Date and Venue:

The two back to back training courses were held in Hanoi, Vietnam from 8th to 13th May 2006 at the Hanoi Horison Hotel, Address: #40 Cat Linh St., Hanoi, Vietnam
Tel. 844 7330808    Fax: 844 7330688     Email: res@hanoihorisonhotel.com.vn
Website: http://www.swiss-belhotel.com/hanoi_location.html

Local Organizer: Vietnam Petroleum Institute (VPI)

Participants:

Twenty four (24) geoscientists from Cambodia, China, Indonesia, Malaysia, the Philippines, Thailand and Vietnam, seven (7) CCOP Member Countries attended the training courses. Among them, eight (8) participants are female.

The detailed list of participants is attached as Annex 1.

Program:

The two back to back training courses supplemented each other. The detailed program of the training courses are provided as Annex 2.

Background of the Training Courses:

The petroleum system modeling software user training and application training are the planned training courses during the implementation of the ICB-CCOP1 Project. The petroleum system modeling software is one of the most important prevailing tools for the petroleum systems analysis in the oil industry nowadays. Therefore, the training courses are designed for the new technology transfer as well as focusing on assisting in accomplishment of the second phase research (petroleum system analysis) of the case studies. Mr. Ioannis Abatzis, the ICB-CCOP1 Project resource person, using the good connection between Geological Survey of Denmark and Greenland (GEUS) and IES software company helped to conduct the purchasing the academic version of the IES petroleum system modeling software (PetroMod) to the ICB-CCOP1 Project
case study host countries. He also helped invite good, informative and experienced instructors from IES, GEUS and VPI as the resource persons to the training courses, all these efforts brought the success to the training courses later on. The software and the licenses were issued to all case study host countries during the training courses.

The original planned venue for the training was in The Philippines. The local organizer was supposed to be the Department of Energy (DOE), Philippines, which is one of the partner agencies of the ICB-CCOP1 Project case studies. However, to their regret, they cannot help carry out the activity this time due to the shortage of the staff and tight working schedule of DOE. The venue was changed to Hanoi, Vietnam, which was discussed and decided during the ICB-CCOP 1st Malaysia workshop. The objectives are as followed:

1. To deliver and transfer the petroleum system modeling technology;
2. To share the existing knowledge experience on application of the software;
3. To deliver the purchased PetroMod to the ICB-CCOP1 Project case study host countries;
4. To exchange the geoscientific views through the discussion during the training courses;
5. To enhance the cooperation relationship, establish the academic linkage and develop the friendship among the geoscientists from IES, GEUS and the CCOP Member Countries as well as promoting the future cooperation.

Record of the Training Courses:

During the 6 full-day training courses, under the invited instructors’ informative instructions, participants learned not only the basic theory of the petroleum system, but also the application of the petroleum system as well as the petroleum system modeling software. The training courses are composed of three parts: lecture, discussion and exercise. During the training courses, the software has been installed to all participants’ laptop, so that the participants could run the software program on their own computers with the different kinds of parameters selected and prepared by themselves. Dr. Bjorn Wygrala, Managing Director of Technology Transfer IES, is an excellent speaker in the field of petroleum system modeling. He gave a very comprehensive and detailed instruction, and the participants are enjoyed his presentation very much. Mr. Anders Mathiesen, the resource person from GEUS, is an excellent expert in petroleum system modeling. His lecture is mostly focused on analysis of petroleum modeling results and the correlative between the parameters and results. He generously contributed his rich experiences in petroleum system modeling to all participants. His experience is the most important part to application of the petroleum system modeling. Mr. Pham Van Tiem, the resource person from VPI, who was trained in GEUS before, gave a wonderful lecture on the real case study of the petroleum system modeling software application in the Phu Khanh Basin, Vietnam. On the one hand, it shows that the software can be used in our region successfully. On the other hand, it is a very good example to show how the new technology transfer from GEUS to local regional institute and pass to all geoscientists in this region later on. Mr. Pham Van Tiem also introduced and shared his experience on how to select and prepare the parameters for the petroleum system modeling, as well as provided some raw data for participants practice and exercise. All the participants were really involved in the training courses, no one was absent during the 6-day training, and most of them asked the questions interactively to the instructors. On the last day of the training, the certificates have been issued to all participants. And the evaluation form of the training courses has been
distributed to all participants. The evaluation form is very integrative including the content of training, instructor, organizing, accommodation and impact, etc. The feedback has been received immediately which would help improving the organizing of the future training courses.

Input of the training courses is mainly derived from the knowledge and experience of the 3 invited resources persons. Actually, they are the best combination for this kind of training courses, including the whole expertise, software provider, excellent experts and regional user. The knowledge, new technology, and experience are delivered through the training. Experts’ generous contributions are highly appreciated.

Through the common efforts, the training courses were conducted very successfully. The direct and indirect outputs are as followed:

- The petroleum system discipline was introduced to all participants in details so that all the participants got good understanding of it;
- All the participants have been trained on how to use the petroleum system modeling software PetroMod, now they are familiar with the software;
- The existing knowledge and experience in petroleum system modeling have been shared through the discussion and exercise, the participants can apply them for case study as well as other projects in hand.

The impact of the training courses is obvious. It is the first training courses conducted by the ICB-CCOP1 Project during the project implementation. All the participants are from the CCOP Member Countries, most of them are young geoscientists while one third of them are female participants. The 6-day indoor intensive training brought them the new technology and knowledge in petroleum system as well as familiarity with the petroleum system modeling software. The know how and experience of the software application have also been shared. As the participants mentioned in their evaluation form as feedback, all these knowledge, technology and experience will benefit them in their work and their colleagues in their institute in the near future for their research projects. Like most participants mentioned, they asked eagerly for advanced training course on 2D and 3D function of the software in the future. To our regret, due to the duration of the training courses very limited comparing to the whole package of the technology, during the training we just went through the 1D function of the software which is just the basic function of the software. It means these training courses really mobilized the participants’ enthusiasm for the petroleum system software application. It was believed that the new technology of petroleum system would be applied broadly in our CCOP Member Countries, especially the ICB-CCOP1 Project case study host countries. These will produce the added value to their oil industry.
## Annex1

CCOP-DANIDA Institutional Capacity Building Project ICB-CCOP1  
Petroleum System Modeling Software User Training & Application Training  
May 8-13, 2006, Hanoi, Vietnam

### Distinguished Guest

<table>
<thead>
<tr>
<th>NAME</th>
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| 1) DR. NGUYEN HUY QUY | Deputy General Manager  
Science Technology, Vietnam Oil and Gas  
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### Resource Persons

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<th>RESOURCE PERSONS</th>
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| 1) MR. IOANNIS ABATZIS | Representative of Denmark to CCOP  
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| 2) DR. BJORN WYGRALA | Managing Director  
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# LIST OF PARTICIPANTS

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<td><strong>CAMBODIA</strong></td>
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<td>1) MR. CHAP SAMNANG</td>
<td>Geologist, Upstream Division&lt;br&gt;Cambodian National Petroleum Authority (CNPA)&lt;br&gt;#13-14, Russian Federation Blvd, Sangkat Kakab, Khan Dangkor, P.O. Box 1442, Phnom Penh, CAMBODIA&lt;br&gt;Tel: (85-12) 943344, Fax: (855-23) 890569&lt;br&gt;E-mail : <a href="mailto:ppm_cambodia@online.com.kh">ppm_cambodia@online.com.kh</a></td>
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<td><strong>CHINA</strong></td>
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<td>2) DR. CAI FENG</td>
<td>Chief Researcher&lt;br&gt;Qingdao Institute of Marine Geology&lt;br&gt;62 Fuzhou Rd., Qingdao, Shandong, 266071&lt;br&gt;People’s Republic of China&lt;br&gt;Tel: (86-532) 8575 5821, Fax: (86-532) 8572 0553&lt;br&gt;E-mail: <a href="mailto:qdcfeng@cgs.gov.cn">qdcfeng@cgs.gov.cn</a></td>
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<td><strong>3) MR. PIYAWATCHARA PRAMALNRUT</strong></td>
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<td><img src="image3.png" alt="Photo" /> Assistant in IT</td>
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Annex2

CCOP-DANIDA
Institutional Capacity Building Project ICB-CCOP1
Petroleum System Modeling Software User Training & Application Training
May 8-13, 2006, Hanoi, Vietnam

Program

Day 1:  7 May
Traveling to Hanoi, Vietnam.
Arrival of Participants / Check-in Hotel

Day 2:  8 May

08:30 Registration
09:00 Opening Remarks
- Dr. Nguyen Huy Quy on behalf of the Permanent Representative of Vietnam to CCOP
- Director of CCOP Technical Secretariat

09:20 Group Photo
09:30 Coffee/tea break

09:50 Introduction

10:00 Petroleum System Modeling Software User Training Course
Technology Review
Introduction to Basin and Petroleum Systems Modeling
Definitions and History
The role of basin and petroleum systems modeling

12:00 Lunch Break

13:30 Petroleum Generation
- Chemical principles of petroleum generation
- Physical principles of thermal modeling
- Boundary conditions for thermal modeling
**Petroleum Migration**
- Expulsion (primary migration)
- Principles of secondary migration

15:00 Coffee/tea break

15:15 Discussions
   Exercises

17:00 End of Day 2

19:00 Welcome Dinner

**Day 3: 9 May**

08:30 **Constructing Basic Basin and Petroleum Systems Models**
   General Input Data Requirements
   - 1D models
   - 2D models
   - 3D models

10:00 Coffee Break

10:15 **Property editing**
   - Lithologies
   - Chemical parameters

12:00 Lunch Break

13:30 Discussions

15:00 Coffee/tea break

15:15 Exercises

17:00 End of day 3

**Day 4: 10 May**

08:30 **Workflows in Basin and Petroleum Systems Models**
   From Input to Output
   - Editing input models
   - Simulation and simulation controls
   - Output displays in 1D, 2D and 3D

10:00 Coffee Break
10:15 **Calibrating Models**
- Thermal calibration
- Pressure calibration (compaction/porosity modeling)

**Migration Modeling**
- Drainage area analysis
- Pre-assessment with multi-1D models
- Volumetrics modeling

12:00 Lunch Break

13:30 Discussions

15:00 Coffee/tea break

15:15 Exercises

17:00 End of day 4

**Day 5: 11 May**

08:30 **Constructing Complex Basin and Petroleum Systems Models**

**Special Modeling Requirements**
- Facies maps
- Faults and fault properties
- Uplift and erosion
- Salt movements
- Igneous intrusions
- Links to structural models

10:00 Coffee Break

10:15 - Salt movements
- Igneous intrusions
- Links to structural models

12:00 Lunch Break

13:30 Discussions

15:00 Coffee/tea break

15:15 Exercises

17:00 End of day 5
Day 6: 12 May

08:30 Migration Modeling Theory and Methods
   Types of Migration Modeling
   - Darcy flow
   - Flowpath
   - Others
   - Mathematical approaches
   PVT controls
   - Hydrocarbon components and phases
   - Modeling methods for component/phase controls
   - Prediction of Petroleum properties

10:00 Coffee Break

10:15 Seals and Seal Efficiencies
   - Column height and breakthrough calculations
   - Comparison of different methods

12:00 Lunch Break

13:30 Discussions

15:00 Coffee/tea break

15:15 Exercises

17:00 End of day 6

19:00 Farewell Dinner

Day 7: 13 May

08:30 Application of Basin and Petroleum Systems Models
   Risk and Uncertainty Analysis
   - Principles of risk analysis
   - Risk analysis tools

10:00 Coffee Break

10:15 Applications and Case Studies
   - Petroleum Systems Modeling as a Guidance Tool
   - Comparison of 2D and 3D modeling
   - Charge risking and history modeling
   - Local E&P risking, e.g. for satellite structure assessments
   - Large scale models (resource assessments)
12:00 Lunch Break
13:30 Review of current developments/Preview of future developments
   Final Discussions
15:00 Coffee/tea break
15:15 Summary of Training Course
   Closing and Certification Presentation
17:00 End of day 7

**Day 8: 14 May**
Check out from Hotel, Back Home Trip

Note:
1. For more information about the software please browse the software vendor’s website at: [http://www.ies.de/](http://www.ies.de/), please download the software from this website
2. For participants who will attend this training course are strongly recommended to bring the laptop PC with them with the Windows XP/2000 Operation System
Annex 3

SPEECH BY DIRECTOR OF CCOP TECHNICAL SECRETARIAT

MR. CHEN SHICK PEI

at the opening of ICB-CCOP 1
Petroleum System Modeling Software User Training & Application Training
May 8-13, 2006, Hanoi, Vietnam

Dr Nguyen Huy Quy, Deputy General Manager, Science-Technology Division, PetroVietnam
Dr Nguyen Trong Tin, Vice Director, Vietnam Petroleum Institute
Mr Ioannis Abatzis, Representative of Denmark to CCOP
Mr Liu Liqun, ICB-CCOP 1 Coordinator
Resource Persons Dr Wygrala, Dr Mathiesen and Mr Tham Van Tiam
Distinguished participants
Ladies and Gentlemen

Good Morning and Cin Cao (Chao)

On behalf of CCOP, I would like to extend a very warm welcome to everybody to this User and Application Trainings on Petroleum System Modeling Software under the ICB-CCOP 1 Project. In this august opening ceremony this morning, we would like to express our deep appreciation to Dr. Nguyen Huy Quy 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 an 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.

This User and Application Trainings on Petroleum System Modeling Software is part of the technology transfer component of the ICB-CCOP 1 Project. Under this component, trainings will be conducted to provide knowledge and technology that can help in the conduct of the case study and to enhance the expertise of Member Countries’ scientists. To complement this, the project will support the provision of relevant software. It is also heartening for us to note that Member Countries in addition, have also suggested and offered the sharing of some specialized and high cost facilities to other CCOP Member Countries which do not posses them.
The ICB-CCOP 1 project is now at the half way implementation stage of the 3-year project. I am pleased to say that with the good cooperation and support of the Member Countries, it has made excellent progress, despite its inherent complex nature, and all the activities are being implemented as planned. We foresee that the project can fully attain its objectives and make the impact as expected.

To conclude, we would like to say a big thank you to PetroVietnam and Vietnam Petroleum Institute for hosting these trainings and providing a resource person. On behalf of the participants, we would like to thank the resource persons, Dr. Bjorn Wygrala from IES Integrated Exploration Systems, Germany, Mr. Anders Mathiesen, from the Geological Survey of Denmark and Greenland, and Mr. Tham Van Tiam from the Vietnam Petroleum Institute for sharing with us their valuable knowledge in the conduct of the trainings. We also thank Mr. Liu Liqun, the ICB-CCOP1 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 thank the Royal Danish Government through the Royal Danish Embassy in Bangkok for the generous support for this Project.

Before I end, I would, once again, like to thank Dr. Nguyen Huy Quy for his interest and support, and his gracious presence in this ICB-CCOP1 Opening Ceremony of the Training Workshop. Our special appreciation goes to Mr. Ioannis Abatzis, Representative of Denmark to CCOP, Senior Advisor of the Geological Survey of Denmark and Greenland (GEUS) for his untiring efforts in rendering useful advice and guidance for the project. I would also like to thank our CCOP Member Countries, the national project coordinators and their colleagues for their cooperation, support and participation in the project activities and the case studies.

I wish you all a successful Training Workshop

Thank you and Cam Mon

May 2006
INSTITUTIONAL CAPACITY BUILDING IN CCOP COUNTRIES, PHASE 1 (ICB-CCOP1)

Group photo of all the ICB-CCOP1, 1st Vietnam Training Courses participants

Opening Ceremony on 8th May, 2006.

Instruction

Learning
CCOP-DANIDA Institutional Capacity Building Project ICB-CCOP1
Petroleum System Modeling Software User Training & Application Training
May 8-13, 2006, Hanoi, Vietnam

Discussion & Consulting

Issue the Software

Issue the Software

Issue the Software

Issue the Software

Certification

Certification