjiang Branch, 22P.O. Box, Potou ,Zhanjiang, Guangdong, P.R. of China Tel: (86)0759-3900269 Fax: (86)0759-3900277 Email: Mihg@cnooc.com.cn |
| 4) MR. WANG ZHENFENG | General Manager Technology Department CNOOC Ltd- Zhanjiang Branch 22P.O. Box, Potou ,Zhanjiang, Guangdong, P.R. of China |
| 5) MR. LI XUSHEN | Chief Geologist General Technology Department, CNOOC Ltd- Zhanjiang Branch 22P.O. Box, Potou ,Zhanjiang, Guangdong, P.R. of China Fax:86-759-3901752, E-mail: lixush@cnooc.com.cn |
| 6) MR. TONG CHUANXIN | Exploration Project Manager Technology Department, CNOOC Ltd- Zhanjiang Branch 22P.O. Box, Potou ,Zhanjiang, Guangdong, P.R. of China Tel: (86)-0759-3901757 Fax:(86)-0759-3910300 Email: Tongchx@cnooc.com.cn |
| 7) MR. PEI JIANXIANG | Senior Geologist Technology Department, CNOOC Ltd- Zhanjiang Branch 22P.O. Box, Potou ,Zhanjiang, Guangdong, P.R. of China Tel:(086)0759-3900554 Email: peijx@cnooc.com.cn |
| 8) MR. ZHANG YINGZAO | Chief Engineer Technology Department, CNOOC Ltd- Zhanjiang Branch Potou DIS., Zhanjian, Guangdong, China Tel: (086)0759-3900556 Email: ZhangYingzh@cnooc.com.cn |
| 9) MR. FAN CAIWEI | Senior Engineer Technology Department, CNOOC Ltd- Zhanjiang Branch 22P.O. Box, Potou ,Zhanjiang, Guangdong, P.R. of China Tel: 0759-3910352, Email: Fancw@cnooc.com.cn |
| 10) DR. CAI FENG | Chief Researcher Qingdao Institute of Marine Geology 62 Fuzhou Rd. Qingdao, Shandong, 266071, China Tel: 86-0532-85755821, Fax: 86-0532-85720553 E-mail: qdcfeng@cgs.gov.cn |

| NAME | POSITION / ADDRESS |
|-----------------------|--|
| 11) DR. ZHANG LI | Professor Guangzhou Marine Geological Survey, CGS P.o Box 1180 No.188 Guanghai Road, Huangpu, Guangzhou 510640, China Tel. +86-20-82250353 Fax. +86-20-82250352 E-mail: zhangli20cn@21cn.com |
| 12) MS. XU TING | Engineer, Oil Production and Flow Mechanism in Reservoir Petroleum Exploration & Production Research Institute, Sinopec Xueyuan Road, Haidian District, Beijing 100083, P.R.China Tel: 86-10-8231 2621 Fax: 86-10-8231 2089 |
| 13) MS. WANG BUE | Senior Engineer, China Petroleum & Chemical Corporation (SINOPEC) No. 6A Hui Xin East St., Chaoyang District, Beijing, P.R. China Tel. 86-10 8499 8320, Fax. 86-10 6499 8398 E-mail: Wangbue@sinopec.com.cn |
| 14) MR. ZHENG XITAN | Senior Engineer EOR Department of RIPED, CNPC 20 Xue Yuan Road, Beijing100083 Fax: (86)010-62098078 E-mail: zhengxt@petrochina.com.cn |
| 15) MR. ZHANG ZUBO | Senior Engineer EOR Department of RIPED, CNPC EOR Department of Riped, CNPC P.O. Box 910,20 Xue Yuan Road, Beijing 100083 Tel: (86)010-62097595 Fax: (86)010-62097995 E-mail: zzbo@petrochina.com.cn |
| 16) MS. SUN YUMEI | Senior Geologist, CNOOC, CNOOC Plaza, No.6 Dongzhimenwei Xiaojie, Beijing, China Mobile:13931252136 Fax: (86-10)64625514 Email: sunym@cnooc.com.cn |
| 17) MR. ZHANG HAISHAN | Drilling and Completing Supervisor CNOOC, Shanghai Branch Room 2316, Lingling Road 583, Xuhui District, Shanghai, China Mobile:13611803280 Fax: 021-64077307 Email: zhanghsh@cnooc.com.cn |

| NAME | POSITION / ADDRESS |
|------------------------------|--|
| 18) MR. CHEN ZHOUSHENG | Chief Engineer Bohai Oil Research Institute, CNOOC No.3 Zhabei Road, Tanggu, Tianjin , China Tel:(86-22)25808365, Fax: (85-22)25793011 Email: CHENZHUSH2@CNOOC.COM.CN |
| 19) MR. CAI DONG SHENG | Vice President, CNOOC Limited - Zhanjiang P.O. Box 22, Potou, Zhanjiang, Guangdong, P.R. of China Tel. (86-0759) 3910969, Fax. (86-0759) 3910 969 E-mail: caidsh@cnooc.com.cn |
| 20) MS. SUN WENJIE | Director Division of Oil & Gas Management Department Geological Exploration, Ministry of Land and Resources(MLR) No.64 Funei Street, Xicheng District, Beijing, China Tel: 0086-10-66558371 Fax:0086-10-66558576 Email: wjsun@mail.mlr.gov.cn |
| 21) MRS. WANG YAN | Manager CNOOC Limited No. 25 Chaoyangmenbei Doncheng District, Beijing, P.R. of China Tel: (86 10) 8452 1498 Fax: (86 10) 6460 2563 E-mail: wangyan1@cnooc.com.cn |
| INDONESIA | |
| 22)MR. PANDE MADE OKA IRIANA | Senior Geologist/ Stratigraphy Specialist EP Technology Center PT. PERTAMINA Jl. Medan Merdeka Timur 6, Kwarnas Bld. 15th Floor Jakarta 11000 Tel: (62 21) 350 2131, Fax: (62 21) 352 2365 E-mail: madeoka@pertamina.com |
| KOREA | |
| 23) DR. YI KYUN KWON | Senior Researcher Korea Institute of Geoscience and Mineral Resources (KIGAM) P.O. Box 111, Gajeongdong 30, Yuseong Science Town, Daejeon, Korea, 305-350 Tel: (82-42) 868 3394, Fax: (82-42) 862 7275 E-mail: kyk70@kigam.re.kr |

| NAME | POSITION / ADDRESS |
|---------------------------------|--|
| MALAYSIA | |
| 24) MS. NORHAFIZAH MOHAMED | Geoscientist PETRONAS Level 22, Tower 2, Petronas Twin Towers, Kuala Lumpur City Centre, 50088, Kuala Lumpur, Malaysia Tel: (603) 2331 7081, Fax: (603) 2331 3238 E-mail: norhafizah_m@petronas.com.my |
| 25) DR. AZLINA ANUAR | Staff Basin Modeler/ Petroleum Geochemistry Group Research, Research & Technology Division, PETRONAS Lot 3288 & 3289, Off Jalan Ayer Itam, Kawasan Institusi, Bangi, 43000 Kajang, Selangor Darul Ehsan, Malaysia Tel: (603) 8928 1372, Fax: (603) 8925 4620 E-mail: azlinaa@petronas.com.my |
| PAPUA NEW GUINEA | |
| 26) MR. JOSEPH S. TAYMEN | Principal Petroleum Engineer Department of Petroleum & Energy P.O. Box 1993, Port Moresby NCD 121, Papua New Guinea Tel: (675) 322 4292, Fax: (675) 322 4222 E-mail: joseph_taymen@petroleum.gov.pg |
| PHILIPPINES | |
| 27) MR. JED B. ARAGONES | Senior Science Research Specialist Energy Resource Development Bureau, Department of Energy Energy Center, Merritt Road, Fort Bonifacio, Taguig, Metro Manila 1630, The Philippines Tel: (632) 8124016 , 8401401 to 21, Fax: (632) 840 2206 E-mail: jedevabam@yahoo.com |
| THAILAND | |
| 28) MR. SURIYAN APHIRAKSATYAKUL | Director, Operation Supervision Unit Department of Mineral Fuels 1010 Shinnawatra tower 3 Bldg., Vibhavadee rangsit Rd. Chatuchak, Bangkok 10900 Tel: (662) 791 8365, Fax: (662) 791 8367 E-mail: suriyan@dmf.go.th |
| VIETNAM | |
| 29) MS. TRAN CHAU GIANG | Senior Petroleum Geologist Vietnam Petroleum Institute (VPI) Yen Hoa, Cau Giay, Hanoi, VIETNAM Tel: (84-4) 784 3061/ 136, Fax: (84-4) 784 4156 E-mail: giangtc@vpihn.pv.com.vn |

| NAME | POSITION / ADDRESS |
|-----------------------------------|---|
| 30) DR. NGUYEN TRONG TIN | National Coordinator ICB-CCOP1 Deputy Director of VPI, Director of RCPEP Vietnam Petroleum Institute (VPI) Yen Hoa, Cau Giay, Hanoi, VIETNAM Tel. (84-4) 7844011, Fax. (84-4) 784 4156 Mobile: +84-090406 2646 E-mail: tinnt@vpihn.pv.com.vn |
| ASCOPE | |
| 31) DR. KHAJOHN BHASAVANIJA | Manager, Strategic Planning Department PTT Exploration and Production Plc. 555 Vibhavadi-Rangsit Road Chatuchak, Bangkok 10900, Thailand Tel: (662) 537 4752, Fax: (662) 537 4863 E-mail: khajohn@pttep.com |
| CCOP TECHNICAL SECRETARIAT | |
| MR. LIU LIQUN | ICB-CCOP1 Project Coordinator E-mail: liu@ccop.or.th |
| MR. SIMPLICIO CALUYONG | PPM Project Coordinator E-mail: sim@ccop.or.th |
| MS. PETCHARAT SARAWISUTRA | Programme manager E-mail: fern@ccop.or.th CCOP Technical Secretariat 24th Floor, Room 244-245, Thai CC Tower 889, Sathorn Tai Road, Sathorn, Bangkok, 10120 THAILAND Tel: (66-2) 672 3080 to 81, Fax: (66-2) 672 3082 Website: www.ccop.or.th |
| LOCAL ORGANIZER | |
| MR. LUO MING | CNOOC Ltd. Zhanjiang Tel:+86-759-3900496, Tel:+86-759-3902038 Fax: +86-759-3910203, Mobile: 13560533981 E-mail: luo_ming@cnooc.com.cn |
| MR. YANG JIHAI | CNOOC Ltd. Zhanjiang Tel:+86-759-3900496, Tel:+86-759-3902038 Fax: +86-759-3910203, Mobile: 13560533981 E-mail: yangjh@cnooc.com.cn |
| MS. LU JING | CNOOC Ltd. Zhanjiang |

Annex2

CCOP/ICB-PETRAD-CNOOC-MLR-CGS

Seminar on CO₂ Issues in Petroleum E&P

23-25 November 2006, Guilin, China

Program

Day 1: Thursday 23 November

08:30-09:00 Registration

09:00-09:30 Opening Ceremony

*Welcome Address by: **Mr. Cai Dong Sheng**, Vice President,
CNOOC Limited - Zhanjiang Branch*

*Opening Address by: **Mr. Søren Lütken**, Counsellor (Development
Affairs), Embassy of Denmark, Beijing, People's
Republic of China*

*Welcome Remarks by: Ms. Yang Tiantian, on behalf of Prof. Zhang
Hongtao, Permanent Representative of China to
CCOP, Deputy Director-General,
China Geological Survey (CGS)
Mr. Fei Yue, on behalf of **Mr. Ma Yongzheng**,
Deputy Permanent Representative of China to
CCOP, Deputy Division Director, Department of
International Cooperation, Science and
Technology, Ministry of Land and Resources
(MLR)
Mr. Chen Shick Pei, Director, CCOP Technical
Secretariat
Dr. Øystein Berg, Managing Director, PETRAD*

09:30-10:00 Photo Session & Coffee / Tea Break

10:00-10:30 Keynote Presentation on Geochemistry, origin, and accumulation of inorganic CO₂ in the Yinggehai and Qiongdongnan Basins, offshore South China Sea

by Dr. Huang Baojia, CNOOC Limited - Zhanjiang

10:30-11:15 The generation and occurrence of CO₂ in the Malay Basin, Malaysia

by Dr. Azlina Anuar, PETRONAS, Malaysia

- 11:15-12:00 **CO₂ distribution and its controlling factors, case study from NW Java Basin, Indonesia**
by Mr. Pande Made Oka Iriana, PERTAMINA, Indonesia
- 12:00-13:30 **Lunch**
- 13:30-14:15 **The primary results of study on CO₂ origin and distribution in the Yinggehai-Song Hong basin**
by Ms. Tran Chau Giang, VPI, Vietnam
- 14:15-15:00 **Enhanced gas recovery related to CO₂**
by Ing. Bert van der Meer, TNO
- 15:00-15:30 **Coffee / Tea Break**
- 15:30-16:15 **Safe storage of CO₂: How to select a storage site and how handle the risk of CO₂ escape**
by Dr. Erik Lindeberg, SINTEF Petroleum Research
- 16:15 **End of the day**
- 18:30 **Welcome Dinner (Hosted by CNOOC)**

Day 2: Friday 24 November

- 08:30-09:15 **Properties of CO₂ in reservoir conditions in petroleum reservoirs and formation**
by Dr. Erik Lindeberg, SINTEF Petroleum Research
- 09:15-10:00 **CO₂ injection in coal basin in enhanced methane production**
by Ing. Bert van der Meer, TNO
- 10:00-10:30 **Coffee / Tea Break**
- 10:30-11:15 **CO₂ injection for use in enhanced oil recovery**
by Dr. Erik Lindeberg, SINTEF Petroleum research
- 11:15-12:00 **Monitoring underground CO₂**
by Ing.. Bert van der Meer, TNO
- 12:00-13:00 **Lunch**

13:00-15:00 **CO₂ Capture and Storage - Towards Zero Emission Power Generation**

by Mr. Niels Peter Christensen, GEUS

15:00-15:30 **Presented Token of Appreciation to Guest Speakers**

by Mr. Chen Shick Pei, Director, CCOP Technical Secretariat

Certificate Ceremony

by Mr. Chen Shick Pei, Director, CCOP Technical Secretariat

Dr. Øystein Berg, Managing Director, PETRAD

Closing Ceremony

Closing Remark by Mr. Søren Lütken, Counsellor (Development Affairs),

Embassy of Denmark, Beijing, People's Republic of China

Closing Speech by Madam Wang Yan, Manager, CNOOC

15:30-15:45 **Coffee / Tea Break (End of Seminar)**

15:45 **Panel Meeting by CNOOC/Invited Guest Speakers**

18:30 **Farewell Dinner (Hosted by CCOP/ICB)**

Day 3: Saturday 25 November

Excursion:

Boat trip down the Li River to Yang Shou City (organized and sponsored by CNOOC)

Annex 3

WELCOME SPEECH BY VICE PRESIDENT OF CNOOC-LIMITED ZHANJIANG

MR. CAI DONGSHENG

**at the opening ceremony of CCOP/ICB – PETRAD – CNOOC– MLR – CGS
Seminar on CO₂ issues in Petroleum E&P
23-25 November 2006, Guilin, China**

**Distinguished guests and friends,
Ladies and Gentlemen,**

Good Morning!

It is a great honour for me to have this opportunity to attend this Seminar on CO₂ Issues in Petroleum E& P and give an address of welcome on behalf of CNOOC. First of all, I would like to express my sincere appreciation to Mr. Soren Lutken, Counselor Embassy of Denmark in P.R.China for giving us his valuable time to be with us to grace this opening ceremony and to express my deep appreciations to Mr. Chen Shick Pei, Director CCOP Technical Secretariat, to Dr Oystein Berg, Managing Director, PETRAD, Norway, to Mr Sun Wenjie, Mrs Yang Tiantian, Mr Fei Yue from Ministry of Land and Resources, P.R. China, to Mr Ioannis Abatzis, Representative of Denmark to CCOP, and to Mr Liu Liqun, ICB-CCOP1 Project Coordinator. It is their promoting, supporting, organization and coordination that makes this Seminar on CO₂ Issues opening on time. I would like to appreciate all guests for your great attention to this meeting and warm welcome all of you to the beautiful city, Guilin, China.

Since CNOOC took part in ICB-CCOP1 Project to conduct cross-border joint case studies in December 2005, we have taken part in 8 activities. Under the support of ICB-CCOP1 Project, the cross border case study China-Vietnam in the Yinggehai-Song Hong Basin is progressing well, I think the study will contribute not only to the better understanding of the petroleum geology of the basin but also to attracting investment for the exploration and development of the hydrocarbon fields on border later on.

CO₂, which this seminar will address, has been a heated discussion in the world in recent years by governments, experts and scholars not only in the fields of environmental protection, development and utilization, but also in the field of gas exploration and production. The challenges, such as how we could reduce the emission of CO₂ to restrain the global warming, how we could make good use of the value of CO₂ and how we could forecast CO₂ in gas exploration and make high commercial exploitation success.

Today, it is a great pleasure for us to have so many experts and scholars from the CCOP Member Countries and the CCOP Cooperating Countries in this beautiful city, Guilin to sit together with us to discuss on CO₂ issues. It is sure to be a meaningful and fruitful seminar. Many honorable guests here have made great achievements and had rich experience in your study fields by great

dedications and endeavors to your research. CNOOC has also done much work on the difficult problems brought by CO₂, but it still remains a lot of problems unsolved especially the high CO₂ content in the Yinggehai basin. We can share the experience and learn from each other through this seminar, especially in exchanging ideas on the forming mechanism of CO₂, on the relationship between CO₂ and the hydrocarbon generation, migration, accumulation and reservoir forming, on the seismic identifications and drilling detections and on the utilization of CO₂. I'm convinced that through this meaningful event your valuable experience are surely beneficial to CNOOC.

Before the end of my speech, on behalf of CNOOC, I would like to say thank you to the Royal Danish Government for the generous financial support for the ICB-CCOP1 Project. I would like to say thank you to PETRAD, Norway for the great support, say a big thank to CCOP for the efficient coordination and organization to bringing so many distinguished experts in CO₂ to share their knowledge with us in this seminar. I would like to say thank to the Ministry of Land and Resources, China, for all along support to CNOOC. I would like to say thanks to everyone who do any help for this meeting.

I Wish you all meeting successful and wish all of you to have a good time in Guilin.

Thank you!

Annex 4

WELCOME SPEECH BY DR. ZHANG HONGTAO, PERMANENT REPRESENTATIVE OF CHINA TO CCOP AND DEPUTY DIRECTOR GENERAL OF CHINA GEOLOGICAL SURVEY MISS. YANG TIANIAN

**at the opening ceremony of CCOP/ICB – PETRAD – CNOOC– MLR – CGS
Seminar on CO₂ issues in Petroleum E&P
23-25 November 2006, Guilin, China**

Mr. Soren Lütken, Counsellor , Embassy of Denmark in China

Mr. Cai Dongsheng, Vice President, CNOOC Limited-Zhanjiang Branch,

Mr. Chen Shick Pei, Director of CCOP Technical Secretariat

Mr. Oystein Berg, Managing Director, PETRAD

Ladies and Gentlemen.

Good morning!

On behalf of Dr. Zhang Hongtao, Permanent Representative of China to CCOP and Deputy Director General of China Geological Survey, I would like to express my warm welcome to the participants to this Seminar which is jointly organized by CNOOC, the Ministry of Land and Resources, China Geological Survey, CCOP and PETRAD.

The proposal of reducing the emission of CO₂ in Kyoto Protocol on Climate Change has been greatly supported by many countries across the world. An increasing number of countries are focusing on storage and utilization of CO₂, as well as conducting research on its distribution and recovery. As we are all aware, the CO₂ has increasingly become one of the most crucial issues in the petroleum industry. It's not only related to the petroleum exploration and production but also to the potential environmental impacts, especially in the South China Sea Region. The CO₂ remains as a vital issue in petroleum E&P in Yinggehai basin in recent years. However, the geologists know how to process CO₂. Using advanced technology to collect CO₂ during oil and gas production and store CO₂ in the appropriate strata or in deep sea has become a hot topic.

I am glad to know that near 40 participants from CCOP member countries to attend this 2-day seminar on CO₂ Issues in Petroleum E&P. The Chinese participants are mainly from China National Offshore Petroleum Corporation (CNOOC), China National Petroleum Corporation (CNPC), China Petroleum & Chemical Corporation (SINOPEC), CGS' Qingdao Institute of Marine Geology and Guangzhou Marine Geological Survey. The experts from Demark, Norway and some CCOP Member Countries will make presentations on CO₂ capture, storage, utilization methodology and technology in the coming 2 days. It provides an opportunity for the experts and participants to discuss these issues together, learn from each other, and share the information and experience.

Here, I would like to express my sincere thanks to CNOOC for providing financial support to this Seminar, and very appreciate Mr. Soren Lütken, Counsellor of Embassy of Denmark in China to attend this Seminar.

Finally, I wish this Seminar a great success and wish all of you a pleasant stay in Guilin.

Thank you.

Annex 5

WELCOME SPEECH BY MR. MA YONGZHENG, DEPUTY PERMANENT REPRESENTATIVE OF CHINA TO CCOP, DEPUTY DIRECTOR, DEPARTMENT OF INTERNATIONAL COOPERATION, SCIENCE AND TECHNOLOGY, MINISTRY OF LAND AND RESOURCES (MLR)

MR. FEI YUE

**at the opening ceremony of CCOP/ICB – PETRAD – CNOOC– MLR – CGS
Seminar on CO₂ issues in Petroleum E&P
23-25 November 2006, Guilin, China**

**Mr. Cai Dongsheng, Vice President of CNOOC Zhanjiang Branch,
Mr. Soren Lutken, Counsellor of Danish Embassy,
Mr. Chen Shick Pei, Director, CCOP Technical Secretariat,
Dr. Oystein Berg, Managing Director of PETRAD,
Mr. Ioannis Abazis, Representative of Denmark to CCOP,
Ms. Yang Tiantian, from China Geological Survey,
Ms. Wang Yan, From CNOOC,
Distinguished guest speakers,
Ladies and Gentlemen,**

Good Morning!

It is a great pleasure for me to attend today's Seminar on CO₂ Issues in Petroleum E&P. First of all, on behalf of the Ministry of Land and Resources, particularly on behalf of Mr. Ma Yongzheng, Deputy Permanent Representative of China to CCOP, I would like to extend our warm welcome to all the participants and express my sincere thanks to the Danish government for sponsoring the ICB-CCOP1 Project, to PETRAD for your continuous support, and to CNOOC Zhanjiang Branch for your great efforts and considerate arrangement that have made this seminar possible.

As we are aware, CO₂ has become an increasingly crucial issue in petroleum industry. It's not only a matter of petroleum exploration and production but also of potential environmental impact. The seminar is held today during the implementation of ICB-CCOP Project to address this issue. I believe, through sharing information and experience, we can be in a better position to meet the challenges, facilitate our work, and enhance our cooperation.

Finally, I wish this seminar a complete success and all of you a pleasant stay in this beautiful city of Guilin.

Thank you.

Annex 6

WELCOME SPEECH BY MR. CHEN SHICK PEI, DIRECTOR OF CCOP TECHNICAL SECRETARIAT

MR. CHEN SHICK PEI

**at the opening ceremony of CCOP/ICB – PETRAD – CNOOC– MLR – CGS
Seminar on CO₂ issues in Petroleum E&P
23-25 November 2006, Guilin, China**

Mr. Cai Dongsheng, Vice President of CNOOC Zhanjiang Branch,

Mr. Soren Lutken, Counsellor of Danish Embassy,

Mr. Chen Shick Pei, Director, CCOP Technical Secretariat,

Dr. Oystein Berg, Managing Director of PETRAD,

Mr. Ioannis Abazis, Representative of Denmark to CCOP,

Ms. Yang Tiantian, from China Geological Survey,

Ms. Wang Yan, From CNOOC,

Mr Liu Liqun, ICB-CCOP 1 Project Coordinator

Distinguished guest speakers,

Ladies and Gentlemen,

Good Morning and Zao An,

On behalf of CCOP, I would like to extend a very warm welcome to everybody to this special CO₂ Seminar organized under the ICB-CCOP 1 Project. In this august opening ceremony this morning, we would like to express our deep appreciation to Mr. Soren Lutken, Counsellor of Danish Embassy, China, for giving us his valuable time to be with us to grace this opening ceremony and to deliver the opening speech.

The ICB-CCOP 1 project is of great importance for the region. Besides the geoscientific aspects, it has great significance in promoting cross-border understanding and cooperation. We are pleased to share with you the fact that it is the first time that cross-border case studies have been jointly conducted by the neighboring countries, and other non case study Member Countries have also the opportunity to participate under the ICB-CCOP 1 Project. This working arrangement will enable the better integration and greater enhancement of existing knowledge of the petroleum systems in the region that can contribute to attracting investment for the sustainable development of the hydrocarbon potentials. This cross border case study model could well serve as the model for case studies of other CCOP projects in the future.

I am pleased to share with you the fact despite the complex and challenging nature of the project, under the capable coordination of Mr Liu Liqun, and with the cooperation of the participating countries, it is making very good progress. Work on both the cross border case studies China-Vietnam Yinggehai-Song Hong Basin and the Malaysia-Philippines-Indonesia Sulu Sea-East Sabah Basin are progressing well. We are seeing the benefits of the cross border case

study in the series of integrated geoscientific maps that have already been produced that will contribute to the better understanding of the geology as well as the petroleum potentials of the Basins.

CO₂, which this seminar will address, is a subject of great common interest of our Member Countries. Many of our Member Countries are facing challenges in the CO₂ issue, from the aspect of resource, and environment in its capture, storage and disposal. Many of the region's gas resources have inherently high CO₂ content and the commercial exploitation of this gas resource remains a big challenge.

The organization of this seminar serves the immediate needs of the Member Countries. This topic is of common interest to several Member Countries. With the help of Mr Ioannis Abatzis of GEUS and Dr Oystein Berg of PETRAD who together bring the best Danish and Norwegian experts, and Mr Zainal Matassan of ASCOPE and our own Member Countries providing the regional experts, Mr. Liu Liqun, Project Coordinator was able to put together a very impressive program covering wide ranging CO₂ issues. I am sure that this seminar will significantly contribute to enhancing the knowledge and understanding of CO₂ for more successful development of petroleum resources as well as minimizing its impact on the environment in its handling and disposal.

I am also pleased to share with you the fact that the CO₂ issues will be addressed in greater depths in the Natural Gas Development and Clean Development Mechanism (CDM) component under the proposed Enhanced Public Petroleum Management project which CCOP is forwarding to the Royal Norwegian Government for consideration of funding support. For those who are interested, you are most welcome to participate in it.

To conclude, we would like to say a big thank you to CNOOC, the Ministry of Land and Resources, China, China Geological Survey for hosting this seminar. We would like to thank Mr Ioannis Abatzis of GEUS and Dr Oystein Berg of PETRAD, Mr Zainal Matassan of ASCOPE as well as our CCOP colleagues from China, Malaysia, Vietnam and Indonesia for bringing their top caliber experts in CO₂ to share their knowledge with the participants in this seminar. We also thank Mr. Liu Liqun, the ICB-CCOP 1 Project Coordinator for the efficient coordination of the project, and the staff of the CCOP Technical Secretariat for their hard work in the overall arrangement for this event.

On behalf of CCOP, we would like to say thank you to the Royal Danish Government through the Royal Danish Embassy in Bangkok for the generous support for the ICB-CCOP 1 Project.

I wish you all a successful CO₂ seminar

Thank you and Syeh Syeh

Annex 7

CLOSING SPEECH BY MS. WANG YAN, MANAGER, CNOOC-LIMITED

MS. WANG YAN

**at the closing ceremony of CCOP/ICB – PETRAD – CNOOC– MLR – CGS
Seminar on CO₂ issues in Petroleum E&P
23-25 November 2006, Guilin, China**

**Mr. Soren Lutken, Counsellor, Royal Danish Embassy in Beijing,
Mr. Chen Shick Pei, Director of CCOP Technical Secretariat,
Dr. Oystein Berg, Managing Director of PETRAD,
Mr. Ioannis Abatzis, Permanent Representative of Denmark to CCOP
Madam Sun Wenjie, Division Director, MLR
Mr. Feiyue, Representing of MLR
Mr. Liu Liquan, Project Coordinator, ICB-CCOP1
Ms. Fern, Program Manager, CCOP Technical Secretariat
Distinguished Invited Speakers,
Dear friends, Ladies and Gentlemen,**

Good afternoon!

Thank you for your interesting and attending this seminar organized by CCOP/ICB-PETRAD-CNOOC-MLR-CGS.

Through the ICB-CCOP1 project platform, the participants from CCOP Member Countries, found challenge from CO₂ issues in petroleum E&P. It is our great honor, CNOOC to have this opportunity to host the seminar, which will be a great help for all of us to understand more about the regional geology to deal with CO₂ issues together in this region.

In CCOP/ICB-PETRAD-CNOOC-MLR-CGS Seminar on CO₂ Issues in Petroleum E&P, invited guest speakers with high experience in this field and participants from 12 countries come together, to share their expertise, knowledge and experience on CO₂ issues. The 11 presentations, including origin and accumulation of CO₂, Utilization of CO₂ in EOR, CO₂ storage, injection and monitoring, etc. have been presented during the seminar.

We would like express our deeply appreciation to our invited guest speakers, Dr Azlina, Mr. OKA, Ms. Giang, Dr. Bert van der Meer, Dr. Erik Linderberg, Mr. Niels Peter Christensen and Dr. Huang Baojia. Thanks to their generous contribution of their expertise. We learned a lot from them, which surely be beneficial all of us in the near future. The fruitful and success of this seminar shows our wonderful cooperation among all parties under the CCOP umbrella. Obviously, this seminar will enhance the joint study and understanding of CO₂ issues and reduce the environmental impact from CO₂, as well as promote the regional collaboration and social-economic

sustainable development.

Again, we would like to express our sincere thanks to Royal Danish Government, for the generous financial support to the ICB-CCOP1 Project. We also would like to give our deeply appreciation to CCOP, PETRAD, MLR, CGS, GEUS, SINTEF, ASCOPE, TNO for their valuable cooperation and strong support.

Now, let's congratulate to the complete success of this seminar. CNOOC expected to have closer future cooperation with CCOP, PETRAD and other parties.

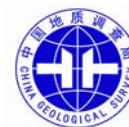
Finally, please enjoy tomorrow excursion. I wish all of you have a wonderful trip in Guilin and welcome you to come back and visit China again and again.

Thank you.

ANNEX 8



MLR



CCOP/ ICB-PETRAD-CNOOC-MLR-CGS

SEMINAR ON CO₂ Issues in Petroleum E&P

23-25 November 2006, Guilin, China

SUMMARY EVALUATION

We would appreciate if you would complete this evaluation form and return to the Secretariat Staff.
Please mark the appropriate box, and include your comments.

| Description | Excellent | | Unsatisfactory | | |
|--|-----------|----|----------------|---|---|
| | 5 | 4 | 3 | 2 | 1 |
| 1) Were the Guest speakers well prepared? | 22 | 14 | | | |
| 2) Were the Guest speakers knowledgeable? | 19 | 17 | | | |
| 3) Seminar presentations | 18 | 15 | 3 | | |
| 4) Did the Guest speakers/Seminar help you with your needs and requirements? | 12 | 18 | 5 | 1 | |
| 5) Was there a good mixture of theory and practice? | 7 | 24 | 5 | | |
| 6) Were the examples good? | 9 | 24 | 3 | | |
| 7) Was the Seminar relevant to your job? | 8 | 20 | 7 | 1 | |
| 8) Overall Seminar assessment. | 11 | 25 | | | |
| 9) Did you enjoy the Seminar? | 19 | 16 | 1 | | |
| 10) Did the Seminar meet your expectations? | 12 | 22 | 2 | | |

11) Please clarify if you missed something.

- Subsurface (direct) mapping of CO₂ contained reservoir as opposed low the HC contained reservoir
- It is a very good attempt in gather expertise from several countries to share their knowledge and ideas, which benefit everybody in this seminar. Good Job!
- Material in this seminar.
- Exploration strategy on areas with known high CO₂ petroleum resource
- Government policies to address these issues.
- Other GHG issues.

**12) How many people in your institution/company/organization will benefit from the seminar?
(please give an estimation)**

- Overall is around 30-50% of colleagues who involved in Petroleum Geology.

13) What changes do you think could be made to improve the Seminar?

(quality of seminar handout, content, venue, facilities, etc.)?

- If there would be the topics to address on the direct mapping of CO₂ bearing reservoir/formation, it would be of other's interest.
- Greater participation by the CCOP Member Countries both in presentations & discussions.
- Digital copies preferably in PowerPoint of the presentations could be provided so that we could use/borrow it (w/proper acknowledgements) in the future.
- Time for each presentation should be around 30.
- Quality of reservoir content.
- Let the participant know/access the information related to the topic of the seminar before the event. (e.g. recommended website/books etc.)

14) Perspectives after the Seminar. How would you put value to the knowledge learned?

- Participants learnt a lot through the seminar, they have never realized of issues on organic/inorganic CO₂ study before. It is very important to participants to knowledge and could be used in their future work.
- The continuation course for exchange of the knowledge in some special aspect in reservoir. So it is important thing for participants to learn more about it and keep in touch with each other.
- This type of seminar is very valuable in term of knowledge sharing and technology transfer.
- Participants expect this seminar is very useful for planning and organizing CCS project of South Korea.
- This seminar was sharing information, sharing knowledge, sharing experience world wide.
- It is a good and new knowledge for making, contribution to the environmental issues in developing countries.
- Invaluable! Opens up doors to future work, either alone personally or though collaboration.
- Spared the information to colleagues.
- Very impressed and high value to the knowledge learned.

15) Comments on the food, accommodation and the venue for the seminar?

- The seminar was well organized. Good function room, food, accommodation
- The excursion programme was wonderful and very enjoyable

ANNEX 9

Minutes of Side Meeting on the Song Hong-Yinggehai Basin Case Study

During the CCOP/ ICB-PETRAD-CNOOC-MLR-CGS SEMINAR ON CO2 Issues in Petroleum E&P,
23-25 November 2006, Guilin, China

Meeting Venue: Sheraton Guilin Hotel, 15 Bin Jiang Road, Guilin, Guangxi 541001, China

Participants: Eight (8) geoscientists from China, Vietnam and CCOP/TS attended meeting at 9:00-10:00 on 25 November 2006

Dr. Cai Feng, National Coordinator ICB-CCOP1 Project, Chief Researcher, Qingdao Institute of Marine Geology, CGS

Mr. Cai Dongsheng, Vice President, CNOOC Ltd.- Zhanjiang

Ms. Wang Yan, Manager, Cooperation & Contract Block, Exploration Department, CNOOC Ltd.

Mr. Li Xushen, Chief Geologist General, Technology Department, CNOOC Ltd.-Zhanjiang

Mr. Tong Chuanxin, Exploration Project Manager, CNOOC Ltd.-Zhanjiang

Dr. Nguyen Trong Tin, National Coordinator ICB-CCOP1, Deputy Director, VPI

Ms. Tran Chau Giang, Senior Petroleum Geologist, VPI

Mr. Liu Liqun, Project Coordinator ICB-CCOP1, CCOP Technical Secretariat

Record of the Proceedings and Discussions at the Meeting:

1. The first phase case study reports from Chinese team and Vietnamese team will be submitted to CCOP/TS before 15 December 2006. Dr Cai Feng takes the responsibility on Chinese side, and Dr. Tin will be responsible for Vietnamese side.
2. Review the all merged structure maps (both in time and depth) and three selected geological cross-sections the AA', BB' and CC' and finalize them. Dr. Nguyen The Hung (hungnt@vpihn.pv.com.vn) and Mr. Tong Chuanxin (Tongchx@cnooc.com.cn) will take the responsibility, accomplished before 15 December 2006.
3. China and Vietnam will use the PetroMod basin modeling software to do the basin modeling practice respectively on two selected cross-sections the AA' and CC'. Mr. Huang Yiwen (huangyw@cnooc.com.cn) and Ms. Nguyen Thi Dau (daunt@vpihn.pv.com.vn) will take the responsibility. The necessary basin modeling parameters will be prepared and provided to the partners before 15 January 2007.
4. The basin modeling outputs from Chinese team and Vietnamese team will be correlated and reviewed during the forthcoming the ICB-CCOP1 Digital Mapping Training Courses conducting in Indonesia toward the end of February 2007.

Note: Recommend using email to communicate and exchange the outputs directly from both parties' responsible persons and always copy to National Coordinator Dr. Cai Feng (qdcfeng@cgs.gov.cn), Dr. Tin (tinnt@vpihn.pv.com.vn) and Mr. Liu Liqun (Liu@ccop.or.th).