

2023년도 제2차 해외전문교육 개요

'23. 6. 2, 재단사무국

1. 교육 개요

- 일시/방법 : 2023. 6. 19(월)~6. 23(금), 09:30~17:30 / 원격교육(Webex)
- 개 최 : 재단-포스코인터내셔널
- 기관/강사 : Schlumberger / Tom Neville(강사 이력 [첨부1] 참고)
- 주 제 : Coalbed Methane Reservoirs: Advanced Analysis Techniques
- CMR (석탄층 메탄가스 저류층 : 고급 분석 기법 - CMR)
- 분야/수준 : Engineering / 중급

2. 주요 교육 내용 (상세 내용 [첨부2] 참고)

- 석유물리학, 지질학, 지구물리학, 저류공학, 시추 및 개발 전략 등 다양한 주제와 관련하여 석탄층 메탄가스 저류층과 관련된 전반적인 이해도 향상
- CSG(입체 기하학적 구조) 3D 동적 시뮬레이션 등 예제 실습뿐만 아니라 분야별 사례 연구를 통해 석탄층 메탄가스 저류층 분석 능력 향상

<일별 교육 커리큘럼>

구분	6.19(월)	6.20(화)	6.21(수)	6.22(목)	6.23(금)
내 용	<ul style="list-style-type: none">• Petrophysics, Geology, Geomechanics and Hydraulic Fracture Stimulation	<ul style="list-style-type: none">• Reservoir and Production Engineering	<ul style="list-style-type: none">• Geophysics and Well Placement	<ul style="list-style-type: none">• Drilling, Well and Completion Design and Development Studies	<ul style="list-style-type: none">• General Overview and Special Topics

3. 교육 정원 및 대상

- 교육정원 : 15명
- 교육대상 : 자원개발 업계 등
 - 공동 개최 기관인 포스코인터내셔널에 전체 정원(15명) 중 8명을 우선 배정하고, 자원개발 업계 직원 및 관련 학과 교수, 대학원의 박사 과정 학생 등 7명에게 선착순으로 교육 기회 제공
 - 단, 1개 기관에서 다수의 인원이 신청하여 정원 초과 시, 인원 제한 가능

Tom Neville



Professional Experience

- Asia-Pacific Formation Evaluation Services, Brisbane, Australia March 2017 – present: Principal Consultant. Providing integrated formation evaluation consulting with an APAC focus. Services include operations and acquisition support, asset evaluations and field studies, training and mentoring of staff, and development of formation evaluation software and workflows.
- Qteq Pty Ltd, Brisbane Australia (following Qteq's purchase of NMRSA), October 2017 – December 2018: Formation Evaluation Advisor. Performing data processing and interpretation, answer product development, and sales and marketing activities related to Qteq's family of borehole magnetic resonance (BMR) tools.
- NMR Services Australia Pty Ltd, Brisbane Australia, March 2017 – September 2017: Formation Evaluation Advisor. Performing data processing and interpretation, answer product development, and sales and marketing activities related to NMRSA's family of borehole magnetic resonance (BMR) tools.
- Schlumberger Oilfield Services, Jakarta, Indonesia February 2015 – March 2017: Schlumberger Indonesia Petrophysics Advisor. Supported Schlumberger Clients in Indonesia by identifying formation evaluation needs and challenges, designing and supervising appropriate data acquisition programs, performing and supervising data processing and interpretation, and developing innovation formation solutions when required.
- Schlumberger Oilfield Services, Kuala Lumpur, Malaysia April 2014 – February 2015: Carbonate Petrophysics Advisor seconded to the joint PETRONAS-Schlumberger Carbonate Evaluation and Development Centre. Mentored PETRONAS staff on carbonate formation evaluation and provided support for FDP studies on Malaysian carbonate fields. Performed regional studies on carbonate petrophysical behaviour and developed new evaluation workflows.
- Schlumberger Oilfield Services, Kuala Lumpur, Malaysia February 2011 – March 2014: Asia/Australasia Petrophysics Advisor. Provided high level technical support to Schlumberger operations throughout the Asia and Australasia region, with a focus on Southeast Asian thinly-bedded siliciclastic reservoirs and carbonate reservoirs, and unconventional reservoirs in Australia and China.
- Schlumberger Oilfield Services – Beijing Geoscience Centre, Beijing, PRC June 2010 – January 2011: Formation Evaluation Advisor. Provided technical support for development of formation evaluation answer products within BGC, and provided support for formation evaluation activities conducted by Schlumberger in China.
- Schlumberger-Doll Research, Cambridge, USA August 2007 – May 2010: Research Director of Reservoir Geosciences Department and Petrophysics Advisor. Managed the Reservoir Geosciences Department at SDR, leading a team of around twenty-five research scientists and support staff. Overall technical leadership of formation evaluation-related research at SDR, with a focus on carbonate and unconventional reservoir formation evaluation.
- Schlumberger Oilfield Services, Beijing, PRC July 2006 – August 2007: Formation Evaluation Lead. Overall technical responsibility for formation evaluation activities performed by Schlumberger in China, including development of innovative solutions to Client problems, such as formation evaluation in volcanic reservoirs and carbonates.
- Schlumberger Oilfield Services - Beijing Geoscience Centre, Beijing, PRC January 2004 - June 2006: Formation Evaluation Discipline Manager and Interpretation Advisor – Formation Evaluation. Managed the Formation Evaluation Discipline at BGC, with a team of around twenty petrotechnical experts and software developers. Focused on defining new interpretation methods and workflows for carbonate evaluation, resistivity modelling and inversion, and formation tester interpretation.
- Schlumberger Oilfield Services, Houston, USA January 2002 - January 2004: Open Hole Petrophysics Domain Advisor, Wireline / DCS Headquarters. Defined and managed implementation of Schlumberger's technical strategy in the field of open hole petrophysics.
- Schlumberger Oilfield Services – Sugar Land Product Centre, Sugar Land, USA July 2000 – December 2001: Domain Specialist, Interpretation Department. Provided guidance to software development teams working on geosteering and high angle well evaluation software and real-time petrophysical answer products.
- Schlumberger Oilfield Australia Pty Ltd, Melbourne, Australia March 1998 – June 2000: Data Services Manager. Managed Data Services activities in Australia with a team of around ten petrotechnical experts, performed long term planning and budgeting, and marketing of Data Services products. "Lead" geologist and petrophysicist providing support for formation evaluation services.

Schlumberger Oilfield Australia Pty Ltd, Brisbane, Australia July 1996 - March 1998: Geologist / Petrophysicist. Conducted general data preparation and log quality control tasks, processing and interpretation of borehole geological products, including FMS and FMI, and general petrophysical evaluations.

PETROZ NL, Brisbane, Australia August 1994 - June 1996: Geologist. Supervised the company's Surat Basin assets, involving preparation of geological assessments and recommendations on exploration and development projects proposed by the Operator, and providing an audit of Operator's activities. Petrophysics "key role", with primary responsibility for petrophysical evaluations conducted by Petroz.

SANTOS Limited, Brisbane, Australia (following Santos's purchase of AGL Petroleum) January 1993 - August 1994: Geologist. Exploration/development geologist for the company's eastern Eromanga Basin acreage, involved initiation of, and provision of geological and petrophysical support for exploration and development projects such as new wells and workovers.

AGL Petroleum LTD, Brisbane, Australia November 1990 - December 1992: Geologist. Exploration geologist working primarily on the company's Surat Basin acreage, duties included prospect generation and evaluation, preparation of well proposals, supervision and conduct of wellsite geological operations, and preparation of well completion reports.

Education and training

BSc, University of Queensland, 1985-1987. Undergraduate courses in geology, pure and applied mathematics, chemistry, physics, and remote sensing.

BSc (Hons) in Geology and Mineralogy, University of Queensland, 1989 Thesis title: Permo-Triassic Geology of the southern Serocold Anticline, Denison Trough, east central Queensland. Supervisor: Dr Chris Fielding. Awarded Arthur Ward Prize for the student who has shown the greatest proficiency in the final year of the course in the Department of Geology & Mineralogy for the degree of Bachelor of Science with Honours or the degree of Bachelor of Applied Science in Geology or Geophysics.

Postgraduate Certificate in Petroleum Engineering, Heriot Watt University, 2015. Completed courses in drilling engineering, petroleum geoscience, production technology, reservoir engineering, reservoir simulation, petroleum economics, and formation evaluation.

Industry training on play concept generation, seismic interpretation, sedimentology and sequence stratigraphy, economics and risk analysis, coring and core analysis, log analysis, DST interpretation, and integrated formation evaluation.

Internal Schlumberger training on NMR logging, wireline formation testing, triaxial induction logging, dielectric logging, and cased hole and production logging.

Training courses and workshops

* Course prepared and delivered by me.

Tool response modelling (Schlumberger LWD interpretation school), Houston, Texas, October 2000.

Tool response modelling (Schlumberger LWD interpretation school), Houston, Texas, April 2001.

Tool response modelling (Schlumberger geosteering school), Houston, Texas, April 2001.

Tool response modelling and high angle well evaluation (Schlumberger open hole LAT #22), Houston, Texas, November 2001.

Tool response modelling (Schlumberger geosteering school), Houston, Texas, November 2001.

Tool response modelling (Schlumberger LWD interpretation school), Houston, Texas, December 2001.

Spectroscopy, tool response modelling and high angle well evaluation (Schlumberger open hole LAT #23), Houston, Texas, February-March 2002.

Tool response modelling (Schlumberger geosteering school), Houston, Texas, March 2002.

Tool response modelling (Schlumberger LWD interpretation school), Houston, Texas, April 2002.

Inform3D (internal Schlumberger school), Houston, Texas, June 2002.*

Tool response modelling and high angle well evaluation (Schlumberger open hole LAT #24), Houston, Texas, August 2002.

Tool response modelling and high angle well evaluation (Schlumberger open hole LAT #25), Houston, Texas, October 2002.

Invasion2 (internal Schlumberger school), Houston, Texas, March 2003.*

Induction tool theory and saturation evaluation (Schlumberger open hole LAT #26), Houston, Texas, April-May 2003.

DecisionXpress (internal Schlumberger school), Houston, Texas, June 2003.*

Induction tool theory and saturation evaluation (Schlumberger open hole LAT #27), Houston, Texas, October 2003.

DecisionXpress (internal Schlumberger school), Houston, Texas, October 2003.*

Reservoir petrophysics (internal Schlumberger school), Houston, Texas, November 2003.*

DecisionXpress (internal Schlumberger school), Kuala Lumpur, Malaysia, April 2004.*
 Resistivity tool theory, tool response modelling (Schlumberger Build-IT 3 school), Beijing, China, September 2004.
 Induction tool theory, tool response modelling (Schlumberger open hole LAT #29), Abu Dhabi, U.A.E., October 2004.
 Reservoir petrophysics (internal Schlumberger school), Abu Dhabi, U.A.E., September 2005.*
 Reservoir petrophysics (internal Schlumberger school), Abu Dhabi, U.A.E., April 2007.*
 Advanced petrophysics workflow for carbonates (internal Schlumberger school), Abu Dhabi, U.A.E., June-July 2008.*
 Applications of spectroscopy in volcanic rocks (internal Schlumberger school), Abu Dhabi, U.A.E., July 2008.*
 Reservoir petrophysics (internal Schlumberger school), Kuala Lumpur, Malaysia, November 2008.*
 Petrophysics for log analysts (Schlumberger open hole LAT school #37), Houston, Texas, April 2009.*
 Advanced Carbonate Petrophysics, SPWLA Annual Logging Symposium, Houston, Texas, June 2009.*
 Petrophysics for log analysts (Schlumberger Deep Blue 3 school), Houston, Texas, October 2009.*
 Reservoir petrophysics (internal Schlumberger school), Kuala Lumpur, Malaysia, November 2009.*
 Petrophysics for log analysts (Schlumberger Deep Blue 3 school), Houston, Texas, April 2010.*
 Reservoir petrophysics (internal Schlumberger school), Abu Dhabi, U.A.E., February-March 2011.*
 Spectroscopy workshop (internal Schlumberger school), Beijing, China, March 2011.*
 Reservoir petrophysics (internal Schlumberger school), Abu Dhabi, U.A.E., February-March 2012.*
 Reservoir petrophysics (internal Schlumberger school), Abu Dhabi, U.A.E., May-June 2013.*
 Advanced formation evaluation in Techlog (internal Client school), Seria, Brunei Darussalam, February 2013.
 Advanced formation evaluation in Techlog (internal Client school), Perth, Australia, May 2013.
 NExT advanced formation evaluation in clastics, carbonates, and basement reservoirs, Ho Chi Minh City, Vietnam, July 2014.
 NExT advanced formation evaluation in carbonates, Kuala Lumpur, Malaysia, November 2014.
 Advanced petrophysics training (internal Client school), Jakarta, Indonesia, May 2015.
 NExT advanced core analysis, Kuala Lumpur, Malaysia, August 2015.
 NExT advanced core analysis, Bandung, Indonesia, October 2015.
 NExT integrated reservoir analysis, Bali Indonesia, December 2015.
 NExT evaluating low contrast pay, Tokyo, Japan, February 2016.*
 NExT formation evaluation in volcanic reservoirs, Tokyo, Japan, May 2017.*
 NExT advanced formation evaluation in clastics, carbonates, and basement reservoirs, Bali, Indonesia, August 2017.
 NExT applied core analysis, Bali, Indonesia, October 2017.
 NExT advanced formation evaluation in clastics, carbonates, and basement reservoirs, Bandung, Indonesia, December 2017.
 Mining petrophysics (internal Client school), Adelaide, Australia, December 2017.*
 Mining petrophysics, First Australasian Exploration Geoscience Conference, Sydney, Australia, February 2018.*
 NExT advanced formation evaluation in clastics, carbonates, and basement reservoirs, Bandung, Indonesia, July 2018.
 NExT advanced formation evaluation in sandstones, Kuala Lumpur, Malaysia, March 2019.

Professional society memberships and activities

American Association of Petroleum Geologists (1991)
 Society of Exploration Geophysicists (2012)
 2010 China Shale Gas Technology Forum organising committee
 Society of Petroleum Engineers (1993)
 Queensland branch committee member, 1996-1997
 Technical Reviewer SPE Reservoir Evaluation and Engineering, 2009-2019
 2019 Asia-Pacific Unconventional Resources Technology Conference technical committee
 Society of Petrophysicists and Well Log Analysts (1994)
 Topical conference organising committee member: Spring 2003, Fall 2003, Spring 2007
 Long Range Planning Committee member: 2006
 Technology Committee member: 2012, 2013, 2014, 2015, 2016, 2017
 Vice President – Information Technology: 2007-2009 International Board of Directors
 Regional Director – Asia and Australia: 2011-2013, and 2013-2015 International Board of Directors
 Vice-President – Formation Evaluation Society of Queensland, 2018-2019

Recognitions

Advisor in the Schlumberger Eureka Technical Career scheme
 2007 SPWLA Annual Logging Symposium Best Paper award
 2007-2008 SPWLA Distinguished Speaker
 2012-2013 Adjunct Lecturer on Well Logging and Formation Evaluation, Universiti Teknologi PETRONAS, Malaysia

	Time	Contents
Day 1	09:30~13:00	Petrophysics <ul style="list-style-type: none"> • Logs for Coal Evaluation • Petrophysics Answer Products • Case Studies Geology <ul style="list-style-type: none"> • CSG geological overview for east coast basins in Australia • Wireline and D&M image logging technologies and activity for CSG (high resolution image logs) • Challenges and data quality concerns on image logging in CSG (highly resistive CSG zones) • Common geological interpretation products for CSG companies in Australia. (coal cleats vs Induced and natural fractures identification, and in-situ stress analysis) • CSG static modeling (structural modeling and data analysis in Petrel)
	13:00~14:00	Lunch
	14:00~17:30	Geomechanics <ul style="list-style-type: none"> • Fundamentals of constructing 1 Dimensional Mechanical Earth Model (1D MEM) • Mech Prop, Strength and stresses and constructing 1D MEM in coals • Case studies Hydraulic Fracture Stimulation <ul style="list-style-type: none"> • Principles and HF in coals • Case studies
Day 2	09:30~13:00	Wireline Formation testing <ul style="list-style-type: none"> • Formation Testing in Coals • MDT Stress Testing in Coals and case studies 3D Dynamic Simulator for CSG <ul style="list-style-type: none"> • Brief intro to Simulation • Introduction to CSG simulation • CSG model initialization • CSG model History Matching

	Time	Contents
		<ul style="list-style-type: none"> • CSG model predictions • Case study and summary • Groundwater studies are usually needed and environmental approval
	13:00~14:00	Lunch
	14:00~17:30	Production Engineering <ul style="list-style-type: none"> • Why artificial lift • Types of artificial lift (ESP, PCP) and their usage in CSG • Opening the well for production (various considerations and techniques)
Day 3	09:30~13:00	Geophysics (Microseismic, Fiber optic monitoring) <ul style="list-style-type: none"> • Hydraulic Fracture Monitoring using conventional and fiber-optic tools • Crosswell Seismic applications for coal seam gas
	13:00~14:00	Lunch
	14:00~17:30	Well Placement for CSG Wells <ul style="list-style-type: none"> • Well-placement in horizontal CSG wells using various techniques • Case Studies
Day 4	09:30~13:00	Drilling and Well and completion design & Development <ul style="list-style-type: none"> • Well and completion design for CSG • Other development aspects: Water treatment, Well Pads, Surface facilities, appraisal and dev strategy
	13:00~14:00	Lunch
	14:00~17:30	CSG Asset Development <ul style="list-style-type: none"> • CSG Development Strategy, Operating Philosophy, Safety and Law consideration
Day 5	09:30~13:00	General overview covering the summary of Day-1 to Day-4 <ul style="list-style-type: none"> • (Petrophysics, Geology, Geomechanics, Hydraulic Fracturing, Reservoir Engineering)
	13:00~14:00	Lunch
	14:00~17:30	General overview covering the summary of Day-1 to Day-4 <ul style="list-style-type: none"> • Geophysics, Well placement for CSG, Drilling and Well Completion Design and Development