KAZAN SUMMER SCHOOL 2016

UPPER PALAEOZOIC ENERGY RESOURCES OF EUROPEAN RUSSIA: SEDIMENTOLOGY, GEOCHEMISTRY, ORGANIC FACIES

The Late Paleozoic successions of Russia have a long history of study and are renowned for excellent outcrops that occur over a vast territory, a considerable variety of depositional types, and abundant fossils. This makes Russia one of the most famous and popular places for reservoir analysis, global and regional tectonic reconstructions, paleogeographical and biostratigraphic research, and Late Paleozoic paleontology.

The territory of the Republic of Tatarstan is a part of the East European (Russian) Platform. The crystalline basement of the platform is composed of Archean and Proterozoic rocks and located at a depth of 1500 to 2000 m and more. The sedimentary cover is composed of Devonian, Carboniferous, Permian, Jurassic, Cretaceous, Neogene, and Quaternary rocks. The uplifts of Devonian and Carboniferous rocks contain oil resources.

The Republic of Tatarstan is the oldest oil production region of the Russian Federation and a leader in bitumen reserve volume and in its scientific research and development. Sedimentary sequences of this region are of enormous economic interest for the future exploration and exploitation of hydrocarbon and mineral resources in Russia.

LOCATION Kazan Federal University, Kazan, Russia

DATE 25 July 2016 - 30 July 2016 (6 days)

CONTENT

Sedimentology of Carbonate Rocks (Giovanna Della Porta)

Introduction to carbonate sedimentology and diagenesis

A) Carbonate factories and carbonate depositional system geometry (examples from the recent, geological record and subsurface, Late Palaeozoic carbonate reservoirs)

B) Microbial carbonates in space and time

C) Non marine carbonates facies and geometry

D) Carbonate rock diagenesis and geochemistry (stable isotopes and trace elements)

Geology of the Volga-Ural Petroleum Province (Danis K. Nurgaliev, Nuriia G. Nurgalieva)

Presentation of main features of geology and hydrocarbon accumulations within the Volga-Ural Petroleum Province

A) General setting

B) Tectonics

C) Stratigraphy and Facies

D) Upper Paleozoic hydrocarbon accumulations

Platform Reservoir Rocks (Vladimir P. Morozov, Anton N. Kolchugin)

Analysis of core material (thin sections, X-ray diffraction (XRD), and Thermogravimetric (TG) data)

A) Permian clastic reservoir rocks (bitumen)

B) Lower Mississippian and Middle Pennsylvanian carbonate reservoir rocks (oil)

C) Devonian clastic reservoir rocks (oil)

D) Unconventional hydrocarbon resources (Upper Devonian source rocks of Volga-Ural region)

3D-modelling and GIS (Boris Platov, Andreas Brosig)

Introduction to Geological modelling, Reserve calculation, Reservoir simulation, and Seismic-stratigraphic analysis (examples from the Late Palaeozoic reservoirs of European Russia)

A) Geological modelling and Reserve calculation using Petrel & Techlog

B) Reservoir simulation using Eclipse E100-500 & tNavigator, CMG

C) Basin modelling using PetroMod (play elements and deposit formation simulation)

D) Seismo-stratigraphic analysis using Petrel

Applied Biostratigraphy of Continental Deposits (Joerg W. Schneider)

Introduction to Late Palaeozoic-earliest Mesozoic continental deposits and depositional environments in space and time (examples from different regions of the world in different climate settings compared to modern analogues) and the methodological tools applied to different settings and scales (outcrop, drilling core). Economic importance of continental deposits

A) Climatic governed distribution of Late Palaeozoic continental deposits in space and time

B) Principles of biostratigraphy

C) Inventory of methods for biostratigraphy of continental deposits and their application

D) Multidisciplinary stratigraphy and global nonmarine-marine correlation

Palynofacies and Palynostratigraphy of Continental and Marine Deposits (Annette E. Götz)

Introduction to organic facies, its application to reservoir characterization (conventional and unconventional plays) and identification and correlation of source and reservoir rocks using palynostratigraphy

A) Palynofacies of marine and continental settings

B) Palynofacies and sequence stratigraphy
C) Palynostratigraphy of Palaeozoic and Mesozoic reservoirs
D) High-resolution correlation techniques

Geochronology and Quantitative Biostratigraphy (Vladimir I. Davydov)
Introduction to methods, calibration, problems and further development of high-precision geochronology and quantitative biostratigraphy
A) Geochronology high-precision U-Pb method
B) Quantitative biostratigraphy methods: tools, limits, applications
C) Geochronology-biostratigraphy quantitative calibration of geological processes

Field trip to Permian continental deposits of the Volga-Kama area (Vladimir Silantiev, Andreas Brosig)
Monastery Ravine Section. Stratotype of the Urzhumian (= Wordian) and Limitotype of the Severodvinian (= Capitanian) Stage (one day bus trip along Volga River, 100 km South from Kazan city)
A) Sedimentological overview
B) Magnetostratigraphy: Kiaman-Illawara Reversal Boundary
C) Urzhumian–Severodvinian boundary, biostratigraphic and chemostratigraphic criteria
D) Cyclicity and paleosols

CREDITS

Participants get a Certificate of the Summer School course.
Students who would like to get credits should indicate on the registration form “credit points” and we will provide detailed information how 5 credits (according to the Russian System) or 7 credits (according to ECTS) can be awarded.

PRESENTERS

Prof. Danis K. Nurgaliev (Kazan Federal University, Russia)
Prof. Nuriia G. Nurgalieva (Kazan Federal University, Russia)
Dr. Giovanna Della Porta (Milan University, Italy)
Prof. Vladimir P. Morozov (Kazan Federal University, Russia)
Dr. Anton N. Kolchugin (Kazan Federal University, Russia)
Prof. Joerg W. Schneider (Technical University Bergakademie Freiberg, Germany)
Prof. Annette E. Götz (Keele University, United Kingdom)
MSc (University of Alberta) Boris V. Platov (Kazan Federal University, Russia)
MSc Andreas Brosig (Technical University Bergakademie Freiberg, Germany)
Prof. Vladimir I. Davydov (Boise State University and Florida International University)
Dr. Vladimir Silantiev (Kazan Federal University, Russia)

TARGET AUDIENCE

The course is designed for Master’s students and PhD students with a general interest in sedimentology, geochemistry and biostratigraphy of hydrocarbon resources, exemplified here by the Upper Paleozoic deposits of Volga-Kama Region.

SCHOOL’S AIM

The summer school aims to train students in the different methods of the investigation of sedimentary deposits mainly in marine and subordinately in continental settings which are vital for the exploration and exploitation of resources, ranging from hydrocarbons to geothermal energy. Exemplified by the geology and the energy resources of European Russia, i.e. sedimentology, geochemistry and biostratigraphy of Devonian, Carboniferous and Permian deposits of the Volga-Kama Region, the school’s content will provide the participants with a broad overview in each exploration tool.

MAXIMUM NUMBER OF PARTICIPANTS – 12

SCHOOL LAYOUT

Monday – Sedimentology of Carbonate Rocks & Geology of the Volga-Ural Petroleum Province
Tuesday – Sedimentology of Carbonate Rocks & Platform Reservoir Rocks (study of drilling cores)
Wednesday – 3D-modelling and GIS
Thursday – Applied Biostratigraphy of Continental Deposits & Palynofacies and Palynostratigraphy
Friday – Palynofacies and Palynostratigraphy & Geochronology and Quantitative Biostratigraphy
Saturday – Field trip to Permian continental deposits of the Volga-Kama area
Detailed Time Schedule will be announced on the Summer School website.

REGISTRATION FEE 475 € (including transfer from the airport, accommodation in the University Campus (Universiade 2013 Village), refreshments and unique national Tatar foods during session breaks (two times per day), field trip (including lunch package), Field Trip Guide book and training manuals, Certificate of Attendance). The fee can be paid in cash in Kazan.

DAILY ALLOWANCE 7-15 per day
TRAVELLING FROM UNIVERSITY CAMPUS TO KAZAN FEDERAL UNIVERSITY 2.0 € by taxi, 0.5 € by bus or underground

OBTAINING A VISA TO VISIT RUSSIA: Please check to see if your visit to Russia will require a visa:
http://www.visitrussia.org.uk/visaform/not-need
or
http://ru.vfsglobal.co.uk/

The process involves contacting the nearest Russian embassy.
We will send an official Invitation Letter issued by Kazan University to participants who need to apply for a visa. Please send us a request for a visa invitation after April 1, 2016.

TRAVEL
By air to Kazan via Moscow, St. Petersburg, Almaty, Bangkok, Dubai, Dushanbe, and Istanbul.
By train to Kazan via Moscow (12 hours) or St. Petersburg (14 hours).

CULTURAL PROGRAMME
Enjoy the flavor of Kazan which combines in incredible ways and organically two sources of life: extreme antiquity and extreme modernity, Asia and Europe, Islam and Orthodoxy, the Russian and Tatar cultures merging together, giving birth to a new, unexpected, interesting unity.
Visit of the Museum complex of Kazan Kremlin (with a guide), Museum of History of Kazan Federal University and Stuckenberg Geology Museum. Excursions will be free.

THE DEADLINE FOR REGISTRATION IS 1ST MAY 2016
Please visit www.kpfu.ru\Geo\GeoKazan2016
for further details and registration information

Contact us

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