GeoNeurale

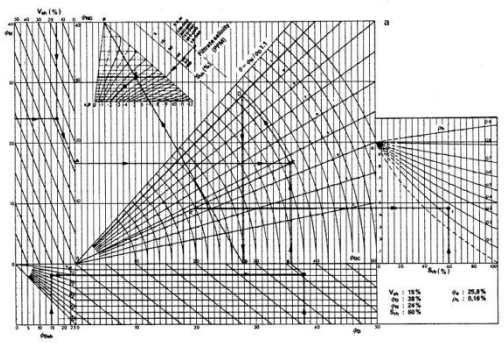
Announces

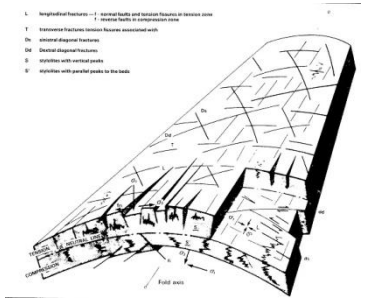
GEOLOGICAL PETROPHYSICS

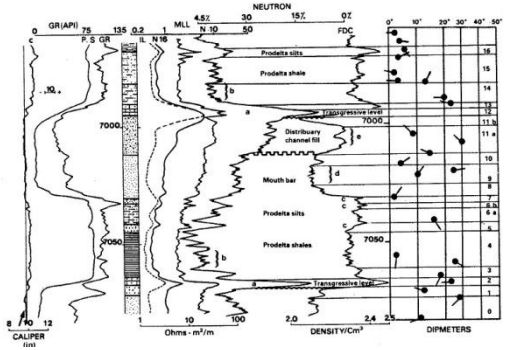
13-17 June 2016

Munich

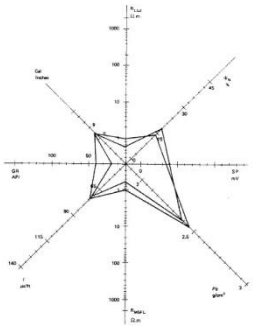
Instructor: Oberto Serra

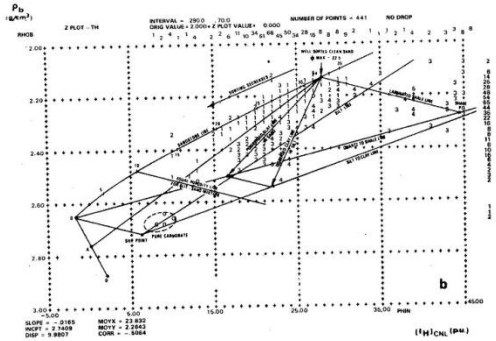


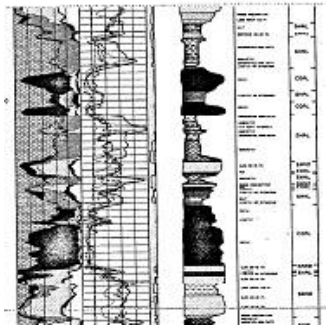


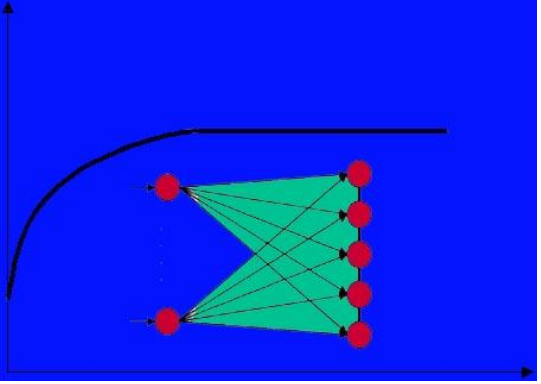


$$\rho_h = \frac{\theta - 1 + S_{rh}\left[A\left(\frac{\rho_{mf}(1-P)+0.2}{\rho_{mf}(1-P)}\right) + \frac{1.07\,\theta\,(1.11-0.15\,P)\rho_{mf}}{\rho_{ma}-\rho_{mf}}\right]}{S_{rh}\left[\frac{1.5\,A}{\rho_{mf}(1-P)} + \frac{1.23\,\theta}{\rho_{ma}-\rho_{mf}}\right]}$$









GeoNeurale

GEOLOGICAL PETROPHYSICS

MUNICH

at the

GATE – Munich Technical University Research Center

13-17 June 2016

5 DAYS COURSE

INSTRUCTOR: ***Oberto Serra***

LEVEL: Advanced / Specialized

AUDIENCE: Petrophysicists, Geologists, Geophysicist, Reservoir Engineers

COURSE FEES: 3750 Euro plus 19% VAT (Private companies outside Germany are also allowed to avoid VAT TAX)

ONLINE REGISTRATION: www.GeoNeurale.com **Registration deadline : 13 May 2016**

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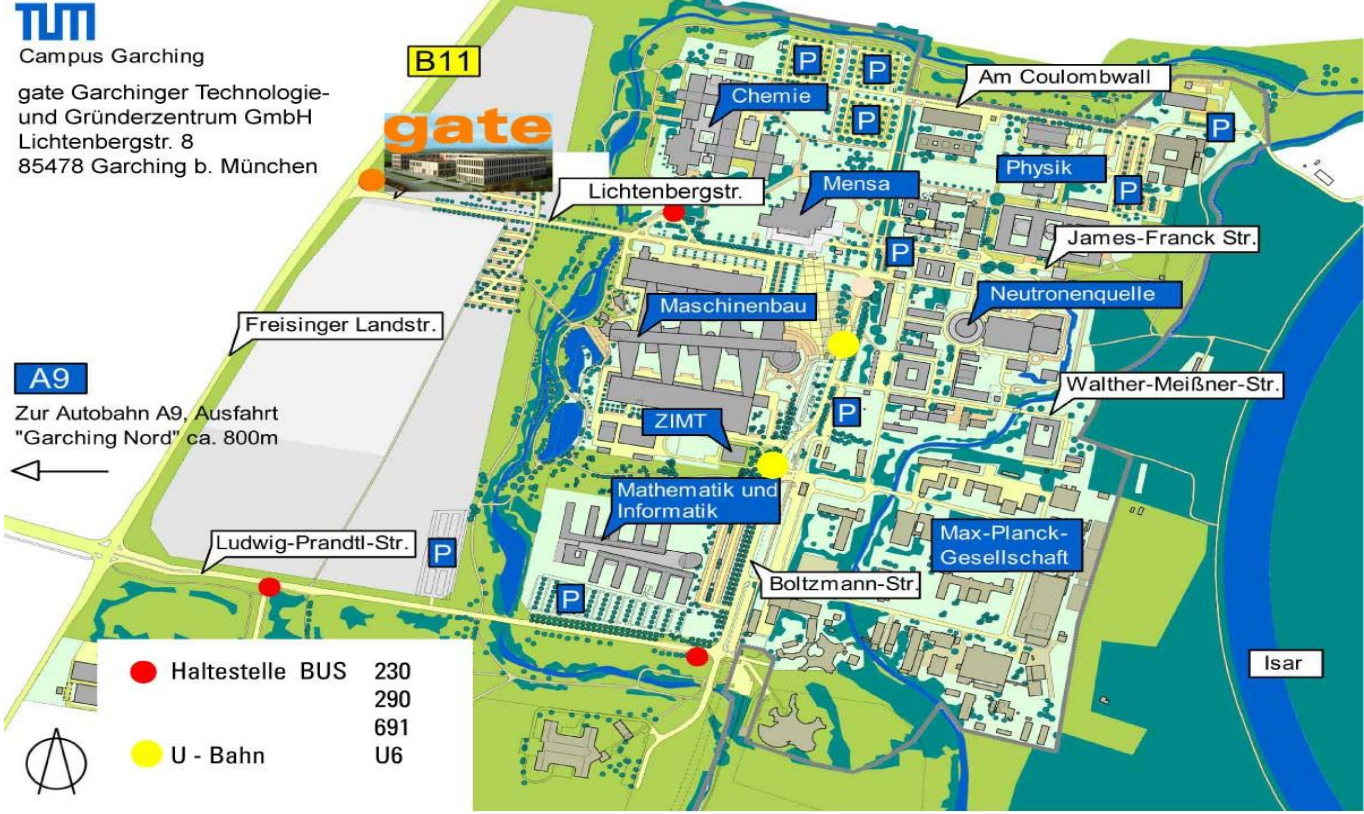
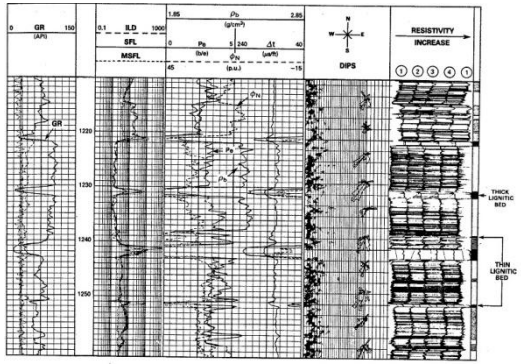
GeoNeurale

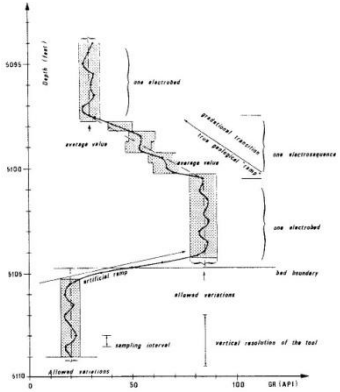
Training Location

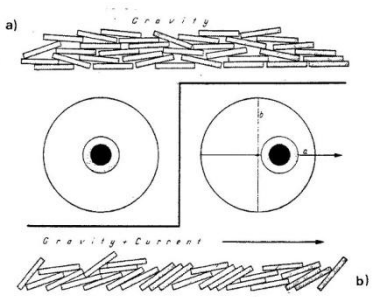


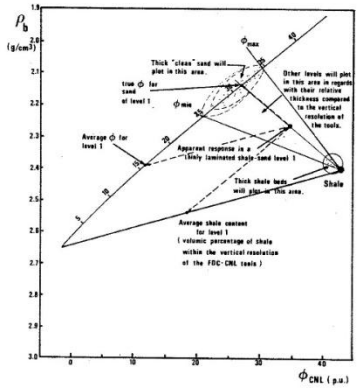
GOAL OF THE COURSE

•This 3 days seminar will start by preliminary remarks indicating that <u>any log measurement reflects the geological realities. Consequently any log interpretation is in fact a geological interpretation</u>. So, a minimum knowledge in geology is required in order to realize a reliable interpretation of log data and evaluation of the economic potential.
•Brief review of the required geological knowledge.
•Illustrate the methodology and the basic principle of the SERRA LOG approach.
•This approach consists to be the closest as possible to the geological reality.
•Describe the succession of depositional units, reservoirs and not-reservoir, their own characteristics (volume and properties, facies) which depend on the depositional environment, the transformations undergone due to diagenetic effects and compaction or tectonic stresses. To achieve these goals we have to extract, from all the available data the geological informations they provide with caution on the limitations of the different types of measurements and empirical equations.
•This is required to better evaluate the volumes, through the extent of the reservoir beds, and their economical potential.
•Application to clastic reservoirs analysis.
•Application to carbonate reservoirs analysis.









GEOLOGICAL PETROPHYSICS

Course outline

1. Day

Introduction to geological concepts and general algorithms and petrophysical concepts in the context of the oil exploration geosciences. Integration with other disciplines.

2. Day

Petrophysical Theory, Tool Physics.

3. Day

Chapter 1 - Preliminary remarks.

•Objectives and definition of Petrophysics.

•Importance of well logging methods to evaluate the economic potential of a reservoir (gas, oil, water...).

In consideration of:

The essential concept that <u>any log measurement fundamentally reflects the geological realities and in consequence any log interpretation is in fact a geological interpretation</u>.

•How the geological knowledge is required in order to finalize a reliable interpretation of log data and evaluation of their economic potential.

Chapter 2 - Petrophysical deliverables:

Presence of a reservoirs and evaluation of its economic potential.

Geological context of the area as additional information on the reservoir character.

Reference to the tool physics and physics of the measurements.

Reference to geological and petrophysical interactions and interdependency.

Chapter 3 - Physical principles of the logging measurements;

•Planning the log measurement´s suite during and after the drilling process.

•Review of the well logging tools, the principle of the measurements, their applications.

•Quality control:

- -the calibrations of the tools,
- -the comparison of the repeat section with the main log,
- -the sampling rate,
- -the depth matching of the different logging measurements;

•interpretation of the available logging data for identification of:

- -the location of reservoir rocks,
- -their economic potential (porosity, volume of fluid in place and productivity...).

4. Day

Chapter 4 - Determination of the geological properties of the drilled formations,
- taking into account all the informations available by the log analyst:
•applying scale-up and scale-down during interpretation,
•making a constant reference to the geologist´s study,
•making correlations with other wells present in the proximity,
•in that case, with additional spatial implementation of maps (isoliths, isopachs, isobaths, isoporosity…).

Chapter 5 - The further subdivision of the analyzed formation in :
•succession of beds and sequence,
•rock type, review of rock types (plutonic, volcanic, detrital, chemical...)
•depositional environments.

Chapter 6 – The recognition of the facies in each bed based on:
•its mineral composition by analysis of log data,
-the most abundant minerals, their properties, their elemental composition, their logging attributes, their occurrence, their recognition through cross-plots,
-the most abundant elements,
-cross-plot techniques, especially Z-plots, for the mineralogical and elemental composition from the available set of logs (GR, density, neutron, sonic, Pe, EPT, spectrometry of induced gamma ray...),
-determination of the shale characteristics and percentage, with special consideration of the shale percentage calculation methods;
•its texture, grain shape, grain size, grain sorting, grain packing, in consideration of the porosity level, possibly from image analysis;
•its internal structure essentially from image , dip or EPT data,
•its porosity measurements from “porosity tools”,
•its fluid’s content, essentially through resistivity measurement,
•the undergone diagenetic effects :
-compaction,
-mineral transformations;
•the undergone deformations (derived from dipmeter or image data analysis) :
-folds, repeat sections from the GR analysis,
-faults,
-fractures, stylolites,
-detection of erosional surface, unconformity, transgression.

5. Day

Chapter 7 - Description of the analytical method proposed as a function of the geological context.

- Requirements for logs deconvolution in order to recognize :
  - -the real thickness of each bed unit,
  - -the justification and illustration of the electrobed concept,
- Necessity to determine the properties of the surrounding beds,
- Evaluation of the porosity and fluid content of each porous electrobed recognized and check of the validity of the used equations,

permeability logs calculations and fundamental NMR measurements.

Chapter 8 – Illustration of this approach : analysis of detrital formations.

Chapter 9 – Analysis of carbonate formations.

Chapter 10 – Exotic formations: evaporites, plutonic rocks.

Chapter 11 – Seismic applications of well logs.

Chapter 12 – Further potential applications of well logs.

Biography

Born in Paris in 1930, Oberto Serra is graduated from the University of Paris with a doctorate degree in geology and also graduated as an engineer, specializing in geology, from the Ecole Nationale Supérieure du Pétrole et des Moteurs (Institut Français du Pétrole).
He began his geological career the 01 april 1958 with the ELF-Aquitaine group in the Sahara as a field and wellsite geologist. In 1960 he returned to France to perform synthesis work on Jura and the Paris Basin. In 1966 he joined the Well Logging Dept. of ELF-Aquitaine, becoming his head in 1969. The 01 april 1978 he joined Schlumberger in Paris, where he spent three years with the marketing group working on geological applications of open-hole and dipmeter logs. In august 1981, he was transferred to Singapore as manager of Interpretation Development in Geology. In October 1983 he was transferred back to Paris where he worked with the Interpretation Engineering group in Etudes et Productions Schlumberger. From April 1986 to July 1993, he was working with Services Techniques Schlumberger in the Interpretation and Development group in Montrouge, France, as chief geologist and expert in interpretation.
He retired from Schlumberger in July 1993 but stile consultant and professor. From 2000 to 2006 he was scientific advisor in SERRALOG Company.
He conducted more than 180 seminars in 45 countries.
He is the author, both in french and in english, of numerous papers and several books on the acquisition, application and interpretation of well logs, the last one having been published in June 2008. Most of his books have received very good critics from SPWLA, AAPG, SPE and SEG reviewers. He is the inventor of the electrobed, electrofacies and electrosequence terms and concepts (1969), and of the FACIOLOG program for which he has a patent. He has initiated and contributed to different interpretation's programs : LOGECO, PICARDIA and DENSON for ELF, LITHO, SYNDIP for Schlumberger, and SQWIZLOG for SERRALOG.
In 1973, he won the Marcel Roubault prize awarded by the Union Française des Géologues. In 1990, he won the Léon Bertrand prize awarded by Société Géologique de France. In 1993 he won the symposium best poster prize awarded by SPWLA. In 1995 he was international distinguished lecturer in Far East for SPWLA. He received in 2009 from SPWLA the Distinguished Technical Achievement award.

Registration Details

•Course fees: 3750 Euro + 19% VAT (Private companies outside Germany are also allowed to avoid VAT TAX)

•Registration deadline : 13 May 2016

Payment and Registration

Tuition fees are due and payable in Euro upon enrollment in the course by bank transfer to the bank account given below unless another payment form is agreed.

Unless otherwise agreed, the payment should be received before the date specified in the invoice as payment term to make the enrollment effective.

To register to the course please fill in the registration form and fax or email it along with the confirmation of your bank transfer to:

GeoNeurale

Administration

Am Nymphenbad 8

81245 Munich

T +49 89 8969 1118

F +49 89 8969 1117

ONLINE REGISTRATION: www.GeoNeurale.com

Please indicate your name and the purpose: “ Geological Petrophysics ".

Provisions

Tuition fees are due and payable in Euro upon enrollment in the course. Unless otherwise indicated, fees do not include student travel costs and living expenses.

Payments are also accepted via personal or company check, traveler's check, credit card, and Company Purchase Orders.

Cancellations by Participant:

All cancellation are subject to a 100 Euro non-refundable cancellation fee.

Cancellation have to be notified to our office, at least 30 days prior to the course start date to receive a refund (less the 100 Euro cancellation fee).

If the participants are unable to cancel prior to the 32 days notification date, they may substitute another person at their place in a course by notifying us prior to the course start date.

Course Cancellations:

GeoNeurale reserves the right to cancel the courses if necessary. The decision to cancel a course is made at least two weeks prior to the course start date. If a course is cancelled, the participant will receive a full reimbursement of the tuition fees (but not of the plane ticket or hotel expenses or any other costs), or will be enrolled in another course upon his decision (the cost of the original course will be applied to the cost of the replacement course).

GeoNeurale can not be responsible for any penalties incurred for cancellation or change of airline or hotel reservations .

Refunds:

GeoNeurale will promptly remit all refunds of tuition fees due to cancellations or annullment (less any appropriate non-refundable cancellation fee) within 30 days of the course cancellation.

Force Majeure:

GeoNeurale can not be responsible for cancellations due to “force majeure” events : airplane or airport strikes, emergency situations, natural catastrophes and all situations and incidents independent or outside the human control that can delay or cancel the course. In case of such events related cancellations the course tuition fees will be refunded to the client .

Geoneurale is not responsible for any delay or absence caused by the training instructor or training instructor company for reasons which are independent or out of the control of GeoNeurale´s decisions.

AGREEMENT: Upon enrollment all parts accept the above mentioned provisions. The above specified provisions shall regulate the agreement between GeoNeurale and the participant and the participant company and will enter into force upon enrollment.

REGISTRATION FORM

Please fill out this form and Fax to +49 89 8969 1117

or Email to Courses@GeoNeurale.com

GEOLOGICAL PETROPHYSICS

Munich, 13-17 June 2016

Course Fee: 3750 Euro plus 19% VAT (Private companies outside Germany are also allowed to avoid VAT) TAX

Name:

Company:

Address:

Job Title:

Phone:

Fax:

Email:

SIGNATURE: _____

www.GeoNeurale.com



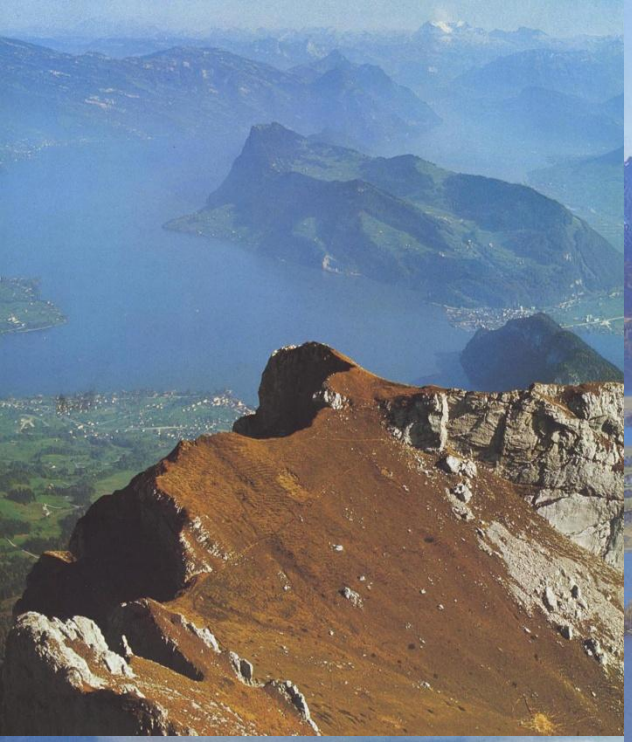
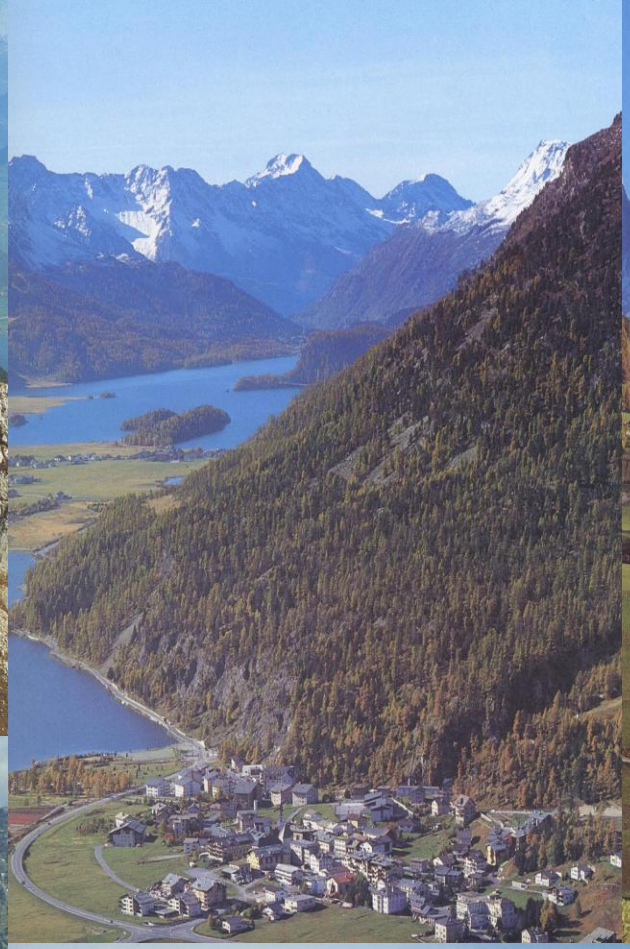




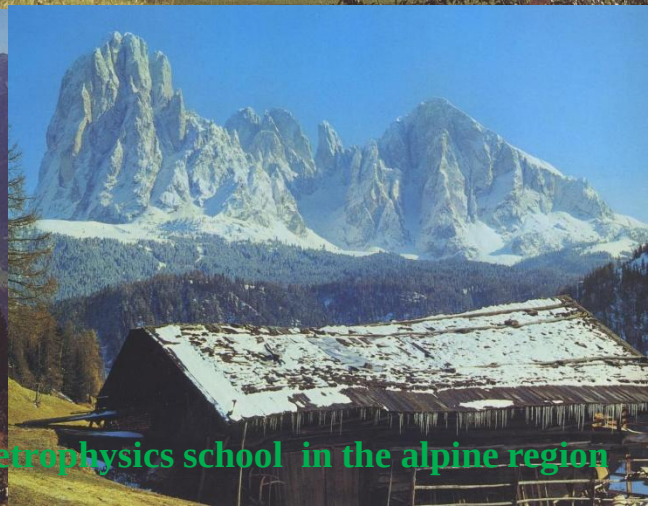


After the courses:

GeoNeurale organizes geological field trips on the Alps. Informations and registrations: courses@geoneurale.com





A Petrophysics school in the alpine region