

MT Survey in Brazilian Basin

Strataimage, a geophysical consulting company specializing in MT and EM data acquisition, recently completed a multi-client MT project in the São Francisco basin in Brazil. This onshore, gas-prone basin is attracting increased interest from hydrocarbon companies.

The survey comprised acquisition, processing and interpretation of 50 stations along two profiles totaling 1,000km in length. Although part of the São Francisco basin is covered with limestone that can degrade seismic data, MT can easily “see” through the limestone cover.

The survey showed the potential of

MT for oil and gas exploration in this large (216,000 sq. km) and little-explored basin. Data quality was very good and results are consistent with known geology of the basin. As well, the survey identified important geological features including depth to basement, the overall structural framework of the basin, and sediment thickness. Further 2D inversion will be performed in order to produce an optimal resistivity-depth model that will be integrated with other available data.



Strataimage employees in the field with their Phoenix MT equipment during the São Francisco basin MT survey. From left, geophysics intern Igor Guaragna with geophysicists Aline Menezes and Diego Nunes

UNAM’s International Course

Fifteen geophysics students from Mexico, Costa Rica, Venezuela, France and Argentina took part in a short course in Mexico last July and August.

The Centro de Geociencias de UNAM (Universidad Nacional Autónoma de México) presented the four-week course covering acquisition, processing and interpretation of BBMT (broadband MT), TDEM and gravity data. Prof. Jorge Arzate of UNAM’s Querétaro campus supervised the course during which

Phoenix geophysicist Yann Avram gave a short training session.

UNAM’s recently increased pool of Phoenix BBMT and TDEM equipment was used for fieldwork in several locations, each with different geological conditions. For more information, contact Dr. Arzate at arzatej@geociencias.unam.mx

Standing at left, Dr. Jorge Arzate of CGEO of the National University of Mexico and kneeling, Randall Guevara, the Department of Geothermy, ICE, Costa Rica. The seven students are, left to right: Aubery Wissocq (geophysics student, University of Strasbourg, France); Jorge Pumar (BGR, Venezuela); Paul Milan (geophysics student, University of Strasbourg); Joselin Almaguer (graduate student, UNAM); Julie Muel, Fanny Piras and Jeanne Mercie, all geophysics students at the University of Strasbourg.



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Indonesia

Phoenix geophysicist Yann Avram spent three weeks in Indonesia in late 2012. He worked with employees of the Center for Geological Resources (CGR), a department of Indonesia’s Geological Agency. CGR’s Phoenix equipment was donated by JICA (Japan International Cooperation Agency). CGR received installation services, full training on hardware and software related to MT and TDEM, and instruction in geophysical theory. CGR’s Chief of Cooperation Subdivision, Edi Suhanto, wrote a very positive letter of appreciation for Yann’s training and EM workshops.

Yann also conducted acceptance and training with clients at the Center for Geological Survey (CGS), a government institution working on geological research. CGS uses their Phoenix instruments for basin or geothermal research, focusing on basin research in east Indonesia (frontier area).

MT-AMT data is combined with gravity or magnetic data to obtain a geological interpretation. MT-AMT is used in this frontier area for economic and technical reasons. First, MT costs much less than seismic. Second, the quality of seismic data is often poor because of scattering and reverberation caused by high-density limestone in the geological section. MT-AMT, on the other hand, can easily “see” through the dense limestone to provide superior data.



Employees of Phoenix client CGR and our agent, Phoenix Geosystem, Indonesia, give ‘thumbs up’ in approval of Phoenix Geophysics equipment and their trainer, Yann Avram.



From tropical weather in Indonesia to skating in downtown Toronto; CGS employees came to Canada last November for further training. Left to right, Bambang Sugiarto, Iwan S. Gumilar, Lucki Junursyah, N.M. Indragiri

PRESIDENT’S MESSAGE

Congratulations to Mits Yamashita, VP of Phoenix, on receiving a prestigious long-service award from SEGJ (Society of Exploration Geophysicists of Japan) in June.

In July, Phoenix employees raised \$5,966, again winning the “Top Team Fundraisers” award from the ORBIS foundation. Well done! Learn more about this charity at www.orbiscanada.ca

On June 30, the family of retired employee Tim Butt hosted a surprise 75th birthday celebration at the Falls View Restaurant, Niagara Falls. Tim was surprised but very pleased to see a group of Phoenix employees at his birthday lunch.

On August 3, Herb Harvey (one of the founders of McPhar Geophysics) celebrated his 90th birthday at his Toronto home. Phoenix presented Dr. Harvey with a Certificate of Appreciation. McPhar was the predecessor of Phoenix (see Issue #1 *The Phoenix*.)

~ **Leo Fox**



Herb Harvey holds his certificate of appreciation presented by Leo Fox.



Tim Butt, front center, with Phoenix colleagues; he is flanked by Annie Lu and Gerald Graham and backed by Lu Yi, Leo Fox and Mitsuru Yamashita.

COMING UP

- **March 3–6:** PDAC 2013, Toronto; please visit the Phoenix booth.
- **May 13–18:** An international field training school for Phoenix equipment will be held at Moscow State University’s field camp. Working languages are Russian and English.

Poland

In September 2012, Leo Fox and Yann Avram visited Geopartner in Krakow. The company had recently purchased a Phoenix MT system that will be used for a variety of applications in Poland and other countries. **Right:** Przemysław Kiszka of Geopartner and Yann Avram

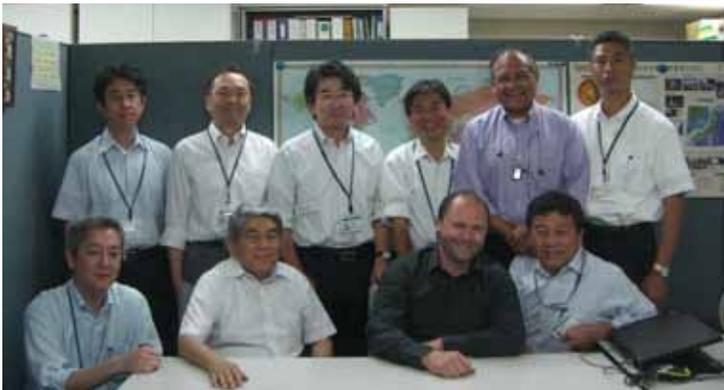


Japan

In June of 2012, Phoenix VPs and geophysicists Mitsuru Yamashita and Yann Avram visited Phoenix's clients in Japan, as well as the Hatchobaru and Ogiri geothermal plants. They also attended the SEGJ where Mr. Yamashita was honoured with an SEGJ long-service award, presented to him by SEGJ President and MT expert Dr. Toshi Uchida.

Right: Nittetsu Mining employees and Dr. Toshi Uchida, front left, who presented Mits' award.

Below: Mits Yamashita and Yann Avram visits with WestJEC staff in Fukuoka.



Colombia

Last fall, Carlos Guerrero visited the head office of ISAGEN in Medellin to conduct the acceptance of two V8-6R multifunctional receivers for MT-AMT. The systems will be used for geothermal exploration in the area of Macizo Volcánico del Ruiz, a volcano west of the capital city, Bogotá.

Costa Rica



Instituto Costarricense de Electricidad (ICE) increased their pool of Phoenix equipment with the purchase of two MTU-5A systems and a V8-6R/T-3 system. **Above:** shown during ICE's acceptance and training in March 2012 are Yann Avram, Guillermo Lezama (ICE) and Carlos Guerrero.



Alberta survey crew member Mischa O'Hoski with Phoenix geophysicists Alex Golyashov and Murat Urakov

Canada

■ **Alberta:** Phoenix carried out an MT survey near Peace River, Alberta, for the University of Alberta where Prof. Martyn Unsworth is leading a geothermal research project that is part of the Helmholtz-Alberta Initiative (HAI). Oil sands extraction and processing now uses natural gas as a heat source. The HAI is studying the possibility of using heat from engineered geothermal systems instead. See www.helmholtzalberta.ca

■ **Quebec:** Institut nationale de la recherche scientifique, a graduate and postgraduate research and training university, acquired Phoenix MT equipment for various studies including carbon dioxide sequestration projects.

ON THE ROAD

Kenya: In November, Tes Haile attended the 4th African Rift Geothermal Conference in Nairobi.

Right: left to right, Masresha Gebreselassie, Director General, Geological Survey of Ethiopia; Solomon Kebede, head of the Geothermal Directorate of the Geological Survey of Ethiopia; Sinknesh Ejigu, Minister of Mines of Ethiopia; Tes Haile of Phoenix



South Africa: Leo Fox and Tes Haile exhibited at the 19th Africa Oil Week 2012, Cape Town, October 29–November 02. They found time to visit Table Mountain, overlooking Cape Town on the northern end of the Cape Peninsula as well as the Cape of Good Hope on the southern tip.



Sudan: Tes Haile attended the 12th International Arab Conference on Mineral Resources and the affiliated technical exhibition in Khartoum in November. **Above:** left to right, Ayman Elkhabor, General Manager and CEO of Elkhabor Company; Tes Haile and Zuhair Mergani, General Manager, Wodakou for Import and Export (Phoenix's exclusive sales agent in Sudan)

Russia: The 10th annual international electroprospecting seminar took place in November at the St. Petersburg National Mineral Resources University. **Right:** Dr. Olex Ingerov from Phoenix gives a presentation about high-accuracy geological mapping using MT; **far right**, seminar participants listen to the University's anthem during opening ceremonies.



USA: Several Phoenix employees attended the SEG held in Las Vegas November 4–9.

Peru: In May, Carlos Guerrero attended the International Gold Symposium in Lima.

Brazil: Also in May 2012, Carlos took part in the ExpoSimexmin (V Brazilian Symposium on Mineral Exploration) in Ouro Preto, MG. Carlos returned to Brazil in late November to attend the V Simpósio Brasileiro de Geofísica in Salvador.



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