

GEOPHYSICS IN GEOTHERMAL ENERGY – TODAY AND TOMORROW

12–14 OCTOBER 2021



PROGRAMME

GULF STANDARD TIME

Committee

- STEPHEN HALLINAN, CGG - CO-CHAIR
- AQUARDI RACHMAT SUMINAR, STAR ENERGY - CO-CHAIR
- IMAM RAHARJO, PERTAMINA GEOTHERMAL ENERGY - CO-CHAIR
- ALISON KIRKBY, GEOSCIENCE AUSTRALIA
- AMINE OURABAH, STRYDE FURTHER
- AWAL MANDONG, CGG
- CHRIS NELSON, STAR ENERGY
- DODDY ASTRA, SARULLA OPERATIONS LTD
- EUGENE SUNIO, PHILIPPINE GEOTHERMAL PRODUCTION COMPANY, INC.
- GREG USSHER, JACOBS ENGINEERING
- JONATHAN LEE MONASTERIAL, ENERGY DEVELOPMENT CORPORATION
- KHAIRUL ARAFIN MOHD NOH, UNIVERSITI TEKNOLOGI PETRONAS
- MARINO BAROEK, SUPREME ENERGY
- MOHD HARIRI ARAFIN, UNIVERSITY KEBANGSAAN MALAYSIA
- SARVAGYA PARASHAR, HALLIBURTON
- MS IYER, HALLIBURTON
- ROBERT HUNN, FORTESCUE
- STEVEN SEWELL, ORMAT
- TOSHIHIRO UCHIDA, GEOLOGICAL SURVEY OF JAPAN (GSJ)

SPONSORS

PLATINUM SPONSOR



BRONZE SPONSORS



SPONSORED WEBINAR



SESSION SPONSOR



SPEED NETWORKING SPONSOR DAY 1



DAY 1 : CURRENT PRACTICES

10:00- 10:10 **Welcome: Technical Committee Co-Chairs**
 10:10 - 10:20 **Leadership Keynote Address: SEG Board**
 10:20 - 10:50 **Opening Speaker:** Ahmad Yuniarto, Pertamina Geothermal Energy

STREAM 1		Session Chair: Marino Baroek (Supreme Energy) and MS Iyer (Halliburton)	
10:50 – 11:10	25 Years of imaging the geothermal “clay cap” Progress and remaining challenges Greg Ussher, Jacobs	11:50 – 12:10	Magnetotellurics (MT) in Geothermal Exploration: Overview of Current Practice and Perspective within Indonesian Context Hendra Grandis, Institut Teknologi Bandung (ITB)
11:10 – 11:30	A critical view on the MT technology for geothermal exploration: Success story, pitfalls and lesson learned for future applications Yunus Daud, Universitas Indonesia	12:10 – 12:30	Magnetotellurics and Geothermal Systems: the Importance of Scale Jared Peacock, United States Geological Survey
11:30 – 11:50	Shared experienced of geophysical exploration in Indonesia Geothermal prospects (+/- 35 years experience) and application of conceptual model William Cumming, Cumming Geoscience		
12:30 – 13:00	Moderated Discussion	13:00 – 13:30	SPEED NETWORKING BREAK

DAY 2 : CURRENT PRACTICES & LATEST TECHNOLOGY

10:00- 10:20 **Opening Speaker:** CGG

STREAM 1		Session Chair: Awal Mandong (CGG) and Eugene Sunio (Philippine Geothermal Production Company, Inc.)	
10:20 – 10:40	Magnetotelluric Data and Resistivity Interpretation of Wayang Windu Geothermal Field, Indonesia Rifqa Wicaksono, Star Energy Geothermal	10:20 – 10:40	Tectonic of Minahasa District: An Update from Local Tompaso Geothermal Field Data Muhammad Ikhwan, Pertamina Geothermal Energy
10:40 – 11:00	Gravity Data Reveals the Structural Play of Geothermal System: Case Study of Muara Laboh Geothermal Field, Indonesia Irvan Ramadhan, Supreme Energy	10:40 – 11:00	Four-dimensional Seismic Tomography to Detect Temporal Velocity Changes within Geothermal Reservoir in Sumatra, Indonesia: A Preliminary Study Aditya Abdurrahman Juanda, Pertamina Geothermal Energy
11:00 – 11:20	Euler Deconvolution Application in Tompaso Geothermal Field Fadhilaz Digdaya Haq, Pertamina Geothermal Energy	11:00 – 11:20	Adjusted Mesh in Inverse Modelling of Timelapse Microgravity in Geothermal Area Mochamad Tofan Sastranegara, Pertamina Geothermal Energy
11:20 – 11:50	Moderated Discussion Streams 1 & 2	11:50 – 12:20	SPEED NETWORKING BREAK
		12:20 – 12:40	Keynote Speaker: Priyandaru Effendi, Indonesia Geothermal Association

DAY 3 : EMERGING TECHNOLOGIES & GEOPHYSICS FOR THE WIDER GEOTHERMAL CONTEXT

10:00- 10:20 **Opening Speaker:** Ken Riedel, Star Energy Geothermal

STREAM 1		Session Chair: Steven Sewell (Ormat) and Doddy Astra (Sarulla Operations Ltd.)	
10:20 – 10:40	The value of geophysical data for geothermal exploration: examples from empirical, field & synthetic data Whitney Trainor-Guitton, Zanskar Geothermal & Minerals, Inc.	10:20 – 10:40	Mapping subsurface heat with surface conductive heat flow sensors Graeme Beardsmore, University of Melbourne
10:40 – 11:00	Multi-channel data modelling scheme for imaging with uncertainty the clay cap, temperature distribution and heat output in high temperature geothermal field Alberto Ardid, University of Canterbury	10:40 – 11:00	Miniaturization of seismic equipment enabling better seismic for geothermal exploration Amine Ourabah, STRYDE
11:00 – 11:20	Unlocking geothermal reservoir seismic characterization with physics-guided deep neural networks Jean-Luc Formento, CGG	11:00 – 11:20	High Resolution 3D seismic image for geothermal by jointly designing acquisition and imaging Nicolas Salaun, CGG
11:20 – 11:50	Moderated Discussion Streams 1 & 2	11:50 – 12:10	SPEED NETWORKING BREAK

TUESDAY, 12 OCTOBER 2021

All sessions are in Gulf Standard Time

STREAM 2		Session Chair: Alison Kirkby (GNS Science) and Jonathan Lee Monasterial (Energy Development Corporation)	
13:30 – 13:50	Current practices in geophysics for geothermal resource exploration and monitoring Ted Bertrand, GNS Science	14:30 – 14:50	Geothermal Geophysics at the Sorik Marapi and Sokoria Fields, Indonesia Gabe Matson, Geologica Geothermal Group
13:50 – 14:10	Use of geophysics for exploration, development and operations in the high temperature Rotokawa, Ngatamariki and Kawerau geothermal fields of New Zealand Steven Sewell, Australis Geoscience Ltd	14:50 – 15:10	3D MT Characterization the Northern Part of Patuha Geothermal Field Arif Darmawan, PT Geo Dipa Energy
14:10 – 14:30	3D magnetotelluric inversion by finite-difference modeling including topography in Hakkoda geothermal area, northern Japan Toshi Uchida, Independant		
15:10 – 15:40	Moderated Discussion	15:40 – 16:10	SPEED NETWORKING BREAK

WEDNESDAY, 13 OCTOBER 2021

All sessions are in Gulf Standard Time

STREAM 3		Session Chair: Khairul Arifin Mohd Noh (Universiti Teknologi Petronas) and Amine Ourabah (Sryde Further)	
12:40 – 13:00	Time-lapse Precision Gravity for Reservoir Dry-out Monitoring in Darajat Geothermal Field, West Java. Reka Tanuwidjaja, Star Energy Geothermal	13:40 – 14:00	Diffraction Imaging using Microseismic Record Obtained by DAS Moeto Fujisawa, JGI Inc
13:00 – 13:20	Reservoir Base Redefinition using Improved Microseismic Events from Tomography Study at Salak Field, Indonesia Muhamad Wildan Perdana, Star Energy Geothermal		
13:20 – 13:40	3D joint inversion of geothermal geophysics; towards geologically-consistent results Wolfgang Soyer, CGG		
14:00 – 14:35	Moderated Discussion	14:35 – 15:05	SPEED NETWORKING BREAK

THURSDAY, 14 OCTOBER 2021

All sessions are in Gulf Standard Time

STREAM 3		Session Chair: Robert Hunn (Fortescue) and Marino Baroek (Supreme Energy)	
12:10 – 12:30	Integrated geophysical mapping of a fractured system for Geothermal exploration in a non-volcanic region: A case study in parts of the Peninsula Malaysia Mohd Hariiri Arifin, Universiti Kebangsaan Malaysia	13:10 – 13:30	Implementation of an Induced Seismicity Protocol for the United Downs Deep Geothermal Power Project, United Kingdom Andrew Jupe, Altcom Limited
12:30 – 12:50	Integrated geophysical exploration of low-enthalpy geothermal resources - with a focus on Thailand Helmut Duerrast, Prince of Songkla University	13:30 – 13:50	The use of satellite InSAR across Geothermal Complexes to monitor surface deformation indicative of fluid dynamics Amy Lloyd, CGG
12:50 – 13:10	Detection of geothermal system below Chotanagpur granitic gneissic complex using audio magnetotelluric method in the Bakreswar geothermal province, Eastern India. Rajib Kumar Sinharay, Maharashtra Institute of Technology		
13:50 – 14:25	Moderated Discussion	14:25 – 15:45	Breakout Session with Speakers 1-4