Report on research visit of Prof.Tapas Kumar Chatterjee

[University of Missouri –University of the Western Cape- Academic Exchange Program 2017]

I would like to express my sincere gratitude to the UM-UWC exchange program for making it possible for me to visit the Missouri University of Science and Technology (Rolla), US during 08 August to 07 September, 2017.The main objectives of my visit were to start collaborative work with Prof. Francisca E. Oboh-Ikuenobe (my host at Missouri S&T University, Rolla Campus) on a research project topic entitled "*Reservoir Scale Biostratigraphic Study in the Orange Basin, Offshore, South Africa*".

The project's aims are to:

- Define and identify individual mudstone layers in selected areas of the Orange Basin, South Africa to provide a higher order of constraint on electrical logs and seismic interpretation;
- Plot facies changes in space and time, and study their lateral/vertical heterogeneity; and
- Compartmentalize the reservoir in order to check the continuity of facies and exploration potential.

Prof. Oboh-Ikuenobe carefully prepared for my visit, including my stay in the Thomas Jefferson Hall close to McNutt Hall, which houses the Department of Geosciences and Geological and Petroleum Engineering. I arrived there midnight on 8 August and started discussions mainly on the technical aspects of our project from 9 August.

The project work is mainly based on oil well samples from the Orange Basin, Western Offshore of South Africa. I collected the conventional core samples from the Petroleum Agency of South Africa (PASA) in Cape Town during in the month of July, 2017 and travelled with 50% of each samples to Missouri S&T for palynological studies.

All the 37 conventional core samples from 4 wells in the Orange Basin were processed in the Biostratigraphy laboratory at Missouri S&T. Two PhD students and one postdoctoral scholar in Prof. Oboh-Ikuenobe's research group in understanding the processing techniques for palynological studies. This facility is not available at present in the Earth Science Department at UWC and I am interested in learning the important steps of processing of samples. This will benefit our UWC postgraduate students in the future.

In the integrated study, 50% of the core samples will be studied at Missouri S&T. The foraminiferal biostratigraphic study of the remaining part of the core and additional well cuttings will be carried out at UWC by me. It will take a few months for laboratory analysis and integration before finalization of the report. In future, I would like to involve MSc. and PhD students from both institutions (UWC and Missouri S&T). This type of exchange program is very helpful for petroleum exploration related research project especially using integrated approach (involving micropaleontology and palynology integrated with sedimentology and electrical logs), and their application in South African sedimentary basins is relatively new.

I did not have any difficulty with travel to Rolla. Administrative staffs of both the universities were very helpful. I did not experience any problem during travel except long layoff hours in Chicago and Frankfurt airports.

This project is the first collaborative project of the Applied Geology Unit of the Earth Sciences Department at UWC with Missouri S&T. The exchange program has provided an opportunity to interact with Prof. Oboh-Ikuenobe and other academic members at Missouri S&T. Such exchange programs are very useful for long-term projects involving South African petroleum prospects. After successful completion of the project we plan to work together again on other sedimentary basins of South Africa in the following year. Given an opportunity I would like to participate in this exchange project again.

I would like to encourage my other colleagues at UWC to collaborate with the other groups of researchers at Missouri S&T. This would help to improve the quality of research at UWC.

In general my research visit to Missouri S&T (Rolla) was scientifically beneficial as this will help me in understanding some critical aspects of South African sedimentary basins. We have to work for the next few months to get all our research data from laboratory analysis before finalizing the report.

I would like to than my host Prof.Francisca E. Oboh-Ikuenobe for making all the arrangements for my visit and for the many useful discussions that involved her research group. I am also thankful to Prof. Rodney Uphoff, Prof. R.Bharuthram and the UM-UWC staff for facilitating my visit to Rolla.

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