



COORDINATION COMMITTEE PROGRESS REPORT

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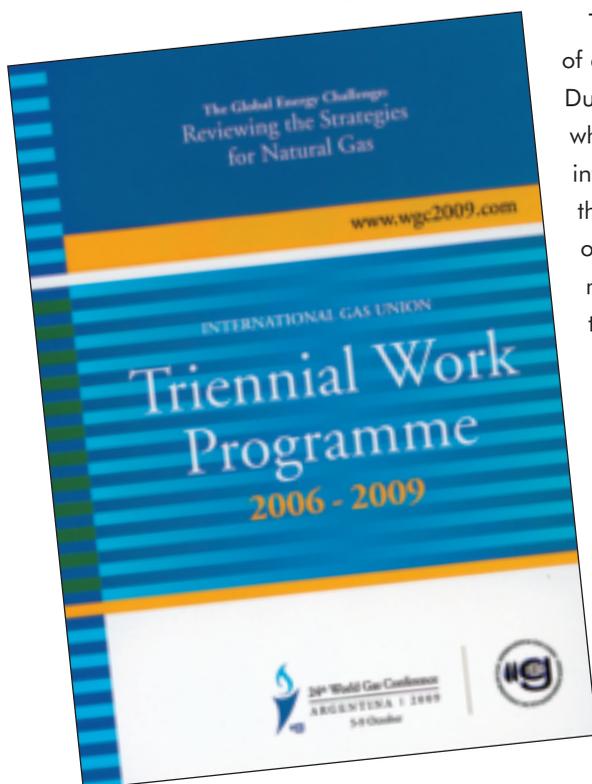
Introduction and Key Developments

The purpose of this progress report is to provide the reader with an idea of how IGU's Working Committees (WOC), Programme Committees (PGC) and Task Forces (TF) are advancing with the tasks defined in the 2006-2009 Triennial Work Programme (TWP), on the way to the 24th World Gas Conference, which will be held in Buenos Aires, October 5-9, 2009.

● The Triennial Work Programme

This document, which has been widely distributed amongst the entire IGU membership and related organisations and can also be accessed via the IGU website (www.igu.org), is the result of the support and contribution of a large number of people to whom the Argentine Presidency wishes to extend its gratitude.

BELOW
The TWP has been widely distributed and can also be accessed via the IGU website.



The kick-off was of course with our Dutch predecessors, who provided invaluable support through a number of hand-over meetings towards the end of the 2003-2006 Triennium. The objective was to ensure a certain degree of continuity and consistency between the technical programmes, as well as to identify topics

of special interest which had not been fully addressed. This input was complemented by additional discussions between the incoming Coordination Committee (CC) Chairman and Secretary and the outgoing Technical Committee chairs.

This paved the way to the drawing up the Strategic Guidelines, which were submitted for the consideration of IGU's Management Team before they were formally approved by the Executive Committee and the Council. The Strategic Guidelines adopted for the 2006-2009 Triennium are the following:

- The Global Energy Challenge: Reviewing the Strategies for Natural Gas towards 2030;
- Contribution of the Natural Gas Industry, in terms of Security of Supply, Safety and Environment; and
- Regional Gas Market Integration, as a Key Driver for Sustainable Economic Growth.

These Guidelines constitute the cornerstone of the TWP and have also helped to define the structure of the 2006-2009 Coordination Committee, which retains the nine regular Committees (five WOCs and four PGCs) as well as a Task Force (TF R&D) that was active during the previous Triennium, and incorporates a new Task Force on Gas Market Integration (TF GMI).

The Strategic Guidelines were later shared with the incoming CC members (chairs, vice-chairs and secretaries), as the starting point on which they based their proposals regarding the topics that should be tackled during the 2006-2009 Triennium. These plans were widely discussed and adjusted during two incoming CC meetings held in Madrid (February 2006) and Amsterdam (June 2006), as well as in the kick-off meetings of the Technical Committees (from September 2006 onwards) and in the first CC meeting of the Argentine Triennium in Lima (October 2006).

As a result of these discussions, 28 Study Groups (SG) have been created. These are listed in Table 1, and their corresponding terms of reference



LEFT
Table 1.

STUDY GROUPS AND TOPICS FOR THE 2006-2009 TRIENNIUM

Committee	Study Group	Topic
WOC 1	SG 1.1	Remaining conventional world gas resources and technological challenges for their development.
WOC 1	SG 1.2	Difficult reservoirs and unconventional natural gas resources.
WOC 2	SG 2.1	UGS database.
WOC 2	SG 2.2	UGS technology improvements.
WOC 2	SG 2.3	Intelligent UGS (iUGS).
WOC 3	SG 3.1	Impact of regulation on gas transmission, safety and security of supply.
WOC 3	SG 3.2	Review of new technologies in pipeline and construction monitoring.
WOC 3	SG 3.3	Contribution of gas transmission to climate protection and sustainable development.
WOC 4	SG 4.1	Review of asset management strategies and practices.
WOC 4	SG 4.2	Review of leakage reduction strategies and practices.
WOC 4	SG 4.3	Development of best practices for the prevention of third party interference damage to distribution assets.
WOC 5	SG 5.1	Industrial utilisation: distributed energy and other specific issues (fuel switching, technical research, regulatory aspects, H2). Efficiency indicators.
WOC 5	SG 5.2	Domestic and commercial utilisation: distributed energy and other specific issues (new appliances, home fuelling, air cooling, combination with renewables, tariff/regulation). Efficiency indicators.
WOC 5	SG 5.3	Natural gas vehicles (NGVs): continuation of current project.
PGC A	SG A.1	Evolution, expansion and promotion of IGU's Guiding Principles on Sustainable Development and Climate Change.
PGC A	SG A.2	Gas industry response to climate change: studies on the reduction of greenhouse gases will include cooperation between Algeria and Nigeria to reduce gas flaring and new power generation plants in Norway. Other studies will be added.
PGC B	SG B.1	Supply and demand to 2030.*
PGC B	SG B.2	Gas price formation and trends.*
PGC B	SG B.3	Regulation and future industry structure.
PGC C	SG C.1	Developing gas markets in South West and Central Asia: India, Pakistan, Iran, Turkmenistan and Azerbaijan.
PGC C	SG C.2	Developing gas markets in South America.
PGC C	SG C.3	Developing gas markets in south-eastern Europe.
PGC D	SG D.1	LNG quality and interchangeability.
PGC D	SG D.2	LNG contract clauses for more flexible global LNG markets.
PGC D	SG D.3	Creative solutions for new LNG facilities.
TF R&D	Objective 1	Role and structure of R&D within the gas industry.
TF R&D	Objective 2	Focal point of IGRC.
TF GMI	Objective 1	Harmonising the structures of the energy and gas business for regional integration.
TF GMI	Objective 2	Governmental and corporate players, partners for success.

* Study Group outputs will be used as partial inputs for a 2030 Natural Gas Industry Outlook study, which will be coordinated by PGC B (and the CC Chairmanship) with support from all other Committees.

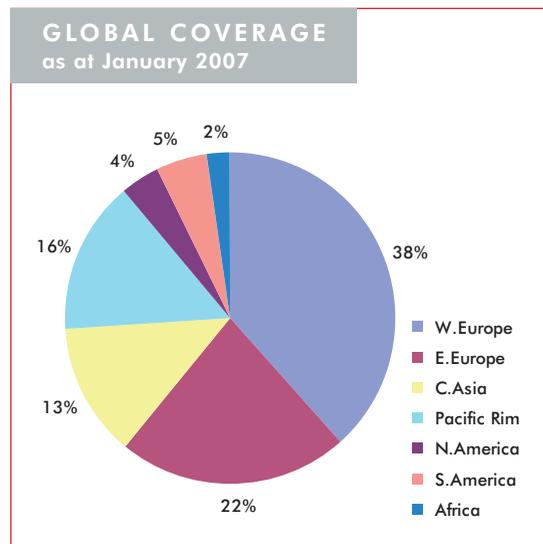


ABOVE
Figure 1.

can be found in the document describing the 2006-2009 TWP, which was formally approved by the IGU Council in Lima (October 2006).

It should be noted that, in line with Strategic Guideline 1, a “2030 Natural Gas Industry Outlook” study will be launched in mid-2007. This study, which will aim to become a key reference for policy and corporate decision-makers, will be coordinated by the CC and PGC B leadership – with guidance from a Steering Committee composed of renowned international experts – and will actively involve IGU’s 11 Technical Committees.

RIGHT
Figure 2.



TECHNICAL COMMITTEE MEMBERS as at January 2007

WOC 1 – Exploration and Production	49
WOC 2 – Underground Gas Storage	55
WOC 3 – Transmission	84
WOC 4 – Distribution	82
WOC 5 – Utilisation	94
PGC A – Sustainable Development	44
PGC B – Strategy, Economics and Regulation	100
PGC C – Developing Gas Markets	37
PGC D – LNG	82
Task Force Research and Development	23
Task Force Gas Market Integration	13
Total	663

Table 2.

The key milestones for the 2006-2009 Triennium include the following dates for the paper selection process prior to the 24th World Gas Conference in Buenos Aires:

- June 1, 2008 Call for Papers
- February 1, 2009 Abstract Submission
- April 15, 2009 Author Notification
- July 15, 2009 Full Paper Submission

● Technical Committees: Membership, meetings and external cooperation

The ambitious work programme described above would be impossible to carry out without the renewed active support of IGU’s Charter and Associate Members.

Following the invitations sent out by the Secretary General, over 600 members were nominated in time for the kick-off meetings, as can be seen in *Figure 1*, whereas *Figure 2* summarises the global coverage. *Table 2* gives the membership of each Committee.

All Technical Committees held their first meetings between September and November

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VENUES OF IGU MEETINGS DURING THE 2006-2009 TRIENNIUM

Year	Event ¹	Venue
2006		
October 16-19	Council meeting	Lima, Peru
2007		
May 3-5	Executive Committee	Montreux, Switzerland
October 22-25	Council meeting	St Petersburg, Russia
2008		
March 26-28	Executive Committee	Trinidad and Tobago
September 22-25	Council meeting	Gyeongju, Korea
2009		
June 3-5	Executive Committee	London, United Kingdom
October 5-9	24th World Gas Conference	Buenos Aires, Argentina

¹ All Council and Executive Committee meetings will be preceded by Coordination Committee meetings.

2006, achieving their goals of establishing the structure of the Study Groups and distributing the workload among them, fine tuning the scope and objectives of the studies, and defining the plan and milestones throughout the Triennium. You will find further detail in the individual reports that follow.

We also held a very successful first CC meeting of the Triennium in Lima, in October 2006, where we reinforced our purpose to maintain a strong communication channel throughout and within the IGU Committees, as well as with external organisations. As is customary, the CC will meet twice a year during the 2006-2009 Triennium, at the venues for future Council and Executive Committee meetings detailed in *Table 3*.

With regard to internal cooperation, we intend to continue with the Dutch initiative of holding joint Committee meetings (JCM), with a demand-driven and project-oriented approach, to help increase their focus and effectiveness. We have already identified the topic of CO₂ sequestration as a one of special interest for PGC A, WOC 1, WOC 2 and WOC 3, who will hold a JCM in May.

It is also worth mentioning the strong liaison already established between the IGU Gas Marketing Committee (IGM) and WOC 5, for the development of joint work on natural gas and renewables. In a similar way, the Technical Programme Committee of the IGU Gas Research Conference (IGRC) and TF R&D are already in close contact with the aim of preparing a productive IGRC, scheduled for October 2008, in Paris. As reported in previous issues of *International Gas*, IGM (formerly Intergas Marketing) and IGRC have been incorporated under the auspices of IGU.

As regards external organisations, we continue working with the International Association for Natural Gas Vehicles (IANGV) on the mutual support of the dynamic NGV market, and maintain a close contact with our colleagues of the World Energy Council (WEC) and the World Petroleum Council (WPC). IGU is also a major sponsor of the LNG Conferences, and as such has actively

ABOVE
Table 3.



IGU works with IANGV to support a dynamic NGV market.

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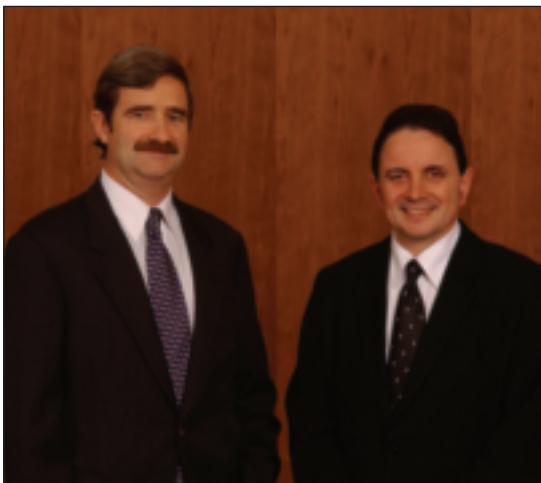
Bonny Gas Transport Limited



IGU has recently joined the Global Roundtable on Climate Change, which held its fourth meeting at Columbia University in New York City, December 18-19, 2006. Delegates met in the Alfred Lerner Hall (ABOVE).

contributed to the preparation of LNG-15, being held this month in Barcelona, Spain.

It is also worth highlighting the very productive cooperation programme agreed with the International Energy Agency (IEA), on occasion of a



CC Chairman Roberto Brandt (right) and Andrés Kidd, CC Secretary.

meeting held in Paris, in November 2006. During this meeting several themes of mutual interest were identified and plans are being defined on how to address them together. Among other topics, we have agreed on mutual support for IEA's *Natural Gas Market Review* and IGU's *2030 Natural Gas Industry Outlook* study, and IEA participation in IGU's project to create and update end-use efficiency indicators for natural gas and other energy sources.

Finally, it should be mentioned that IGU has recently joined the Global Roundtable on Climate Change (GROCC), led by Columbia University (USA), and agreed to become one of the signatories of an important public statement issued in December 2006.

Readers requiring additional information are invited to contact the Coordination Committee Secretary Andrés Kidd at andrew@ifisa.com, or visit IGU's website at www.igu.org.



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Progress Reports from the Committees

This chapter contains news and information from IGU's five Working Committees and four Programme Committees.

● Working Committee 1 – Exploration and Production

Under the TWP WOC 1 will aim to deliver a realistic estimate of reserves on a regional basis, and identify economic, technological and political challenges for their development. We will also investigate unconventional gas sources (methane hydrates, coal-bed methane and aquifer gas) and difficult gas reservoirs (tight, deep [more than 4500 metres], deep-water [a water depth of more than 2000 metres], shallow [less than 500 metres], high pressure/high temperature (HP/HT) and those containing sour gas).

Exploration and production (E&P) in all these areas is expected to become increasingly significant for the world gas resource base. Some environ-



ABOVE AND OPPOSITE WOC 1's first meeting of the 2006-2009 Triennium was hosted by VNIIGAZ in Moscow.

mental issues related to natural gas production (such as sustainable development in Arctic conditions and CO₂ sequestration) are also high on the current agenda for the upstream gas business and will form an essential element of our work, which is covered in more detail in our article on pages 160-164.

Membership and first meeting

WOC 1 currently has 49 members of which 15 attended the first meeting, which was hosted by VNIIGAZ in Moscow, Russia, September 26-27, 2006. The main goals of the meeting were to:

- Inform members about the rules of work in IGU and the WOCs;
- Form the Study Groups and confirm/elect the SG leaders and deputies;
- Develop the programme and schedules for the work of the Committee and the SGs;
- Assign tasks to SG members;
- Discuss whether involvement of upstream experts would help achieve the SG goals; and
- Have preliminary discussions on the dates, venues and format of future meetings.

The following issues were defined regarding the scope and objectives of the Study Groups:

SG 1.1 Remaining conventional world gas resources and technological challenges for their development

Leader: Dominique Copin, Total (France)

Scope:

- Remaining resources in mature areas.
- Arctic potential and deep-water gas deposits.
- Options for remote reserves of natural gas and oil-associated gas.
- CO₂ use in production technologies.

Objectives:

- E&P of additional reserves of natural gas from known gas-bearing plays and formations as well as intensive search for new gas-bearing deposits near the main world centres of consumption.



WOC 1 MEETINGS

Meeting	Main goals
#2: First half 2007	Separate study group working sessions. Final discussion on date/venue and format of future meetings.
#3: Second half 2007	Discussion on progress reports from Study Groups. Discussion about themes for the call for papers.
#4: First half 2008	Preparation for WGC2009.
#5: Second half 2008	Paper selection from the call for papers. Discussion of the first offers on study themes for 2009-2012.
#6: First half 2009	Preparation for the next Triennium 2009-2012.

LEFT
Table 1.

- The potential for resource development in the Arctic region.
- Natural gas in deep waters: examples, economics, production issues.
- Options for remote reserves of gas and oil-associated gas (e.g. LNG, onshore GTL, gas-to-hydrates, gas-to-wire). New alternative options for gas processing and transportation.
- Sequestration of CO₂ emissions by injection into productive reservoirs.

SG 1.2 Difficult reservoirs and unconventional natural gas resources

Leader: Kamel Eddine Chikhi, Sonatrach (Algeria)

Scope:

- Difficult reservoirs and technologies for their E&P.
- Unconventional resources and technologies for their E&P (coal-bed methane, gas hydrates, aquifer gas).

Objectives:

- Identify key technology needs for the understanding of difficult reservoirs.
- Address areas of technology improvements needed to face technical gaps in E&P.
- Lower the cost of development of difficult reservoirs, in particular for the assessment of play resources, subsurface imaging, drilling,

well completion and stimulation.

- Review and propose the definition of exactly what is understood by unconventional gas and propose a classification that, if accepted, can be used in different world regions.
- Update of the global trends and the role of unconventional gas reserves and resources in world supply.
- Fine tune exploration techniques and expand dedicated technologies for assessing unconventional gas reserves.
- Deliver a comprehensive overview of production techniques and best practices.





Future plans

At presstime the second Committee meeting was due to be hosted by INA-Naftapljin in Zagreb, Croatia, March 28-30.

The milestones established for the Triennium are detailed in *Table 1*. To carry out our work we envision interacting with WOC 3, PGC A, PGC B, PGC D and the R&D Task Force. Externally, we also expect to liaise with the World Petroleum Council.

● **Working Committee 2 – Underground Gas Storage**

Underground storage (UGS) plays an important role in the gas chain in balancing supply and demand. It is thus important to address its functionality, technology and cost. WOC 2 is focused on the development, operation and technology of UGS, including the regulatory and legal aspects.

Membership and first meeting

As the Committee is chaired by Vladimír Onderka from the Czech Republic, the first meeting took place in Prague, September 19-22, 2006. It was attended by more than half of the total membership of 55.

The meeting included a workshop on the legal and regulatory framework covering UGS, which was organised in cooperation with the Czech Gas Association. Speakers at the workshop included representatives of the Czech authorities and of RWE Transgas, which owns six of the eight Czech UGS facilities, as well as international experts from France, Germany, Italy, Russia, Slovakia and the USA.

During the meeting the work programme of WOC 2's three Study Groups for the new Triennium was discussed and the following objectives were agreed:

SG 2.1 UGS database

Leader: Joachim Wallbrecht, BEB GmbH (Germany)

SG 2.1 will continue to develop IGU's UGS database in order to obtain a reliable picture of

UGS worldwide and provide a background for additional analyses, benchmarking etc., covering the main parameters of storage reservoirs. Data will be collected on output rates, capacities, the types and numbers of production wells and surface facilities, while basic information about ownership and operators will also be included.

Scope:

- Update of existing database (products and services in UGS, identifying the consumers) by resending a questionnaire.
- Splitting UGS between oil and gas fields.
- Incorporation of pipeline systems related to UGS.
- Enlarging the existing glossary of terms (if needed).
- Point of view (economical, ecological, legal aspects of the UGS sector).
- Describing national trends in the UGS sector.

SG 2.2 UGS technology improvements

Leader: Hélène Giouse, WOC 2 Vice Chair, Gaz de France

SG 2.2 will review technological improvements focusing on the following features: well stability, well potential, remediation practices, operational cost reduction, horizontal drilling, well completion and formation damage mechanisms and remediation practices.

Scope:

- Refreshing existing data.
- Improving existing data.
- Trends in technology.
- New technologies in down-hole logging, well-bore integrity monitoring, cement binding, etc.

SG 2.3 Intelligent UGS

Interim Leader: Vladimír Onderka, WOC 2 Chairman

SG 2.3 will evaluate the potential for connecting all the technologies controlling UGS operation and



<p>Nigeria</p> <p>Olokola (OK) LNG</p> <p>LNG Export Facility Financial/Commercial Advisor</p>	<p>Peru</p> <p>Peru LNG</p> <p>LNG Export Facility Financial Advisor</p>	<p>Iran</p> <p>Persian LNG</p> <p>LNG Export Facility Financial Advisor</p>	<p>Qatar</p> <p>Qatargas 3 USD 4,040,000,000</p> <p>LNG Export Facility Financial Advisor, Mandated Lead Arranger & Bookrunner</p>	<p>Indonesia</p> <p>Tangguh LNG</p> <p>LNG Export Facility Financial Advisor</p>	<p>Egypt</p> <p>Egyptian LNG Train 1 USD 950,000,000 Train 2 USD 880,000,000</p> <p>LNG Export Facility Financial Advisor & Mandated Lead Arranger</p>
<p>UK</p> <p>Dragon LNG</p> <p>LNG Import Terminal Financial Advisor</p>	<p>United States</p> <p>Sabine Pass</p> <p>LNG Import Terminal + Expansion Project Joint Lead Arranger</p>	<p>UK</p> <p>South Hook LNG Terminal Co GBP 420,000,000</p> <p>LNG Import Terminal Mandated Lead Arranger & Bookrunner</p>	<p>China</p> <p>Guandong LNG USD 600,000,000</p> <p>LNG Import Terminal Financial Advisor</p>	<p>Portugal</p> <p>Sines LNG Terminal EUR 300,000,000</p> <p>LNG Import Terminal Financial Advisor</p>	



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using existing knowledge and tools for optimisation, automation and cost savings.

Scope:

- Description of dynamic data needs (reservoir, technology).
- Purposes, ranges, frequency.
- Validation and security of raw data.
- Data filtering, modelling, sampling.
- Operation analyses, simulation, optimisation.
- Tools for optimised UGS management.
- Automation, remote control and cost savings.

Future plans

At presstime the next meeting was scheduled to be held during the week beginning April 22 in Dallas, USA, to coincide with the AGA Operations Conference and Biennial Exhibition, thus allowing Committee members to meet many of the UGS operators in North America. The AGA event includes several workshops of which one is specific to UGS.

It is proposed to hold the other meetings in Italy (second half of this year), Vienna, Austria (April 2008), France (September 2008) and Russia (first half of 2009). The precise dates and venues have yet to be decided.

● Working Committee 3 – Transmission

WOC 3's purpose is to gather information and analyse the development of technology, legislation and economics behind pipeline transmission systems.

In the past, IGU has approached this topic as a system which integrates these issues, whereby any development in a given area will have an immediate impact on the rest, and it is our intention to continue doing so during the 2006-2009 Triennium.

Furthermore, and recognising that the gas industry is encompassed within the larger system of the global society it serves, we intend to include environmental aspects and other issues related to sustainable development, continuing the trend established by our Union during previous Triennia.

Recent decades have witnessed a robust development of natural gas infrastructure to cater for an expanding market. The continuing growth in energy demand compels us to maintain a vigilant attitude regarding both asset management and the challenges for future expansion, with the goal of ensuring security of supply while operating with a safe and environmentally friendly set of practices.

Membership and first meeting

At the time of the first meeting held in Essen, Germany, September 5-7, 2006, the total members nominated to WOC 3 were 82, out of which 36 participated in the meeting. Total membership is now 84 and for more detailed information and to obtain the complete list with contact details please visit the WOC 3 section of the IGU website.

WOC 3 has three Study Groups and their terms of reference are summarised below:

SG 3.1 Impact of regulation on gas transmission, safety and security of supply

Leader: Marinus Kornalijnslijper, The Netherlands

Members: 15

Terms of reference:

- Identify and describe those regulatory activities having an impact on gas transmission.
- Analyse whether, and to what extent, there is any impact on safety and security of supply.
- Evaluate alternatives aimed at minimising the negative consequences of regulation on these issues, within reasonable cost competitive considerations.
- Propose a set of recommendations for the regulators on how to structure a set of regulations related to gas transmission that comply with all parties involved, in terms of cost, safety and security of supply.

Other issues:

Harmonisation of pipeline incident databases.



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SG 3.2 Review of new technologies in pipeline and construction monitoring

Leader: Jorge Bonetto, Argentina

Members: 17

Terms of reference:

- Identify the benefits of new technologies in pipeline and construction monitoring.
- Investigate new monitoring techniques in the fields of:
 - pigging systems and so-called NoPig methods;
 - air- and ground-based pipeline monitoring systems;
 - IT-based pipeline integrity management systems (PIMS); and
 - systems of prediction of pipeline conditions.

SG 3.3 Contribution of gas transmission to climate protection and sustainable development

Leader: Sigve Apeland, Norway

Members: 7

Terms of reference:

- Identify the best practices to reduce the industry's environmental impact at the transmission level.
- Investigate all areas in gas transmission affecting sustainable development, in particular climate change.
- Description of methods for the reduction of emissions.

Other issues:

Positive exchange with PGC A (Sustainable Development) and liaison with Marcogaz, one of the organisations affiliated to IGU. (P. Caribotti of SNAM Rete Gas has been proposed by Marcogaz as the liaison officer with WOC 3).

Future plans

At presstime the second Committee meeting was due to take place in Slovakia, April 17-19. The

third is scheduled to be held in Slovenia, September 25-27.

● **Working Committee 4 – Distribution**

During the 2003-2006 Triennium, WOC 4 completed studies on pipe integrity, the implementation of leading practices and the role of R&D in the management of gas distribution systems. Having enjoyed a very successful programme at WGC2006 in Amsterdam, WOC 4 members have confirmed their key areas for study in 2006-2009.

Membership and first meeting

WOC 4 has 82 members from 30 countries and the first meeting of the 2006-2009 Triennium was held in London, UK, September 20-22. Chairman Jeremy Bending, Director of Network Strategy for National Grid, welcomed 32 members from 19 countries. Peter Storm, IGU Secretary General, and John Williams, CEO of the Institution of Gas Engineers and Managers, attended the meeting, while the partners of 10 members and 12 guests from the UK industry joined the social programme which included dinner on Tower Bridge.

The special guest, Peter Storm, gave a presentation on the work of IGU. Speakers from the British gas industry provided descriptions of leading practices in asset management, leakage reduction, damage prevention, the management of replacement projects and preparation for the 2012 London Olympic Games. WOC 4 members gave presentations on the work Marcogaz is doing on damage prevention, the growth of gas distribution in the Russian Federation and a project in Bosnia and Herzegovina to build a distribution pipeline rising 800 metres up a mountain in Sarajevo to provide gas supplies to wintersports developments. Sarajevo will be bidding for the 2014 Winter Olympic Games and the gas pipeline is part of the infrastructure being provided to support the application.

The meeting included a technical visit to London's Strand, where National Grid's contracting

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North London Gas Alliance's Phil Walden (RIGHT) discusses the replacement of cast iron mains in London's Strand with Robert Stevens (Argentina), Barbara Jinks (Australia) and WOC 4 Chairman Jeremy Bending (UK).

partners were replacing an 18-inch (45.7-centimetre) cast iron main in this very busy road.

The terms of reference and objectives for the three WOC 4 Study Groups are summarised below:

SG 4.1 Asset management

SG 4.1 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.

The Study Group will report on:

- Distribution integrity performance measures;
- The management of information systems, data and data quality;
- The availability of cost/benefit calculations;
- The influence of national and international technical standards;
- The influence of economic regulation and competitive markets; and
- Legal frameworks, e.g. prescriptive vs. risk-based regulation.

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.

The Study Group will report on:

- Leakage management strategies across member countries;
- Members' ability to quantify leakage from distribution systems;
- The effectiveness of leakage survey methodologies;
- Best practices in leakage management systems; and
- Existing and emerging technologies for leakage control.

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 studies. It is important to determine the various approaches, funding levels, legal requirements and collaborative efforts currently in place.

The Study Group will report on:

- Plant records and information to enable location;
- Legal/regulatory requirements driving plant location;
- Measures of effectiveness of protection systems;
- Resourcing requirements for site attendance where provided;
- Existing and emerging technologies for damage control; and
- Best practices in plant and damage location systems across all utilities.



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- Natural gas purchasing, storage, transmission, distribution and sales;
- Export and import operations with natural gas;
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Aristida Briana Str. 6
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Tel: +371 7369132
Fax: +371 7517340
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www.lg.lv

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As a significant LNG player in the energy markets, UNION FENOSA GAS has developed and participates in strategic infrastructures in the Liquefied Natural Gas chain, from gas acquisition to the final consumer: liquefaction, shipping and regasification.

This approach allows UNION FENOSA GAS to meet customers' demands in a global market, fulfilling their needs.

In the Spanish gas market, UNION FENOSA GAS has become an important player for serving both, CCGT power plants and industrial consumers.

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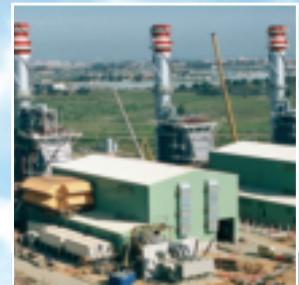
Liquefaction
In Egypt and Oman



Shipping
LNG/c Cadiz-Knutsen
and LNG/c Galicia Spirit



Regasification
In Spain: Sagunto & Mugardos



Marketing
In Spain and international
markets



Future plans

At presstime the second meeting of WOC 4 was due to take place in Boston, USA, April 20-22. The dates and locations for subsequent meetings are: October 15-18, Paris, France; March/April 2008, St Petersburg or Moscow, Russia; September 6-10, 2008, Prague, Czech Republic; March 11-13, 2009, Sarajevo, Bosnia and Herzegovina; October 5-9, 2009, 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.

In line with IGU's permanent focus on sustainable development, we will also evaluate cooperation and complementation schemes between natural gas and the renewables sector (biomass, biogas, solar, wind, etc.).

During this Triennium, the Presidency has further designated WOC 5 to develop an IGU Utilisation Standard Parameter to provide a key reference tool for natural gas users and stakeholders in general.

WOC 3 will divide the work into three Study Groups: Industrial utilisation (SG 5.1); Domestic and commercial utilisation (SG 5.2); and Natural gas vehicles – NGVs – (SG 5.3). Note that distributed generation (combined heat and power generation) will have a strong priority in both SGs 5.1 and 5.2.

Membership and first meeting

WOC 5 has participation from 34 countries and a total of 94 members. The first meeting was attended by 37 members and was held in Copenhagen, October 12-13, 2006, during which the leaders and deputies of the Study Groups were chosen. So far 20 members have chosen to contribute to the work of SG 5.1, 23 members have selected SG 5.2 and 13 have opted for SG 5.3,

while 28 members have not yet selected a specific Study Group.

Scope and objectives of the Study Groups

The overall common objectives of the SGs are to:

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

In all cases the work will be done in continuity with the work of the last Triennium.

In addition, for SG 5.3 the ambition is to develop a global strategy for NGV commercialisation in a wide variety of international markets, using different technologies as appropriate (i.e. for different levels of sophistication in vehicles, retrofit and originally manufactured), covering on- and off-road applications, including cars, trucks and buses, as well as fork-lifts, boats, trains and other kinds of vehicles.

Furthermore, the scope of the 2006-2009 work is to define potential precisely, actively promote and provide support to resolve some critical issues (i.e. standardisation) in order to achieve 50 million NGVs on the road by 2020.

Each SG has identified key issues and appointed one or two experts who are preparing a work programme.

SG 5.1 Industrial utilisation

Chairman: Guy Verkest, Belgium

Vice Chairman: Tatsuo Kume, Japan

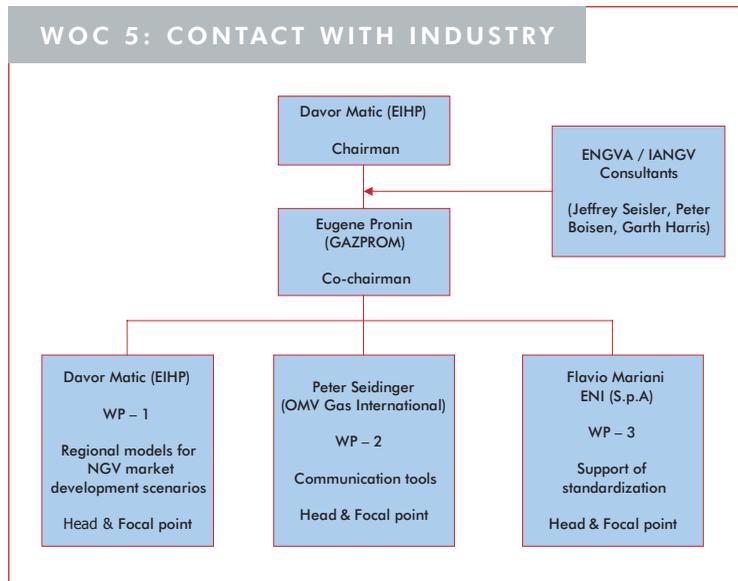
Key issues:

- Fuel switching: electricity or oil to gas, providing energy efficiency indicators.
- Integration of CHP in the industry.
- Combination of gas and renewables; biogas: case studies.
- Gas quality variation impact on utilisations. EASEE-gas¹ proposal and consequences.

¹ European Association for the Streamlining of Energy Exchange (www.easee-gas.org).

A long time ago,
Easter Island was a paradise.
Its inhabitants built great statues
to honour their ancestors.
They would sculpt them in rock
and carry them on wooden logs.
It is said that they cut down so many trees,
their little island became a desert.
Our planet is like Easter Island,
in the middle of the ocean: we can destroy it
or preserve it, but we cannot leave it.
For the sake of future generations, EDF spends
one million euros a day in research.

EDF, European leader for tomorrow's energy.



ABOVE
Figure 1.

- Comparison of tariffs, regulations, etc., by regions such as the EU and Asia.
- Hydrogen, a summary of the present situation for utilisation.
- Simple catalogue of technologies.
- Energy savings in the industrial sector.

The Study Group will present several case studies/success stories on the above key issues. The final report will also include recommendations for further market development.

SG 5.2 Domestic and commercial utilisation

Chairman: Martin Wilmsmann, Germany

Vice Chairman: Bernd Utesch, Germany

Key issues:

- Micro combined heat and power (μ -CHP), distributed generation.
- Appliances database.
- Efficiency indicators.
- NGV fuelling survey.
- Gas quality variation impact on utilisations.
- Energy services: a way to keep gas in the domestic sector?
- Natural gas and renewables, case studies/success stories.

- Cooling and gas heat pumps.
- Garden application (grill, patio heater, gas light).

SG 5.3 Natural gas vehicles

Chairman: Davor Matic, Croatia

Vice Chairman: Eugene Pronin, Russia

Key issues:

- Scenarios of NGV market development (modelling: regional and global – increase in overall mobility demand for passengers and cargo), modal split (road, rail, air, marine, inland waterways etc.), increase in number of vehicles and fuel consumption (all fuels), expected natural gas and/or bio-methane demand (consumption) in transport sector, reduction of pollutant emissions by natural gas (bio-methane) use, necessary investments and (possible) social impacts.
- Market – vehicle match-up.
- Regional natural gas sources (pipelines, LNG, bio-methane production) for “methane”-powered vehicles.
- Identification and/or development of communication tools and models to aid commercialisation.
- Regulations, standards and codes.

The work of the Study Group will be organised in three working packages covering a model for regional prognosis (WP-1), communication kits (WP-2) and support for standardisation (WP-3).

Internal/external relations

SG 5.3 will work in cooperation with IANGV (ongoing IANGV work to develop a global NGV strategy for the Association itself) and regional NGV Associations in Asia-Pacific (ANGVA), Europe (ENGVA), Latin America (ALGNV) and Russia (NGVRUS), together with representatives of the gas industry. The Study Group contact with the industry is shown in Figure 1.

We have been discussing collaboration with the IGU Marketing Committee (IGM) and have already

agreed to work on renewables with SG M.1. There will also be collaboration with SG M.2.

We have agreed to collaborate with IEA on efficiency indicators and are presently setting up the details.

Next meeting

At presstime the next meeting for WOC 5 and included Study Groups was due to be in Tokyo, Japan, April 19-20.

● Programme Committee A – Sustainable Development

The focus of PGC A is on sustainable development and the role of the global gas industry. We have recently observed in the media and public opinion, a growing awareness and concern on climate change. New renowned personalities have taken a stand on this issue like former US Vice President Al Gore and his film "An Inconvenient Truth", to mention one.

Furthermore, the COP 12 Conference on Climate Change in Nairobi, The Stern Review "The Economics of Climate Change", and other fora have highlighted this issue as never before.

A lot is said on climate change, and it is up to IGU to explain how the gas industry can contribute to reducing global emissions of greenhouse gases and other issues related to sustainable development. This is the role mapped for PGC A where it intends to maintain a close relationship not only with its fellow committees on their relation with sustainable development, but also with outside organisations, gathering information that will later nourish the world gas industry on the major trends of this issue, for future decision making regarding policy, operations and technology development.

Membership and first meeting

PGC A has 44 nominated members from around the world and held its first meeting of the Triennium in Barcelona, Spain, September 26-28, 2006. A total of 18 delegates attended the meeting (four

members originally registered could not obtain their visas in time).

Scope and objectives of the Study Groups

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

Leader: Juan Puertas, Gas Natural, Spain

Objective:

To prepare a questionnaire to check IGU members' knowledge and implementation of the Guidelines on Sustainable Development 2003 version.

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

Leader: Elbert Huijzer, Nuon Technology, The Netherlands

Objective:

To provide an extensive list of possible greenhouse gas reduction cases.



PGC A held its first meeting of the 2006-2009 Triennium in Barcelona.

Sonatrach: An Integrated International Gas & Oil Group



Sonatrach is Algeria's most important company, responsible for the research, exploitation, transportation, transformation and marketing of hydrocarbons and derivative products. In addition to the hydrocarbons industry, Sonatrach is involved in power generation, new and renewable energies, and the desalinisation of seawater. Sonatrach's activities also have a significant international scope, covering Africa, the Middle East, Europe and South America. The Sonatrach group as a whole employs approximately 119,225 people.

With a turnover of \$45.7 billion in 2005, Sonatrach is Africa's largest corporation and the 12th largest oil and gas firm in the world. The firm's activities represent approximately 30% of Algeria's GNP and it is the world's second largest exporter of liquefied natural gas and liquid petroleum gas, and the third largest exporter of natural gas. Its total production (oil products included) was estimated at more than 232 million tonnes oil equivalent (TOE) in 2005 and is projected to increase to 270 million TOE in 2007. Sonatrach also operates a wide group of fully or majority-owned subsidiaries which are active in all sectors of the oil and gas business. These subsidiaries operate in various fields, such as: NAFTAL, NAFTEC, HELIOS, HYPROC Shipping Company, AEC (Algerian Energy Company) and NEAL (New Energy Algeria). Other subsidiaries located in Europe and in the rest of the world also play an important role in the development of Sonatrach's activities.

Sonatrach has a pipeline network with a total length of 16,000 kilometres including two trans-continental gas pipelines: one goes to Spain via Morocco (Pedro Duran Farrel) and the other to Italy via Sicily (Enrico Mattei). One of Sonatrach's aims is the increase of natural gas exports of which 90% go to Europe. The Medgaz project envisages the building of an underwater gas pipeline of 747

kilometres connecting Algeria to Spain, while the Galsi project has the aim of building another gas pipeline of 1550 kilometres connecting Algeria to Italy. The Trans-Saharan Gas Pipeline Project is for a gas pipeline of 4400 kilometres connecting Nigeria to Europe via Algeria.

► Sonatrach: An LNG Pioneer

Today Sonatrach is the third largest natural gas exporter in the world, the second in LNG and the first gas company in the Mediterranean.

The first baseload liquefaction plant in the world was built in Arzew in 1964, originally named "CAMEL" and today called GL4Z, making Sonatrach a real pioneer in this industry. Currently, it operates four LNG plants with a combined capacity of 21 million tonnes per annum (Mtpa). It holds in its assets a fleet of seven LNG carriers of different sizes. With a production of 41 million cubic metres in 2005, LNG production is expected to reach 60 million cubic metres in 2010.

In Algeria, Sonatrach has launched in partnership an important integrated gas project in Gassi-Touil with a capacity of approximately 6 billion cm³/year of LNG production. In Spain, Sonatrach undertook in partnership the realisation of two projects:

- 1 The construction of the REGANOSA LNG terminal in Murgados and a gas transportation plant in Galicia, which will have a capacity of 2.5 Gm³ / year of natural gas.
- 2 Through PROPANCHEM company, the production of propylene in Tarragona with a capacity of 350,000 tonnes/year.

Chemin Djenane El Malik,

Hydra – Algiers 16035 – Algeria

Tel: +213 21 54 70 00 Fax: + 213 21 54 77 00

E-mail: sonatrach@sonatrach.dz

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Djenane El-Malik
Hydra • Algiers • Algeria
Tel: 213 21 54 70 00
Fax: 213 21 54 77 00
www.sonatrach-dz.com
e-mail: sonatrach@sonatrach.dz