The search for petroleum; the role of Petrobras and the teaching of Geology in Brazil

Ricardo Latgé Milward de Azevedo & Gerson José Salamoni Terra

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The Pre-Salt sequence – the new challenge for Petrobras and Brazil

In 1953, when Petrobras was incorporated, not even the most optimistic visionary could have forecast that the petroleum exploration history in Brazil would contain chapters so emotional and, fortunately, so successful. Certainly, the principal chapter would be the confirmation of the presence of an extensive layer of permo-porous rock bearing oil and natural gas, designated Pre-Salt and announced to Brazil by the President of the Republic in November 2007. Despite being an ambiguous term, having generic character and indicating something before the existence of salt, the Pre-Salt in Petroleum Geology in Brazil is from a unit of oil bearing rock of limestone composition linked to microbial actions (microbiolites), positioned under a thick layer of salt and located in the peripheral portion of the Santos and Campos basins (fig. 15).

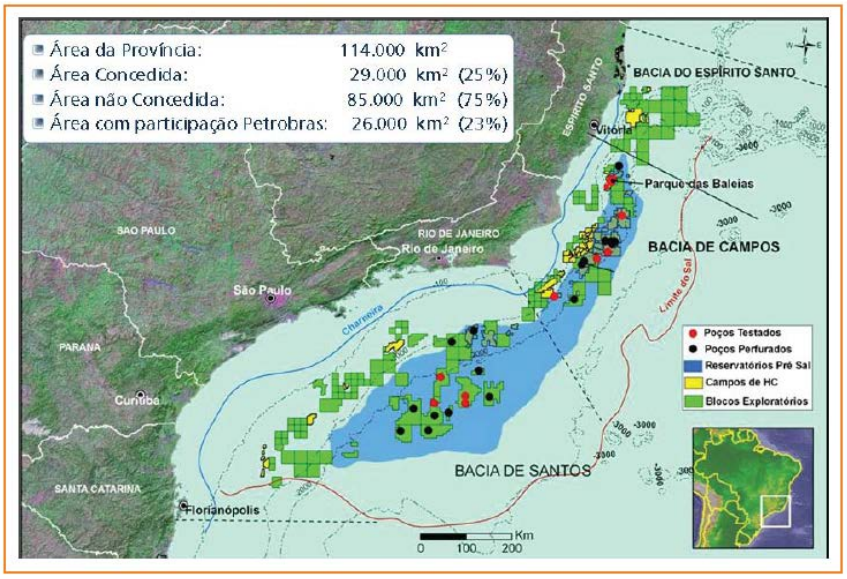

Figure 15
Distribution inferred for the microbialites of the Pre-Salt (Petrobras/E&P-CORP).

Subjacent to them are the source rocks, shales rich in organic materials accumulated in the lacustrine phase. Those sediments are the result of the evolving process of Brazilian southeast and east basin formation, due to the South America-Africa breakup. The thick layer of salt functions as a seal. In this case, there is an ideal example of an accumulation of oil and natural gas, with direct contact between the source rock and the reservoir, which is covered by salt, one of the most efficient seals. Despite the short time since the confirmation of the large volumes of oil and natural gas in the Pre-Salt layer, Petrobras has undertaken a series of actions with a view to obtaining information leading to early production in the shortest possible time. In this case, it

sought to follow the highly successful experience of the Campos Basin, where, through actions of synergy involving several areas of competence, the company quickly managed to adapt technologies and arrange the logistics, in addition to critical resources, to place the fields discovered in production. At the moment, the planning for the development of the present discoveries in the Pre-Salt layer foresees a first phase destined to the gathering of dynamic information through extended well tests in Jubarte, in the Espírito Santo portion of the Campos Basin, and in Tupi in the Santos Basin, in addition to implanting a pilot project in Tupi. The second phase to be undertaken is the development of the Pre-Salt cluster in the Santos Basin, with emphasis not only on Tupi, but also on the other accumulations discovered, which will be operating by 2017. Both from the industrial technology and financial points of view, Petrobras has all the conditions to explore for and produce oil and natural gas from the Pre-Salt cluster for a long time, with the exploitation scheduled progressively from the different fields that comprise it. The scale gain enables the planning of full exploitation of these reserves, integrating a wide-ranging network of Brazilian equipment suppliers and service providers, using technologies developed for this purpose, and effectively transforming this wealth into a series of benefits for Brazilian society that will, be prolonged over several generations. One other highly relevant aspect is in the opportunity that the Pre-Salt layer offers in terms of advances in research and development, by generating knowledge and expanding technology programs, in synergy with universities and national and foreign research institutions. The challenges to provide new solutions for units, systems and production centers with materials and equipment conceived for the exceptional circumstances of producing oil and gas around 300 kilometers off the coast, and in water depths of over 2,000 m, allow negotiations to develop technologies and integrate them into the industrial chains installed in Brazil. With this, the role of the engineering companies is expanded and the possibility of the Pre-Salt layer becoming a multiplier of employment opportunities is increased, with the formation of a specialized workforce. Finally, but not least important, it is appropriate to confirm that the discovery and the debate reached by the Pre-Salt layer in society offer the opportunity to broaden the sections of the Brazilian population to understand what energy independence represents for the sovereignty of the people. The confirmation of a very low exploration risk in the Pre-Salt layer has placed, as the order of the day, the change in the regulatory framework for the petroleum sector, including the discussion about the property of the oil petroleum produced. After all, every study on the perspectives of the energy matrix shows that fossil fuels will maintain dominance in the scenario for the coming decades. Brazil is in a priviledged situation, having a diversified energy matrix, relatively clean, practically autoctone, and having the potential to incorporate or increase the participation of other less pollutant sources. Thus, admitting that petroleum continues to have exceptional importance in the world energy scenario, the discovery of the Pre-Salt layer opens up great opportunities for industrial, technological and scientific development, so as to ensure the right to a dignified life for all Brazilians.

Universidade Federal do Pará – Instituto de Geociências

Programa de Pós-graduação em Geologia e Geoquímica

Prova de Conhecimento de Língua Inglesa (18/01/16)

Nome do(a) candidato(a) .....

Com base no texto em anexo, responda as seguintes questões:

1) (1,5 pt.) O que é o Pré-Sal na Geologia do Petróleo do Brasil?

2) (1,5 pt.) O que prevê, no momento, o planejamento para o desenvolvimento das atuais descobertas do Pré-Sal?

3) (1,5 pt.) Que aspecto altamente relevante o Pré-Sal oferece em termos de pesquisa e desenvolvimento?

4) (1,5 pt.) Quais são as rochas geradoras de petróleo do Pré-Sal e a que fase de evolução da bacia estão relacionadas?

Marque falso (F) ou verdadeiro (V) nas sentenças abaixo de acordo com o texto (0,5 pto. cada):

5) Nem o mais visionário e otimista brasileiro, em 1953, quando da fundação da Petrobras, poderia prever

que a história da exploração de petróleo no Brasil teria capítulos tão emocionantes e tão mal-sucedidos ( ).

6) Apesar do pouco tempo passado desde a confirmação dos grandes volumes de óleo e gás natural no Pré-Sal, a Petrobras empreendeu uma série de ações com vista a obter informações que levem à antecipação da produção no menor prazo possível ( ).

7) Assim, admitindo que o petróleo continue tendo excepcional importância no cenário energético mundial, a descoberta do Pré-Sal abre grandes oportunidades para o desenvolvimento industrial, tecnológico e científico, de forma assegurar o direito a uma vida digna para todos os brasileiros ( ).

8) Tanto do ponto de vista tecnológico-industrial como financeiro, a Petrobras não tem condição de levar a bom termo a exploração e produção do óleo e gás natural do Pré-Sal, pautado numa progressividade do aproveitamento dos diferentes campos que o compõem ( ).

9) (2,0 ptos.) Traduza o texto abaixo:

After all, every study on the perspectives of the energy matrix shows that fossil fuels will maintain dominance in the scenario for the coming decades. Brazil is in a priviledged situation, having a diversified energy matrix, relatively clean, practically autoctone, and having the potential to incorporate or increase the participation of other less pollutant sources. Thus, admitting that petroleum continues to have exceptional importance in the world energy scenario, the discovery of the Pre-Salt layer opens up great opportunities for industrial, technological and scientific development, so as to ensure the right to a dignified life for all Brazilians.