# Minutes of meeting

**2nd Meeting of WOC 1 in the Triennium 2012-2015**

Rio de Janeiro, 18-21 February 2013

# Attendance

The second meeting of WOC 1 in the current IGU triennium took place at the Windsor Atlantica Hotel in Rio de Janeiro, 18-21 February 2015, as a joint reunion with PGC A.

A total of 48 IGU delegates were present, of which 22 from WOC 1, 24 from PGC A, one from WOC 3 and one from the Coordination Committee. In addition to that, 17 external speakers and 11 guests were invited to participate, totaling 76 attendees from 19 countries (Table 1).

Table 1. Attendees from WOC 1.



It was an all time record for a WOC 1 meeting, and it was also one the largest IGU meetings ever held in Brazil.

# Brazilian gas sustainability panel

After the welcome words of the Chairmen of WOC 1 and PGC A, the meeting started with a series of small presentations performed by selected representatives of the Brazilian gas industry.

The most important producer is Petrobras, whose Chief Gas and Energy Officer, Mr. **Alcides Santoro**, presented his expectations towards the local market. Domestic production has nearly doubled to 70 million m3/d in the last 10 years, and the local reserves experienced a similar increase to 460 BCM. Meanwhile, LNG imports have also grown substantially, and an internal production programme was recently launched to explore and exploit in the Brazilian onshore, entitled PRON-GAS. Petrobras is willing to investment nearly US$ 13 billion in its gas businesses over the next five years, mostly for the production of power and fertilizers.

The charter member of the IGU in Brazil is the Brazilian Association of Local Distribution Companies (Abegas), whose CEO, Mr. **Luis Domenech**, is also a member of the Executive Committee of the IGU and regional coordinator for the Americas. He defended regional integration as a means to expand the use of gas, reduce costs and promote economic and social development in the region. Abegas is also interested in increasing the transparency throughout the gas chain, and expects the Brazilian demand to reach more than 200 million m3/d by 2020.

The Brazilian Petroleum, Gas and Biofuels Institute (IBP) was represented by its secretary, Mr. **Milton Costa Filho**. He explored the potential of the oil and gas industry in Brazil, where an annual production of 50 million bpd of oil and gas could be reached by 2020. His organization is one of the most influential in the country, with more than 220 members and an active participation in the formulation of local policies for oil and gas.

Ms. **Cynthia Silveira** of Total is also a member of the Executive Committee of the IGU. She gave the participants a good insight into the most important uncertainties and challenges faced by the Brazilian gas industry. One of the difficulties lies in the strong volatility of the demand, as the rains ultimately dictate the power to be produced from gas (in Brazil most of the electricity comes from hydropower facilities).

Mr. **Marco Tavares** (Gas Energy) briefly explored some new paradigms affecting the local industry, including the production in the pre-salt, and the unconventional gas potential available in the country. An excess of 30 TCM could be produced from onshore basins, according to estimates performed by the National Petroleum Agency (ANP) and market sources. Large uncertainties subsist, however, as drilling activity is still incipient in most of the areas.

The Brazilian Ministry of Mines and Energy (MME) was represented by its deputy director for natural gas, Mr. **Aldo Cores Jr**. After a dark period of almost five years, three bidding rounds are now scheduled for 2013. The first one will take place in May (11th Bidding Round), and the last one in December for unconventional gas.

The Manager of the Glogal Gas Flaring Reduction (GGFR) programme of the World Bank, Mr. **Bent Svensson**, explained the purposes and main achievements of this important public-private partnership, which is now entering in its fourth stage. This initiative is closely related to the work programme of both WOC 1 and PGC A, as its main goal is to reduce gas flaring by increasing the efficiency of the productive processes. Increased energy supply and monetization follow as a consequence.

Mr. **Denis Krambeck Dinelli**, Gas Production Planning Manager, presented the POAG 2015 programme of Petrobras, which increased gas utilization from about 84% in 1997 to 94% in 2012, in spite of a substantial increase in production. He estimated that more than 16 million tons of CO2 emissions have been avoided in the last three years, which is equivalent to 3 million light passenger cars being removed from the Brazilian fleet (about 15%).

The CEO of the Brazilian Wind Energy Association (ABEE), Ms. **Elbia Melo**, announced that in 2013 the Brazilian capacity will be the 10th largest in the world. In spite of the sharp capacity increase observed in the last few years, the potential that remains unexplored is huge, so there is much to be done.

# R&D workshop

Committee members visited the new R&D facilities of Petrobras, where they had the opportunity to watch a 3D presentation on the submarine facilities and platforms of the Campos Basin at the Visualization and Collaboration Nucleus (NVC).

They also attended a small R&D workshop there, whose content was designed to contribute to the work programme of WOC 1 and PGC A.

This event started with a presentation from Mr. **Orlando Jose Soares Ribeiro**, General Manager for Production Engineering R&D at Petrobras. He briefly described some of the innovations introduced by his company and its partners to produce in the Brazilian pre-salt.

Mr. **Francesco Palombo**, Downstream Research Coordinator at Petrobras, introduced the attendance to the production of second generation bioethanol from sugar cane bagasse. Petrobras and Blue Sugars have shared research efforts in a demonstration facility located in the USA, where cellulosic materials have been converted to sugars by enzymes. The process can increase the production of ethanol by 40%.

Ms. **Ana Paula Fonseca**, Coordinator for Gas, Energy and Sustainability at Petrobras, explained how Petrobras and its partners have developed compact GTL technologies to reduce gas flaring and add value to the offshore operations of Petrobras.

Mr. **Breno Pietracci** (Universita Ca'Foscari di Venezia) presented the results of his research on the location and capacity of biofuel mills in Brazil. In the case of biodiesel, abundant soybean supply and proximity to crushing mills are some of the most important variables.

The production of biodiesel and biofuel for aviation was the subject of the presentation performed by Prof. **Donato Aranda** (Federal University of Rio de Janeiro), who explored the environmental and social benefits brought about by these biofuels.

The workshop concluded with a presentation of the National Organisation of the Petroleum Industry (ONIP), performed by its superintendent, Mr. **Luis Mendonca**. A debate is taking place right now in Brazil, where a mandate on local content is considered by some as an important tool to create jobs, while others think that it could delay the development of the oil and gas industry in the country.

# News from the Coordination Committee

The Secretary of the Coordination Committee of the IGU, Mr. **Yves Tournie**, graciously attended the meeting to provide guidance and support to the activities performed by WOC 1 and PGC A.

Membership is growing fast in all committees and task forces, but new nominations are still welcome to reinforce the expertise of all study groups. The Russian Federation, France an Iran are the countries with the largest number of nominations.

He encouraged the committee members to submit articles to the IGU Magazine, and to use the information technology resources available in the internet to share ideas and exchange knowledge.

# WOC 1 sessions

Mr. Denis Krambeck Dinelli, Chairman, announced that WOC 1 has now 65 members of 24 countries, and that meeting attendance has also increased. He thanked the attendees for this result, and briefly presented the terms of reference consolidated in Sapporo for the three study groups that now compose the committee. The creation of a third study group in WOC 1 for Gas Rent and Mineral Property Rights was approved by the Coordination Committee in its last meeting in October 2012, Ottawa.

WOC 1 is expected to organize five or six oral panels in the next WGC, i.e., two or three committee sessions, one or two expert forums, and one strategic panel with PGC A on unconventional gas. Other possibilities include a strategic panel or expert forum on gas flaring reduction, to be hosted with the World Bank, and an expert forum on gas rent, to be hosted with the World Bank as well.

Committee sessions are panels in which the members of WOC 1 present their triennial production, while contributions selected from the call for papers usually constitute an expert forum. Strategic panels, on the other hand, are formed by invited speakers. In the next meeting the composition and themes for all of these sessions, forums and panels will be defined.

Members were encouraged to submit articles to the IGU Magazine, and to start writing up their contributions to the triennial report. For that purpose, provisional templates have been uploaded in the WOC 1 collaborative environment located at <https://quickri.petrobras.com.br/intergu>.

## Study group 1.1 (E&P technology)

 The meeting started with a recap from the leader, Mr **Adif Zulkifli** (Petronas), on the approach proposed and his expectations.

As a case study of how gas and condensate can be produced in extreme conditions, requiring state-of-the-art technology, Ms. **Ekaterina Litvinova** of Gazprom presented on the Zapolyarnoye field in northern Russia. Although discovered in 1965, Zapolyarnoye was not able to be developed until recently; the remoteness and harsh conditions in the area required specialized technology which was not available until now. With the advent of this technology, the giant field is now able to be monetized, bringing in one of the largest productivities in Russia (130 billion cubic meters per year). Other fields in the area are expected to be developed next.

Mr. **Mariano Garcia** of Halliburton was invited to contribute to the triennial work programme of this study group. His presentation explored a number of technologies that are relevant to the production of shale and tight gas, including pin point completions, which allows for perforations to be made at precise points in the reservoirs that need to be fractured, microseismic, management of clay sensitivity (to ensure that no clay swelling causes clogging of fractures or pores), news methods for water management in unconventional fields and improvements in equipment for reservoir stimulation.

Mr. **Yassine Mestiri** of ETAP highlighted the possibility of using renewable energy to fuel gas fields, saving up on gas that is traditionally used for this purpose. A discussion ensued on how stranded gas could be developed, and one of the solutions would be related to the development of mini-LPG plants on skids, to be used on small gas fields. These can be moved elsewhere once the gas is depleted, spreading the cost of development over many fields.

 Further technologies to explore, develop and produce gas will be suggested by members from Petrochina, PTTEP, and KOGAS. Discussion is expected to continue by email, and the list of technologies to be showcased will be finalized before the next meeting.

## Study group 1.2 (assessment of reserves and resources)

Mr. **Said Chelbeb** (Sonatrach) presented an analysis of shale gas reserves and resources, around the world and in Algeria. Some definitions are problematic, so it is important to exert some care when reading and comparing data from different sources.

Dr. **Mohammed Kaced** (Sonatrach) defined the structure of the triennial report with the other members of this study group. It will have basically four sections, exploring (1) the global potencial for convencional gas, (2) for unconventional gas, (3) a gas flaring assessment and (4) an analysis of E&P trends, new frontiers and exploratory areas. These will be led by Mr. Fernando Bado, Mr. Mohammed Kaced, Mr. Bent Svensson and Mr. Denis Krambeck Dinelli, respectively.

For the next meeting in Malaysia the group will refine the structure of their report with analyses of the different methods available to estimate reserves and resources, and will decide on the best data to be outsourced.

## Study group 1.3 (gas rent and mineral property rights)

Dr. **Marcos de Freitas Sugaya**, study group leader, reminded the proposal presented in Sapporo, which was accepted by the Coordination Committee of the IGU in their last meeting in Ottawa, October 2012, resulting in the creation of this new study group in WOC 1.

The meeting started with a presentation on the granting of documents for upstream contracts, performed by Mr. **Adauto Carneiro Pereira** of Petrobras. Governments and companies have different goals, which must be reconciled, and this is not an easy task. In addition to the more usual division of production sharing, concession and service contracts, he briefly described the Iranian buy-back system and the transfer of rights system recently introduced in Brazil for Petrobras. He disagrees with Daniel Johnston, who sees a tendency of growth in the use of production sharing contracts.

 The Brazilian fiscal instruments for oil and gas were explored by Mr. **Demetrius Casteloes Abdala** of Petrobras. In addition to the direct taxation of income and profits, a number of indirect taxes are levied on goods and services, which produce and important impact on the capex and opex costs. To compensate for that, a special regime was developed to facilitate the entrance of equipment for the exploration and production of gas in the country, entitled Repetro.

Prof. **Edmar de Almeida** (Federal University of Rio de Janeiro) compared the fiscal systems adopted by a number of countries in Latin America for the exploration and production of oil and gas. Over the last years, a number of countries moved from concession to service contracts, and in a few cases the fiscal terms for the production of natural gas are worse than for oil. Another important challenge to be faced by the gas industry is the control of domestic prices, which affects production and investment in upstream activities.

Dr. **Ik Hyun Park** (Kogas) analysed the fiscal regimes of Mozambique, Tanzania and Kenya, aiming at the production of deep water gas. Tanzania has just released its first natural gas policy draft in November, with guidelines for public-private partnerships and security of supply provisions to the domestic market, which is still incipient. Kenya has been using production sharing contracts since 1982, but conditions are more attractive in Mozambique, where even smaller reservoirs can be exploited at higher rates of return.

Dr. **Marcos de Freitas Sugaya** (Petrobras) prepared a presentation on the Angolan production sharing regime for deep waters, which is relatively complex, but very stable. He used the same case study presented in Sapporo for Norway and the United Kingdom, which was developed by Mr. **Decio Barbosa**.

Mr. **Pawel Jagosiak** (PGNiG) could not attend this meeting, but graciously prepared an analysis of the fiscal regimes applicable to the Norwegian Continental Shelf, to be shared among the WOC 1 members.

Most of the IGU members are unaware of the creation of this study group, so a letter will be dispatched to announce its purposes and content, encouraging the nomination of delegates. A small questionnaire will be attached to investigate their vision and interests concerning bidding processes and fiscal instruments for the production of oil and gas (Table 2).

Table 2. Questionnaire to IGU charter and associated members.



# Technical visit

Delegates visited the Guanabara Bay LNG Terminal, where they boarded the FSRU Exquisite to be lectured at the bridge, machines and regasification control room. The facility can regasify 20 million m3/d, which is enough to produce 3.7 GW of electric power. This is about one third of the average production in Itaipu, the largest facility in the country. In 2009 Itaipu and Three Gorges produced 91.6 TWh and 79.4 TWh of hydropower, respectively. The organisers would like to thank Excelerate Energy and the crew commandaded by Captain Jean Pol Jacques Marie Ghislain for their warm welcome to the IGU delegates attending this meeting.

# Next meetings

The next meeting of WOC 1 will take place at the **Shangri-La Tanjung Aru Resort, Kota Kinabalu, 3-6 September 2013**, once again with PGC A. The composition and themes for the the next WGC panels entitled to WOC 1 will be debated there, in the presence of the former President and Chairman of the Coordination Committee of the IGU, Dr. Rahim Hashim and Mr. Ho Sook Wah, respectively, whose words of advise to both committees are most expected. For additional information please refer to the presentation performed by the incoming secretary of WOC 1, Mr. Nazri Malek, which is available at <http://www.igu.org/committees-12-15/working-committees-woc/woc-1/meetings/rio-de-janeiro-2013>.

The practice of joint committee meetings with PGC A has been useful to provide the attendance with higher standards of content and organisation, but for the second last meeting in the current triennium WOC 1 is expected to be on its own. It will be one the most important meetings of the triennium, as the contributions that will actually compose the WOC 1 sessions in the WGC will be selected, and the final draft of the triennial report will be completed. Because the call for papers will close only on the 1st of September 2014, this meeting was postponed to 23-26 September 2014.