



September. The meeting also included a technical visit to KeySpan's LNG storage facility.

Good progress is being made by all three Study Groups against their terms of reference:

SG 4.1 Asset management

The study will review the strategies for operating, maintaining and replacing gas distribution networks. The study will recognise the influence of different regulatory frameworks in defining local good practice and assessing the applicability of "best" international practices.

SG 4.2 Leakage reduction

Methane leakage is believed to contribute to depletion of the ozone layer and presents safety, economic and operational challenges to distribution operators. This study will investigate leading practices for the management of gas leakage from distribution systems. Analysis of these leading practices will be based on commonly defined performance metrics.

SG 4.3 Precautions to reduce third party damage

This is a study to evaluate how each of the IGU member countries approaches the reduction of third party interference damage to gas distribution systems. This emerged as a major integrity issue from the 2003-2006 Triennium study. It is important to determine the various approaches, funding levels, legal requirements and collaborative efforts currently in place.

WOC 4 has issued a single questionnaire to gather information for all the Study Group topics. This data collection exercise has been significantly assisted by GHD Consulting, who have formatted and hosted the questionnaire on their website in order to allow members to provide their responses via the internet. This makes use of GHD's expertise in providing asset management assessment capability via their web-based Gap-Ex tool.

Initial responses to the questionnaire are being analysed and further information will be requested

from class-leading companies to inform the WOC 4 report for WGC2009.

Future meetings

The dates and locations for future WOC 4 meetings are now confirmed as:

- October 27-28 Moscow, Russia
- April 14-17, 2008 Paris, France
- October 6-10, 2008 Prague, Czech Republic
- March 11-13, 2009 Sarajevo, Bosnia & Herzegovina
- October 5-9, 2009 WGC2009, Buenos Aires, Argentina

● **Working Committee 5 – Utilisation**

The overall objective of WOC 5 is to describe the situation in the different areas of gas utilisation, identifying the trends, tendencies, technologies and practices, and to evaluate and propose actions for further market development.

The Committee has 97 members from 35 countries and is organised into three Study Groups. Its second meeting of the Triennium was held in Tokyo, Japan, April 19-20, and there were 35 participants.

The work of WOC 5 aims to:

- Describe the situation in the domestic and commercial gas utilisation sectors (state of the art);
- Identify tendencies, trends and technologies; and
- Recommend and evaluate actions for further market development/introduction.

Each Study Group has identified key issues and appointed one or two experts who have prepared a work programme and started work according to the plans defined at the first meeting of the Triennium.

SG 5.1 Industrial utilisation

Chairman: Guy Verkest, Belgium

Vice Chairman: Tatsuo Kume, Japan

Key issues:

- 1 Fuel switching: electricity or oil to gas, providing energy efficiency indicators;

MAKING **FUEL** OUT OF THIN AIR.

Impossible?

The world's oil reserves are on the decline.

Which begs the question:

When will the fuels of the future come from?

The answer is surprisingly simple.

Gas.

For years SASOL has been at the forefront of Gas-to-liquids (GTL) technology in an attempt to harness the world's vast natural gas resources.

The benefits are numerous.

Fuel from gas will be cleaner, perform better and be much kinder to the environment.



In association with our international partners, operations in Qatar will soon begin production, with Nigeria to follow.

As a world leader in both Gas-to-liquids and Coal-to-liquids technologies, SASOL is poised to deliver the next evolution in fuel technology.

www.sasol.com





WOC 5 members listen to a presentation during their second meeting in Tokyo.

- 2 Integration of CHP in the industry;
- 3 Combination of gas and renewables. Biogas: case studies;
- 4 Gas quality variation impact on utilisations. EASEE gas proposal and consequences;
- 5 Comparison of tariffs, regulations, etc., by regions such as the EU and Asia;
- 6 Hydrogen, a summary of the present situation for utilisation;
- 7 Simple catalogue of technologies; and
- 8 Energy savings in the industrial sector.

For now, the priority has been given to items 2, 3, 6 for which a questionnaire has been issued. For topic 7, a case study / success story was prepared for Japan. Regarding the remaining items, the Study Group has elaborated working plans and the experts will now work according to the decisions of the latest meeting in Tokyo.

SG 5.2 Domestic and commercial utilisation

Chairman: Martin Wilmsmann, Germany

Vice Chairman: Bernd Utesch, Germany

Key issues:

- 1 Micro combined heat and power (μ -CHP), distributed generation;
- 2 Appliances database;
- 3 Labelling;
- 4 Efficiency indicators;
- 5 NGV fuelling survey;
- 6 Gas quality variation impact on utilisations;
- 7 Energy services: a way to keep gas in the domestic sector?;
- 8 Natural gas and renewables, case studies / success stories;
- 9 Cooling and gas heat pumps; and
- 10 Garden application (grill, patio heater, gas light).

A new item (3) has been added to the previous list. Most of the progress consists in the definition and elaboration of the details of the working plans, according the decisions of the latest meeting in Tokyo. The most notable progress has been



PGC A's second meeting included a technical visit to the gas processing plant at Kårstø.

achieved for item 4, for which we have established a collaboration programme with IEA, and for item 8 for which we have defined a joint working scheme with IGM. Aksel Hauge Pedersen, Secretary to WOC 5, will be acting as liaison officer with IGM and for the overall coordination of activities with SG 5.2 and SG 5.1.

SG 5.3 Natural gas vehicles

Chairman: Davor Matic, Croatia

Vice Chairman: Eugene Pronin, Russia

The work is organised in three working packages:

- 1** Model for regional prognosis;
- 2** Communication kits; and
- 3** Support for standardisation.

For the first working package scenarios of NGV market development are being prepared. So far, good progress has been achieved on the modelling section for European countries.

For (2) a survey was organised (covering key questions and problems in each region for further

development of NGV markets) and a number of key issues were identified.

Finally for (3) the experts will work in identifying national standards that could cover the gap between technology and existing international standards.

SG 5.3 works in close cooperation with IANGV and Davor Matic has contributed an article about this cooperation to the magazine (see pages 170-172).

● Programme Committee A – Sustainable Development

PGC A currently has 53 nominated members with an acceptable global coverage. However, participation is largely still from the EU and efforts will be made to ensure input from fast-growing developing markets such as China and India to ensure comprehensive world coverage.

The Committee held its second meeting in Haugesund, Norway, April 18-20, which concen-

GAIL (India) Limited



GAIL (India) Ltd. is India's principal natural gas company with activities ranging from gas transmission and marketing to processing (for fractionating LPG, propane, SBP solvent and pentane); transmission of LPG; production and marketing of petrochemicals like HDPE and LLDPE; and leasing bandwidth in Telecommunications, power, City Gas Distribution and Exploration and Production through equity and joint venture participations.

GAIL is one of the leading public enterprises with a consistently excellent financial track record. Turnover during the last 10 years has shown a compounded annual growth rate of 13% with profits growing at a rate of 16%. The profit after tax (PAT) during FY 2006-07 was US\$596 million. The Company's turnover during FY 2006-07 was US\$ 4 billion.

► Extensive networks

GAIL owns and operates a network of about 6,000 kilometres of natural gas high pressure trunk pipeline with a capacity to carry about 140 MMSCMD of natural gas across the country. GAIL's share of gas transmission business is 87% and the Company holds a 73% market share in gas marketing in India.

GAIL, which is the only company in India to own and operate pipelines for LPG transmission, has an LPG pipeline network of 1,900 kilometres, of which 1,300 kilometres connect the western and northern parts of India while 600 kilometres are in the southern part of the country. The LPG transmission system has a capacity to transport 3.8 Mtpa of LPG.

GAIL owns and operates a gas-based integrated petrochemical plant at Pata, Uttar Pradesh, with an annual production capacity of 400,000 tonnes of ethylene and 310,000 tonnes of polymers i.e. HDPE and LLDPE. The capacity of the HDPE plant is being enhanced by 100,000 tonnes. GAIL is setting up the Assam Petrochemical Complex

with a capacity of 280,000 tonnes per annum, representing an investment of Rs. 5,460 crore, through a Joint Venture, Brahmaputer Cracker and Polymer Limited.

GAIL was the first company to introduce city gas projects in India and has formed eight joint venture companies for supplies to households, commercial users and for the transport sector in eight cities and states (Delhi, Mumbai, Hyderabad, Tripura, Kanpur, Lucknow, Agra and Pune). On the global front, GAIL has established its CNG and city gas presence in Egypt through equity participation in Fayum Gas, Shell CNG and Natgas, Egypt. It has also acquired a stake in China Gas Holdings for CNG opportunities in China.

Leveraging on its pipeline network, GAIL has built up a strong OFC network of 13,000 kilometres for leasing of bandwidth as a carriers' carrier. GAIL's telecom business unit GAILTEL offers highly dependable bandwidth for telecom service providers across 175 locations in 10 states.

In a move towards integration along the energy chain and for sourcing supply, GAIL has entered into the area of exploration and production. The Company holds a participating interest in 30 oil and gas exploration blocks, of which 26 are in India, three are in Myanmar and one is in Oman. The GAIL consortium has won three blocks in the round of bidding for CBM blocks in India.

► Pursuing business opportunities

GAIL has set up a wholly-owned subsidiary company in Singapore called GAIL Global (Singapore) Pte. Ltd. GAIL is pursuing business opportunities in regions such as South and South-East Asia, West Asia, Russia and the Central Asian Republics, and Africa, in the areas of exploration and production, gas transmission, CNG and city gas distribution, LNG and petrochemicals.

THIS WILL TAKE 300 MILLION YEARS
TO BECOME NATURAL GAS.

TILL THEN, LET'S PLEDGE TO USE WHAT WE HAVE, WISELY.



GAIL (India) Limited



trated on the first deliveries for the three Study Groups. The meeting also included a technical visit to the gas processing plant at Kårstø. The Kårstø complex north of Stavanger plays a key role in the transport and processing of gas and condensate (light oil) from important areas of the Norwegian continental shelf.

Reports from the Study Groups

SG A.1 Updating IGU's Guiding Principles for Sustainable Development

Leader: Juan Puertas, Gas Natural, Spain

SG A.1 is preparing a questionnaire to measure to what extent the IGU membership is in accordance with the Sustainable Guidelines. The questionnaire will be sent out to all IGU members by the end of September.

SG A.2 Case studies on the reduction of greenhouse gases

Leader: Elbert Huijzer, Nuon Technology, The Netherlands

The goal of SG A.2 as mentioned in the terms of reference of the Technical Committees is to:

- Identify examples of new ways to reduce GHG emissions from the gas industry;
- Approach them by using life cycle analysis (LCA) methodology; and
- Report the main issues and lessons from these experiences.

To achieve this, the Study Group will identify examples of projects or developments throughout the gas chain and from all over the world, which have been recently realised or are in development and where reduction of GHG emissions can be proven to be significantly lower than in comparable or alternative projects. Social responsibility and economic viability need to be positive as well.

SG A.2 will not necessarily use the LCA methodology as developed by PGC A in the previous Triennium. We can choose other LCA methodologies which may be easier to use or

where more or better data is available.

The case studies and the results and lessons will be reported in a layout that is easily accessible and detailed for each of the case studies. The general findings might be published separately.

SG A.3 Post-Kyoto concept

Leader: Klaus-Robert Kabeliz, E.ON Ruhrgas, Germany

SG A.3 is actively involved in the Global Roundtable on Climate Change (GROCC) and has also attended one UN COP/MOP meeting.

In addition to contact with other organisations, SG A.3 has prepared a draft position document on how IGU could address the preparations for a Post-Kyoto regulatory framework. The document will focus on the following points:

- Natural gas has great potential for reducing CO₂ emissions;
- The role of natural gas in the EU Emission Trading Scheme: lessons to be learned;
- Possible models for a global post-Kyoto system; and
- Principles and guidelines for global systems: the gas perspective.

Joint Committee Meeting, CO₂ sequestration

From May 7-9 a Joint Committee Meeting was held onboard the *Crown of Scandinavia* sailing between Copenhagen and Oslo, with delegates attending from WOCs 1, 2, 3 and 5, PGC A, the Argentine Presidency and the IGU Secretariat.

PGC A was responsible for the technical part of the programme, including several presentations on CO₂ sequestration and storage. The Committee has also contributed a separate report on carbon capture developments in Norway to the magazine (see pages 174-178).

The meeting demonstrated that knowledge on CO₂ sequestration and storage is high in the gas industry. The knowledge the gas industry has regarding these issues could become a business advantage in the future. It is also important to



WE'RE ALL ABOUT YOUR PIPE DREAMS.

» www.dresser-rand.com

Total solutions. As a leading provider of energy conversion solutions—and with one of the largest installed equipment bases in the world—Dresser-Rand offers a level of experience and service that other companies can only dream about. Since 1840, we've been focused on you—the technology you need, the value of operational excellence and on-time delivery, and our support of your equipment throughout its life cycle, even if it's not our nameplate. Our ultimate objective is a total solution—to make your dream a reality.



show the extent to which the gas industry is responsible as part of the problem, but mostly as part of the solution, and that making our competence available can help in reaching global goals on CO₂ reduction.

At presstime PGC A's next meeting was due to be hosted by Nuon Technology in Arnhem, The Netherlands, September 18-20.

● Programme Committee B – Strategy, Economics and Regulation

PGC B has the largest membership of the Technical Committees having reached a total of 113: 83 from Charter Members, 23 from Associate Members and a further seven not included in those categories. The global coverage is adequate for our objectives and work (see *Figure 1*). For logistical and practical purposes it has been decided that no more delegates will be accepted,

with the exception of some representatives of specific companies whose contribution is considered essential by the leaders of the three Study Groups.

The large number of delegates and the complex relations with other projects require a strong management team. The organisational structure of PGC B aims to cater for this by adding a staff member to the Chairs and by reinforcing the positions of Study Groups' leaders as shown in *Figure 2*.

Meetings

Since the submission of the previous progress report a number of meetings have been held, culminating with the second plenary meeting of the Triennium in September.

SG B.3, which deals with "Regulation and future industry structure", met in Vienna, Austria, March 8-9.



PGC B has the largest membership of the Technical Committees – some of its members are seen here in Toledo, Spain, last November.



400 years ago we were Japan's first trading partner.

The Dutch have earned a place in history thanks to our savvy business instinct. A spirit made famous by our business ties with Japan back in the 17th century, which made us Japan's only western trading partner for more than two hundred years. Essent Trading is an international merchant company whose roots lie in the renowned Dutch spirit of commerce. At Essent Trading we continue to build on our merchant heritage and innovative way of thinking. Thanks to our unique ability to combine our expertise in energy with our financial knowledge, we have emerged as a formidable market leader in energy trading and risk management. Our modern day traders have made us the world's leader in biofuels and renewables. In an era in which energy is becoming a more valuable commodity, we have harnessed the power to change the world. **Essent Trading. Get Powered.**

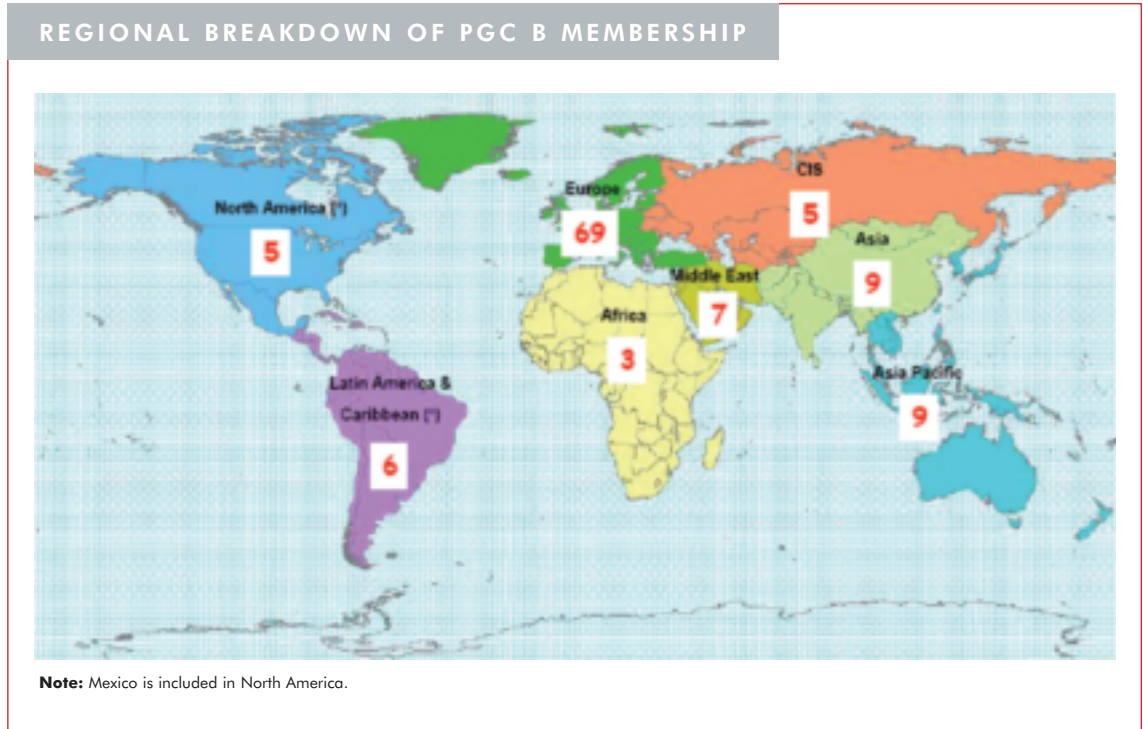


Essent is proud to have won Energy Risk Awards in 2004, 2006 and 2007.

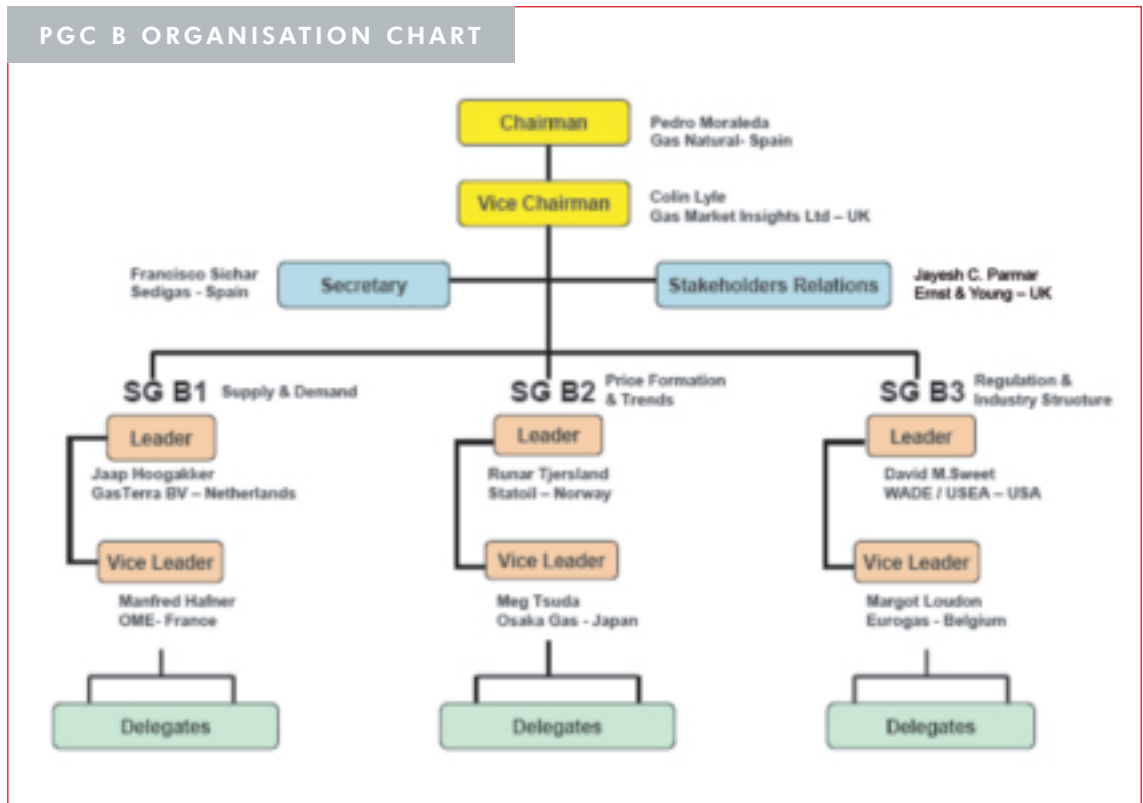
Essent is the largest energy company in the Netherlands.
www.essenttrading.com



RIGHT
Figure 1.



RIGHT
Figure 2.





All around the world...

People around the world rely on the energy produced in Qatar to generate power, light their homes, and run their businesses. Qatargas takes this responsibility seriously. We are committed to supplying clean and reliable energy that is delivered safely and on time. Our customers depend on it.

www.qatargas.com



قطرالفات
QATARGAS



PGC C members at their second meeting in Seoul.

Delegates reviewed the gas supply value chain from the perspective of the potential impact of regulation on the different phases. To this end a very useful session was held with the participation of Walter Boltz, Managing Director of the Austrian energy regulator Energie Control and one of the Vice Presidents of the Council of European Energy Regulators (CEER).

SG B.1 "Supply and demand to 2030" and SG B.2 "Gas price formations and trends" held individual meetings and then a joint session in Paris, France, April 19-20. The aims of these meetings were to detail the working plans for the Triennium, setting the methodology to follow and assigning specific responsibilities to delegates. The joint session helped coordinate the tasks to be developed by both groups regarding the feedback needed for the *2030 Natural Gas Industry Outlook* study.

A meeting of PGC B's core team was held in Barcelona, Spain, June 28-29. The core team includes the Chairman, Vice Chairman, Secretary, Stakeholders Relations Advisor and the leaders and co-leaders of the Study Groups. The objective was to take stock of the work progress and to prepare the Committee's second plenary meeting, which at presstime was due to be held in Washington DC, September 26-27. It is the aim of the Chairmanship to take the plenary meetings to different continents to facilitate the attendance of the largest number of delegates possible.

● Programme Committee C – Developing Gas Markets

PGC C has designed its work programme with the main aim of supporting the third Strategic Guideline of the 2006-2009 Triennium "Regional Gas Market Integration as a Key Driver for Sustainable Economic Growth". This complements work undertaken by other Committees, notably PGC B and the Task Force on Gas Market Integration.

In the last six months membership of PGC C has increased to 42, with new nominations from Austria, Cameroon, Trinidad & Tobago and Turkey. Efforts continue to encourage participation from countries that are covered by the three Study Groups to improve access to authoritative sources of data and information.

Meetings

PGC C's second meeting of the Triennium was hosted by Kogas and Korea Gas Union at the Imperial Palace Hotel in Seoul, April 12-13. The plenary was preceded by parallel Study Group meetings on April 11. The event was attended by PGC C members from Algeria, Argentina, Austria, Brazil, Croatia, Iran, Italy, Korea, Malaysia, Pakistan and Trinidad & Tobago. Afterwards, Kogas invited delegates to visit the LNG receiving terminal at Incheon.

All Study Groups reported good progress, including defining detailed Terms of Reference and in developing key milestones. An exchange of ideas also took place as members presented the gas market outlooks for various countries, with the view of further refining the Terms of Reference. In particular, some groups felt it was necessary to expand the geographical coverage of their study so as to arrive at a more representative view of the drivers affecting the gas markets in that area.

In light of the importance of geo-political issues in either facilitating or hindering regional gas market integration in South America, one notable development during the Seoul meeting was that the Committee agreed to seek the support of the

Can the pioneers in Liquefied Natural Gas continue to set the standards?



**Matsatejo Sokiaw
believes so.**

1972 saw the start of an extraordinary success story. That year, Brunei LNG—a joint venture between the Government of Brunei, Shell and Mitsubishi—made its first shipment of Liquefied Natural Gas. Since then, Brunei LNG has safely delivered more than 5,000 shipments, the first LNG project in the world to do so. Plant Manager Matsatejo Sokiaw, is not only maintaining this remarkable standard, he is now extending the life of the facilities to 2030 and beyond. Through long-term joint ventures such as this, Shell is at the forefront of global LNG supply. Find out how we're working with governments and partners to meet growing energy demand at shell.com/matsatejo





management of Petrobras to host PGC C's first Roundtable Meeting in Rio de Janeiro on September 18. PGC C hopes to build on the momentum created by the first South American Energy Summit in April to bring together the continent's CEOs, regulators and other key industry players to discuss the theme of "Enhancing Energy Security via Integrating Natural Gas Pipelines Infrastructure and Markets in South America".

PGC C continues to support the overall work of IGU in a number of ways. In November 2006, the Chairman gave a paper titled "Emerging Gas Markets in Asia" on behalf of the IGU Presidency at the China Gas Summit in Beijing. The Committee also assisted IGU collaboration efforts vis-à-vis IEA by helping to review the latter's latest Natural Gas Market Review.

At presstime PGC C was due to hold its third meeting in Rio de Janeiro, September 19-21, immediately after the Roundtable.

● Programme Committee D – LNG

PGC D now has 97 members from 31 countries. The PGC D Steering Committee meeting was held

on April 23, just before LNG-15 in Barcelona. The Chairman, Vice Chairman and Secretary, together with the leaders and secretaries of the Study Groups attended. They reviewed progress in the work of each of the three Study Groups (see reports below) and the Committee report, changing the latter's title to "The Worldwide LNG Industry 2008" (from 2007).

A Coordination Meeting was also held on the same day with representatives from PGC D, the Society of International Gas Tanker and Terminal Operators (SIGTTO), the Groupe International des Importateurs de Gaz Naturel Liquéfié (GIIGNL), the Center for LNG (CLNG), Gas LNG Europe (GLE) and Eurogas. Delegates discussed the development of a collaboration programme in order to generate synergy and avoid duplication among the key organisations with interests in the LNG sector.

SG D.1 LNG quality and interchangeability

The second meeting was held in Barcelona on April 23. The purpose of the meeting was for each of the topic leaders to provide an update on progress on the following topics:



The new Q-Flex tankers have 40% more capacity than the current largest LNG carrier and are due to start entering service with Qatargas later this year. Pictured is *Al Hamla*, which was launched in November 2006 and is now being fitted out at the Samsung Heavy Industries shipyard in Geoje, Korea.

Customer Focus & World-class Standards



Excellent Performance



Nigeria LNG Limited

...Helping to build a better Nigeria

www.nigeria LNG.com



Bonny Gas Transport Limited



SG D.1 held its second meeting in Barcelona just prior to LNG-15.

- Quality adjustment at LNG receiving terminals and liquefaction plants;
- Impurity specifications;
- Analysis and measurement;
- LNG specifications;
- LNG rollover;
- Impact of LNG on gas turbine performance; and
- Appliance testing.

SG D.2 LNG contract clauses for more flexible global LNG markets

SG D.2 also held its second meeting in Barcelona on April 23. The Study Group is looking for ways to make the world's LNG trade more active, and to this end is analysing LNG contract clauses such as the destination clause, the take or pay clause and restrictions on flexibility in quantities. Flexible LNG trading will help alleviate the problem of the supply-demand imbalance and make the LNG market a better place for all, buyers and sellers. SG D.2's report will comprise the following sections:

- 1 Introduction
- 2 Perspectives on the world's LNG markets
 - (1) Asia-Pacific Basin (new players: India, China, Russia, Iran)
 - (2) Atlantic Basin (new players: Russia, Norway, Germany, UK)

- (3) Global LNG markets, new hubs
- 3 Factors to make LNG trading more flexible
 - (1) What is flexibility?
 - (2) Volume, price and diversion
- 4 LNG contracts
 - (1) Buyer's standpoint
 - (2) Seller's standpoint
- 5 Conclusion: Evolution of LNG contracts; What is the win-win solution?

SG D.3 Creative solutions for new LNG facilities

The purpose of the second meeting on March 21 was to discuss several of the creative solutions that had been brought up in the first meeting in The Hague on November 28, 2006. Creative solutions throughout the value chain were presented, analysed and discussed. The structure agreed upon in the first meeting was applied, i.e.

- 1 Short description of the creative technology, status of what is known in the public domain or within the organisation.
- 2 How does the technology connect to the issues?
- 3 Gap analysis.
- 4 How can we close the gap?

The intention was to be able to judge whether creativity was still needed in those areas or whether no significant gaps were present, in order to focus on the areas necessary. After the presentation on the current LNG market by SG D.3's leader, Rob Klein Nagelvoort, presentations were given on:

- Floating storage and regasification units (FSRU);
- Shuttle regas vessels, floating LNG storage;
- LNG off-shore transfer systems;
- Regas technologies, on/off-shore;
- Integrated facilities;
- Onshore liquefaction;
- Small scale LNG; and
- LNG storage onshore.

Future plans

The next PGC D meeting will be hosted by BP in London in October, with a site visit to the South Hook LNG receiving terminal.



When Brunei LNG made its first LNG shipment to Japan in 1972, it marked the first major long-distance ocean operation of its kind in the world. It also marked the start of a long but an extraordinary success story.



Since then, we have established a solid reputation as a world leader and a reliable supplier of LNG, successfully servicing the gas markets of Japan and Korea and delivered well over 5,000 cargoes of LNG, more shipments by far than any other LNG project in the world, positioning it as a supplier of first choice.



Today, at BLNG we continue to set remarkable standards of reliability and operational excellence, as we prepare to deliver our promise for the future.



Brunei LNG Sdn Bhd
Lumut KC2935
Brunei Darussalam
Phone: +673-3236901 to 912
Fax: +673-3236749
Website: www.blng.com.bn





Progress Reports from the Task Forces

This chapter contains news and information from IGU's two Task Forces.

● Task Force Research and Development

Following the first meeting of TF R&D in October 2006, an action plan was defined and is currently being implemented. It is based on the objectives defined below, which have been assigned to three different working groups (WG). Each WG has a leader and deputy appointed from the Task Force's membership.

- WG 1: Prove the strategic values of R&D to companies and their stakeholders
- WG 2: Significantly increase gas R&D investment
- WG 3: Support and contribute to the success of the next IGU Gas Research Conference (IGRC 2008)

TF R&D has 23 members, including 16 full members. Due to position changes, three full members have been replaced, including a WG leader.

TF R&D's second meeting was held on April 13 in Tokyo, Japan. It was attended by 20 people of whom 11 were Task Force members. The results of the meeting are detailed by WG.

WG 1, Leader: H. Watanabe

Attendees were invited to give a brief description of their company's R&D and technology programme. Most of them focused on the safety and integrity of gas networks. Operational excellence, capacity extension and gas interchangeability were also highlighted, while gas quality, CO₂ content and mercury content management were mentioned.

However, utilisation and the risk of by-passing natural gas in several regions due to social or political issues were also a shared concern. (For example, some 60% of the R&D budget of Tokyo Gas is allocated to utilisation). Discussions were held on national and regional energy savings



TF R&D's second meeting of the Triennium was held in Tokyo and hosted by Tokyo Gas.

programmes, and on bonus measures related to the promotion of energy conservation.

A second key objective of the WG is to establish IGU “best practices”. The term “best practices” was felt to be too restrictive for promoting the exchange of knowledge, and a new proposal was agreed to expand it to “best practices, new ideas and innovations”. A form has been designed by deputy leader, Mel Ydreos, and our other working committees will be encouraged to put in their agendas the issue of “new ideas, best practices and innovations”.

WG 2, Leader: Marc Florette

Business started with discussion of a case study of KeySpan, which is one of the largest natural gas distribution companies in the US north-east. KeySpan executives recognise the value of R&D and have aligned the R&D programme with the vision of the company. Its R&D budget was increased accordingly by 40% for 2007, divided by category (technology watch, and technology identification and transfer) and into near-term and mid-to-long-term projects.

The results of interviews with the CEOs of Osaka Gas and Tokyo Gas were also presented. There is a real level of respect for technology in Japan. Beyond the interest shown by the interviewees, objective figures show a high level of investment in R&D by Japanese gas companies. They are willing to help with the promotion of R&D and cooperation with other companies.

Then a financial analyst was invited to give his point of view on R&D. For him, the main purposes of R&D in the gas industry include understanding customer needs, the development of competitive gas appliances and technologies, and the development of new businesses. The expected benefits from R&D are to maintain the advantage to customers of using gas, and to foster greater added value, expanded sales, reduced costs and higher company credibility. The financial analyst stated his belief that R&D was a necessary expense, suggesting that if companies did not invest in R&D



IGRC’s marketing will be critical – tools include the website www.igrc2008.com.

they would lose customers or lose revenue from customers. He noted that many of the customers were like business partners, and so companies needed to invest in R&D to maintain the relationship.

WG 3, Leader: Christian Beckerfordersandforth

In order to boost participation and interest compared to the last conference, which was held in Vancouver in 2004, IGRC needs to broaden its subjects and public. Within issues of general consideration, emerging technology papers will also be taken into account, while particular attention will be paid to the quality of all the papers.

Discussions followed on how the Task Force could help in increasing the attendance of university researchers. IGRC’s marketing will be critical and it was agreed that it should focus on how to reach out to the different interested parties, highlighting how participants could benefit from attending IGRC 2008.

Next meeting

At presstime TF R&D’s third meeting was due to held September 27-28 in Canada. The further implementation of the action plan will be reported and discussed.



● Task Force Gas Market Integration

The second meeting of TF GMI was held in Bochum, Germany, April 29-May 2, and achieved the objectives set. The first objective was to identify the drivers behind the “players, policies and platforms” from the perspective of regional markets. For this purpose the “players” are stakeholders such as:

- Governments;
- Private sector companies;
- Investors;
- Consumers; and
- NGOs.

The “policies” cover:

- Energy and energy security – the availability of sufficient supplies at affordable prices;
- Regulatory policies which foster investment and ensure reliability; and
- Advance environmental objectives.

The “platforms” include:

- Starting place – energy supplier or energy user;

- Current energy and environmental policies, GHG in energy mix; and
- Geopolitical spread of resources, delivery capability and outlook.

The second objective was to identify the benefits of, barriers to and dilemmas facing gas market integration.

The second phase of the working programme continues on a three-step plan as follows:

- Define the links for the integration process considering the regional market frameworks under the “players, policies and platforms” conditions;
- Build a step-by-step process to identify different degrees of integration from bilateral agreements to a full market integration process, taking into consideration the tools of scenario analyses; and
- Analyse representative regional cases using that identifying methodology.

The next meeting will be held in Moscow in October.

REFORESTATION: AN NGC IMPERATIVE



As we continue our role in Trinidad and Tobago's development, building a comprehensive natural gas pipeline network and developing industrial estates, we have been unable to avoid clearing some forested areas.

To give back, NGC has adopted a "No Net Loss Principle" regarding forest reserves, committing us to replace at least the equal of forest cleared.

Already, we have begun a ten-year project that will reforest degraded areas in the Rochard Douglas and Mayaro/Victoria Forests and the Morne L'Enfer Forest Reserves.

In all, over 315 hectares will be replanted to restore these forests to the way Nature intended.



**THE NATIONAL GAS COMPANY
OF TRINIDAD AND TOBAGO LIMITED**

TNO: Innovation in Upstream and Midstream

TNO's Mission is to apply scientific knowledge with the aim of strengthening the innovative power of industry and government. Developing, integrating and applying knowledge: it's the combination that differentiates us from other knowledge institutions. By encouraging the effective interplay of knowledge areas, we generate creative and practicable innovations: new products, services and processes, fully customised for business and government.

TNO Built Environment and Geosciences spearheads knowledge development on the management and the use of the subsurface and the subsurface natural resources, renewable energy and energy efficiency.

Global economic developments cause increasing energy demands and require adequate response to the effects of growing energy consumption. Therefore, the main challenges for society in geo energy are security of supply and sustainability. Research by TNO Built Environment and Geosciences strongly contributes to realisation of these objectives.

► Exploration

Exploration research at TNO aims to develop and apply novel techniques in integrated basin studies for finding more oil and gas. Exploration research focuses on improvements for estimating and risk assessment of remaining exploration potential for both mature areas, such as the Netherlands, and frontier basin areas, such as the Caribbean and deep water.

Furthermore, from its *advisory function* to the Ministry of Economic Affairs TNO provides up-to-date assessments of oil and gas resources.

► Production

In many cases the application of smart technology in existing reservoirs is more cost-efficient than exploitation of new fields. *Smart technology* is developed and applied to expand oil and gas production from known reservoirs as well as to facilitate production from tight or complex reservoirs. To this purpose a "closed-loop" approach is applied: based on the integrated "asset-data-model-decision" chain TNO improves the internal decision making process. Technology is also being developed for the production of unconventional resources.

► Underground gas storage

The market for flexible services from UGS is expected to increase dramatically. TNO has in-depth knowledge of the various considerations with respect to the selection of suitable

UGS locations, and to the technical requirements of the facilities. The TNO organisation has been involved as project manager in the selection, environmental impact assessment, planning and subsurface modelling of UGS projects. Ways to minimise the expensive cushion volume whilst ensuring a minimum send-out capacity at the end of the production cycle are being researched.

► Gas market simulation

Gas market liberalisation has raised many questions. Governments have to understand the functioning of the gas market to be able to optimise their regulatory frameworks, while private companies look for new strategies to operate successfully in the restructured market. Existing models are either technical models focusing on part of the supply chain or economic models representing the gas market in an aggregated and highly stylised manner.

To fill this gap, TNO is developing the ENETSIM (Energy NETwork SIMulator) methodology. Questions concerning e.g. the security of supply can be studied locally, and as a function of different regulatory framework conditions.

► Sustainable geo energy

TNO has become a foremost authority in Europe in the field of sustainable geo energy, especially in CO₂ research. This is clearly expressed through TNO's participation in EU research programmes and other international projects that examine the practical aspects of CO₂ research, including model development, reservoir studies, monitoring and risk analysis. Technology is being developed for subsurface CO₂ storage in depleted gas and oil reservoirs, aquifers of coalbeds, if possible with enhances gas or oil production.

Contact

TNO Built Environment and Geosciences
Geological Survey of the Netherlands
Princetonlaan 6
PO. Box 6011
3508 TA Utrecht
The Netherlands
Tel: +31 30 256 46 00
Fax: +31 30 256 46 05
E-mail: info-BenO@tno.nl

tno.nl

Innovation in Upstream and Midstream



Geo energy and Geo information

- Exploration
- Production
- Underground gas storage
- Gas market simulation
- Sustainable geo energy

T +31 30 256 4600 • F +31 30 256 4605 • E oscar.abbink@tno.nl



Annex – Addresses

IGU Presidency

President
Mr Ernesto López Anadón
Repsol YPF S. A.
Roque Sáenz Peña 777 –
Of. 1202
C1035AAC – Buenos Aires
Argentina
Tel: +54 11 5071 5771
Fax: +54 11 4323 1774
E-mail: elopez@repsolypf.com

Vice President
Mr Datuk Abdul Rahim Hj Hashim
Petronas
Tower 1, Petronas Twin Towers
KLCC, 50088 Kuala Lumpur
Malaysia
Tel: +60 3 2051 5100
Fax: +60 3 2051 5004
E-mail: rahimhs@petronas.com.my

Coordination Committee

Chairman
Mr Roberto D. Brandt
MetroGAS S. A.
G. Aráoz de Lamadrid 1360, 3°
(1267 AAB) Buenos Aires
Argentina
Tel: +54 11 4309 1400
Fax: +54 11 4309 1447
E-mail: rbrandt@metrogas.com.ar

Vice Chairman
Mr Ho Sook Wah
Petronas Permata
Jalan Institusi, Kawasan Institusi
Bangi
43000 Kajang
Selangor Darul Ehsan
Malaysia
Tel: + 60 3 8732 7700
Fax: +60 3 8925 8757
E-mail: hosw@petronas.com.my

Secretary
Mr Andrés E. Kidd

IAPG
Maipú 645, 2°
(C1006ACG) Buenos Aires
Argentina
Tel: +54 11 4717 0035
Fax: +54 11 4717 6445
E-mail: andrew@ifisa.com

Working Committee 1

Chairman
Mr Vladimir Yakushev
VNIIGAZ, Gazprom
142717, Moscow Region
p.Razvilka, VNIIGAZ
Russia
Tel.: +7 495 3559886
Fax: +7 495 3991677
E-mail: V_Yakushev@vniigaz.
gazprom.ru

Vice Chair
Mr Kamel Eddine Chikhi
Sonatrach Exploration Division
BP 68 M Boumerdes 35000
Algeria
Tel: +213 24 81 63 97
Fax: +213 24 81 63 98
E-mail: kamel.chikhi@ep.
sonatrach.dz

Secretary
Mr Sergey A. Leonov
VNIIGAZ, Gazprom.
142717, Moscow Region
p.Razvilka, VNIIGAZ
Russia
Tel.: +7 495 3559667
Fax: +7 495 3993263
E-mail: s_Leonov@vniigaz.
gazprom.ru

Working Committee 2

Chairman
Mr Vladimír Onderka
RWE Transgas Net, s.r.o.
Pražská 158
642 00 Brno

Czech Republic
Tel: +420 547 123 198
Fax: +420 547 123 173
E-mail: vladimir.underka@rwe.cz

Vice Chair
Mrs Hélène Giouse
Gaz de France
14-16, rue Touzet-Gaillard
TSA 9.000.6
93 486 Saint-Ouen Cedex
France
Tel: +33 1 7186 1610
Fax: +33 1 7186 1616
E-mail: helene.giouse@
gazdefrance.com

Secretary
Ms Petra Grigelová
RWE Transgas Net, s.r.o.
V Olšínách 75/2300
P O Box 166
100 00 Praha 10 – Strašnice
Czech Republic
Tel: +420 267 97 44 77
Fax: +420 267 97 6949
E-mail: petra.grigelova@rwe.cz

Working Committee 3

Chairman
Mr Helge Wolf
E.ON Ruhrgas AG
Huttropstraße 60
45138 Essen
Germany
Tel: +49 201 1845010
Fax: +49 201 1845197
E-mail: helge.wolf@eon-ruhrgas.
com

Vice Chair
Mr Eric Dam
N.V. Nederlandse Gasunie
Postbus 19
9700 MA Groningen
Concourslaan 17
9727 KC Groningen
The Netherlands
Tel: +31 50 521 2800
Fax: +31 50 521 1962
E-mail: e.dam@gasunie.nl