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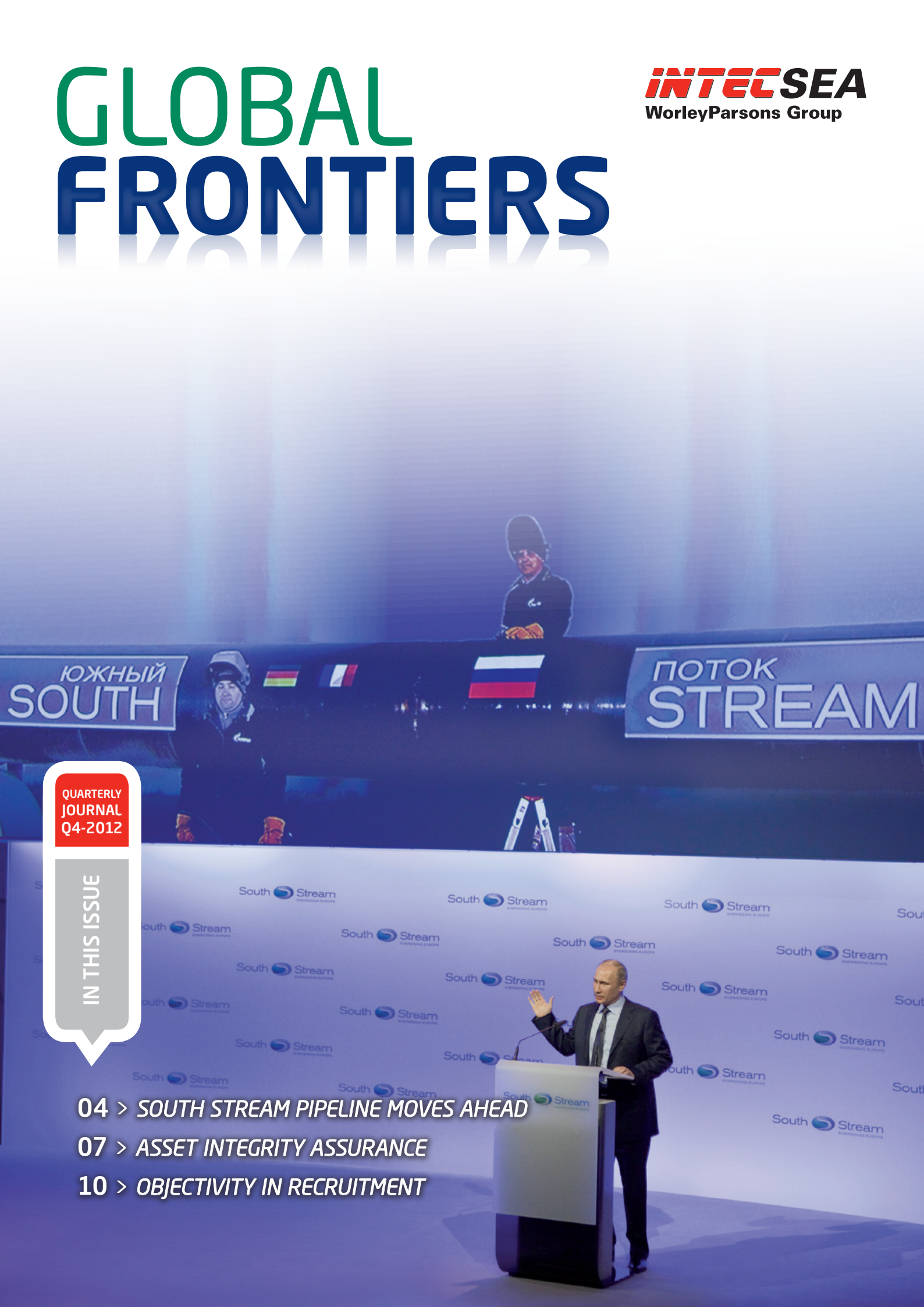

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INTECSEA
15600 JFK Boulevard
9th Floor
Houston, TX 77032, USA

Managing Editor

Michelle Lang
michelle.lang@intecsea.com

Contact Information

www.intecsea.com

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Front Cover Image:
Brazil Project - Page 4

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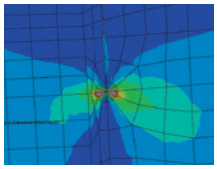
Image Source: South Stream Transport B.V.



All at INTECSEA and WorleyParsons wish to extend our deep condolences to those affected by the tragic events at the Amenas gas facility in Algeria. We have worked closely with BP and Statoil for many years, and mourn the loss of admired friends and colleagues.

Letter from the President

by Uri Nooteboom

Obsolescence per se is not a bad thing; obsolescence is needed to rejuvenate and sustain growth and we all will become obsolete at one point.

A couple of weeks ago I decided to clean out the cabinet in my office at home since I was running out of shelf space. I had several boxes of 3.5-inch diskettes on the shelf. Many of them were marked "Backup, disk X of many". I didn't remember what they were supposed to have backed up, but the passing of time and the generation of new fresh data made them irrelevant anyway, so in the trash they went (taking care to erase content first which was easily done with a pair of tin snips).

Digging deeper behind this stash of old diskettes I discovered a box of 5.25-inch floppy disks. The box identified them as "specifically designed for PC-AT". In it were half a dozen of floppies labeled with "1992 tax return". Apart from the obvious, that I am getting older, it made me realize (again) that there is no such thing as permanent digital media. I am not sure what the shelf life is for these floppies, but even if they don't have mold growing and are still good, 5.25-inch floppy drives are no longer around and the program to interpret the data was a DOS program, now long obsolete, which probably wouldn't run on any modern-day operating system anyway. So, in all practicality, unless I have a paper copy somewhere, I no longer have a record of my 1992 tax return if I ever needed it.

While on the subject of records, like most families we have a shoebox full of photos from our parents of distant family members unknown to us, some old and faded going back to the turn of the previous century. During one of my recent home projects I had managed to scan and digitally restore all of them; they are now in bits and bytes on my computer. Ditto many years of home movies transferred from 8mm film, VHS, Betamax, and microtape. All my other records have been scanned and rest in digital format on my computer as well. Backup is provided by a NAS with RAID 5; any 2 hard drives can fail without losing any of the data; the system is supposed to be able to heal itself at least for a while. I am reasonably confident that my digital data and records will be safe for the immediate future.

Nagging concerns remain: storage media can wear out or burn out and may no longer be replaceable; data formats change and may no longer be backwards compatible; software companies may go out of business or decide to discontinue any further upgrades for the next version of O/S; the "Cloud" may disappear (do we know what happens to data stored in the "Cloud" when the service provider decides to shut down their servers?); malware may penetrate my firewall and attack my data; how much redundancy is enough? A recent blackout of our company email servers proved that even triple redundancy may not be 100% bulletproof.

I realize that for now I have committed myself to keep upgrading hardware and data formats and storage solutions until data preservation is no longer relevant or until I am too tired to worry about it any longer.

I kept the floppies, and they are still sitting on my shelf as a reminder of perpetual transformation and obsolescence. I may frame them and display them somewhere on the wall. Obsolescence per se is not a bad thing; obsolescence is needed to rejuvenate and sustain growth and we all will become obsolete at one point. What is troublesome is the potential loss of records associated with this obsolescence. Call it loss of legacy for lack of a better term.

Until then, as a final safeguard I am considering backing up all my electronic data to hard copy and keep it in a fireproof safe. Oh wait, my wife is already doing that...

South Stream Pipeline Moves Ahead

By Ping Liu

Russian President Vladimir Putin marked the start of the South Stream Pipeline Project on December 7, 2012, through a symbolic welding ceremony held during celebrations near Anapa, on the Russian coast of the Black Sea.

INTECSEA Delft was invited to attend and its delegates included: Ping Liu, Director of Operations; Alex Mayants, VP of INTECSEA Moscow Operations; Martijn van Driel, Project Manager; and Arjen Meijer, Project Engineering Manager.

The event, named "South Stream - Welding the Partnership", celebrated the Russian-European cooperation that forms the foundation of the project and marked the start of its implementation.

During the past several months, the most significant arrangements for both the offshore and onshore sections of the pipeline were concluded. Particularly important milestones were the Final Investment Decision (FID) for the South Stream Offshore Pipeline in November 2012 and the set-up of joint ventures for each section of the project - both onshore and offshore.

The South Stream Pipeline Project consists of several sections, spanning over 2,300km. It will transport natural gas directly from Russia to countries in Central and Southeast Europe. The 930km offshore section will start at the Russian Black Sea coast in the area of Anapa, cross the Turkish Exclusive Economic Zone in the Black Sea and come ashore on the Bulgarian coast near Varna. A significant part of the offshore pipeline crosses the abyssal plane of the Black Sea where the water depth exceeds 2,200m.

South Stream Transport B.V. has been established for the planning, construction, and subsequent operation of the offshore pipeline through the Black Sea. OAO Gazprom of Russia holds a 50 percent stake in the joint venture. Italian company Eni S.p.A. holds a 20 percent stake. French energy company EDF, and German company BASF SE/Wintershall Holding GmbH, each hold a 15 percent stake in the project.

South Stream Transport has contracted INTECSEA to perform the Front End Engineering Design (FEED) of the South Stream Offshore Pipeline project.

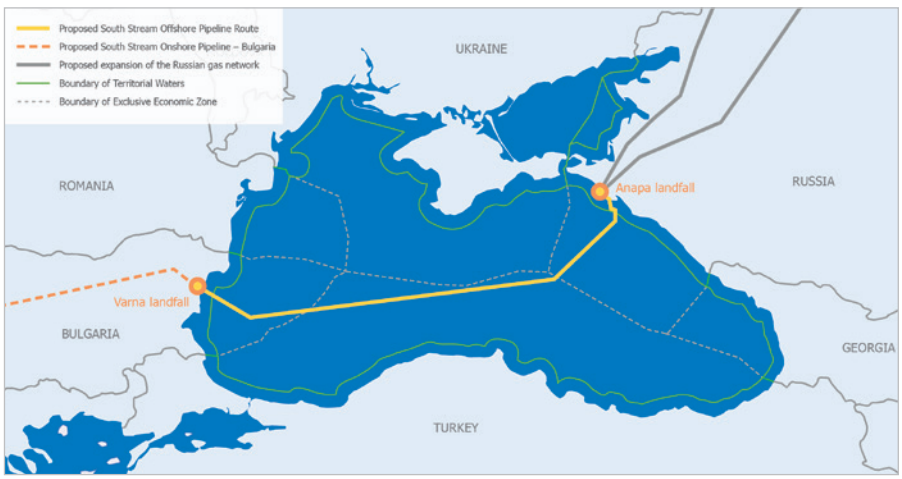
In summary, the scope of work for the South Stream Offshore Pipeline FEED includes the following:

- Develop the FEED for the offshore pipeline
- Perform offshore pipeline design and manage the ongoing and complementary surveys
- Perform pipeline corridor final selection and route optimization sufficient for permitting and EPC bidding procedures
- Create the basis for an integrity management program and implement corresponding activities relating to the design and tendering phases
- Develop the FEED design basis
- Demonstrate a safe and environmentally friendly installation and operation of the pipeline
- Prepare and proactively support the permitting activities for construction in the different countries concerned
- Support, as far as the design phase and preparation of subsequent phases are concerned, pipeline certification by Det Norske Veritas (DNV)
- Establish cost and schedule estimates for project implementation
- Assist definition and implementation of the pre-qualification program, in an integrated manner for line pipe and coating
- Create the technical basis for ITTs related to material supplies and pipeline EPC to allow tendering and support the customer in the tendering process
- Develop specifications and manage implementation of the Manufacturing Process Qualification Tests on selected supply chains including steel mills, plate mills, pipe mills, and coating yards in an integrated manner for line pipe and coating

INTECSEA has already achieved great success and recognition for its work on record-setting projects in the international oil and gas industry. A successful conclusion to the South Stream Pipeline Project will further establish its reputation as a world leader in cutting edge pipeline technology.

Opposite Page:

The celebrations were attended by Vladimir Putin, President of the Russian Federation and representatives of the other participating countries. (Source South Stream Transport B.V.)



Approximate Route of the South Stream Project Pipeline (Source South Stream Transport B.V.)

These initiatives are focused on providing industry leading capability and best practice engineering, available to be effectively deployed in all INTECSEA worldwide locations.

Technology Focus at INTECSEA

by Phil Cooper

Fig. 1: INTOOLS Suite

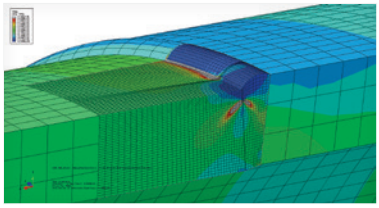


Fig. 2: Advanced ECA

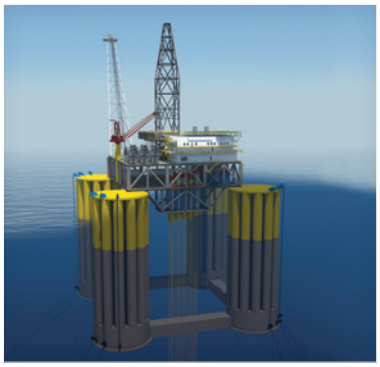


Fig. 3: Dry Tree Semi-sub concept

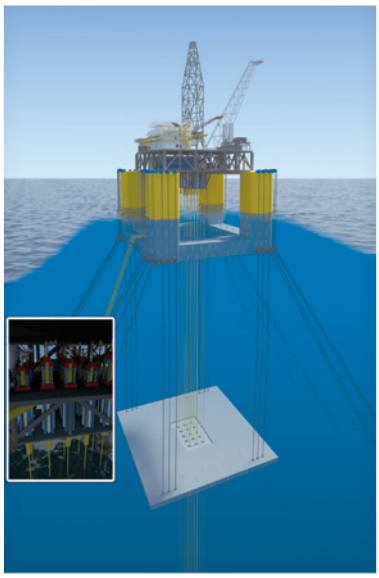


Fig. 4: Dry Tree Semi-sub concept

Technology has always been at the heart of INTECSEA's heritage and culture, but 2012 has seen a renewed strategic focus on retaining our position as leaders in subsea technology. The 2012 technology program spanned innovation, tools, knowledge sharing, and publications. These initiatives were focused on providing industry leading capability and best practice engineering, available to be effectively deployed in all our worldwide locations. The following are a few highlights of 2012 and some of our plans for 2013 briefly outlined.

Innovation

Our innovation workstream seeks to identify new and emerging techniques and technologies that have the potential to add significant value for our customers. Highlights from 2012 include:

- Completed an Arctic Subsea Processing JIP which took a close look at practicalities of boosting, separation, power, and flowline heating for ultra-long tiebacks in ice covered waters, and a parallel study on deep trenching Arctic pipelines
- Commenced a Lined Pipe Fatigue JIP which seeks to reduce conservatism in design of lined pipe in an effort to widen applicability and deliver substantial cost and schedule benefits (Fig. 1)
- Applied the ROPES analysis tool for assessing wake effects on moored vessels, which is already allowing us to help customers develop safe solutions for FSRU and LNG carrier offloading systems
- Introduced the proprietary FLEXAS analysis tool for rapid and accurate analysis of complex nonlinear structural mechanics problems – our first "rocket science to subsea" technology transfer
- Further developed two Dry Tree Semi-sub concepts in Houston, which promise vastly superior motion characteristics compared with our competitors' offerings
- Successfully integrated GIS systems for subsea field development planning, project delivery, and subsequent data management and asset integrity support
- Applied enhanced collapse resistance design methods, setting new industry benchmarks for large diameter deepwater pipelines

Moving into 2013, many of these initiatives will continue, but with an added focus on supporting adoption of subsea processing equipment through a holistic approach to system engineering, equipment qualification, and asset integrity considerations.

Tools

Over the years, our expert teams have developed an extensive set of powerful design tools, ranging from simple spreadsheets to sophisticated parametric FE models, to support the design of subsea and floating systems. As we continue to grow, there is an increased need to collate, standardize, and validate these tools so INTECSEA can ensure all customers benefit from the best available design methods, wherever the project location. Part of the resulting "INTOOLS" suite is illustrated in Figure 1.

Knowledge Management

Balancing the increasing demand for specialist subsea and floating systems engineering services with the finite supply of experienced engineers is a challenge for all of us. INTECSEA is addressing this by strengthening its knowledge sharing and global collaboration tools. This makes it possible for junior engineers in a small, remote office (or in a customer location), to access the entire team of experts, and our "corporate memory", through a powerful intranet toolkit. As well as connecting our own specialists, this platform spans the entire WorleyParsons organization, so no INTECSEA engineer is ever alone. For customers, this means "buy one, get 40,000 free!" We firmly believe that continued focus on these four workstreams will keep INTECSEA at the forefront of the industry, and allow us to provide unsurpassed value and innovation for our customers. We are proud of how far we have come, and are eager to see further technology developments emerge from INTECSEA in years to come!

The benefits to INTECSEA and its customers are significant. They are systemic and provide commercial, reputational, and managerial results that when properly implemented make any outlay cost in its deployment acceptable in terms of the protection afforded by the approach.

Asset Integrity Assurance

by Gordon McCulloch,
Chief Engineer, Asset Integrity Solutions
INTECSEA Knaphill

Asset Integrity Assurance (AIA) evolves with the business as do the key processes that support its operation and deployment. AIA is a major component of Asset Integrity Management (AIM) and a significant tool in the box of methods that helps INTECSEA bring the best and latest Asset Integrity (AI) market provision to its Clients. AIA is integral to AIM as understood in every major energy company the world over. It is therefore an essential requirement to the working of strategies, plans, and tools in all major projects and operating assets. Its relationship to AIM can be shown in Figure 1 as an endorsement process supporting both the delivery (AIM) and the objective (AI).

This way of understanding and approaching AIA has been developed from the "OGP Guide to Asset Integrity" (2008), the contributors to which are the most significant oil and gas companies in the world. This ensures there is provenance in the structure and application of the above method and through this link and the regulatory link to the HSE (UK), its requirement to be carried out can be ultimately demonstrated.

How AIA Works

The initial step of establishing the need for AIA has been proven by virtue of its embedment in every AIM system in use worldwide. INTECSEA has developed a methodology of implementing this process into customers' projects. Figure 3 shows AI has two key elements throughout its lifecycle - management and assurance. The elements include the following activities:

- Operational Integrity Management
- Safety Management (MAH Process)
- Codes and Standards
- Legal and Regulatory Compliance
- Risk Management
- Management of Change
- Competency Assurance
- Independent Verification
- Independent Assurance Reviews

This set of activities comprises all that should be identified and required to ensure the Project has a clear picture of its AI needs and deliver a functioning, optimized Operational Integrity Management System to its customers.

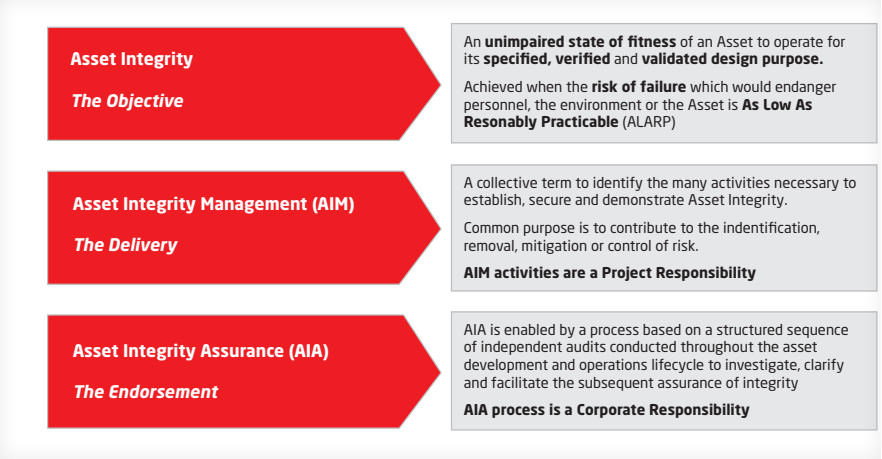


Fig. 1: Asset Integrity Definitions

Independent verification is an industry standard requirement in the UK in operations and as such has spread globally as good practice. It is essentially a means of using a third party of standing to evaluate and examine the practices, methods, and output of the Safety Management process. This means that the project developed and operations applied Safety Critical Elements and Performance Standards to ensure the asset will be safe within the risk management tolerability limits agreed or set by a regulator.

Independent Assurance Reviews

As previously stated, AIA is the endorsement process. It is carried out in projects by a third party group to demonstrate that all aspects of risk (safety, business, societal and environmental) related to AI have been accounted for, mitigated, and managed for the lifecycle.

AIA program objectives carried out by these third parties include:

- The avoidance of integrity related project disasters
- Providing assurance to management that project assets are designed and built to a standard whereby they have the ability to perform as required
- Providing confidence to stakeholders that asset value is being properly protected

(continued on pg 8)

Fig. 2: The INTECSEA Deming Cycle - with assurance clearly shown

The AIA team is integrated into the corporate and project level, which ensures they are outside the influence of project politics.

Asset Integrity Assurance (cont. from pg 7)

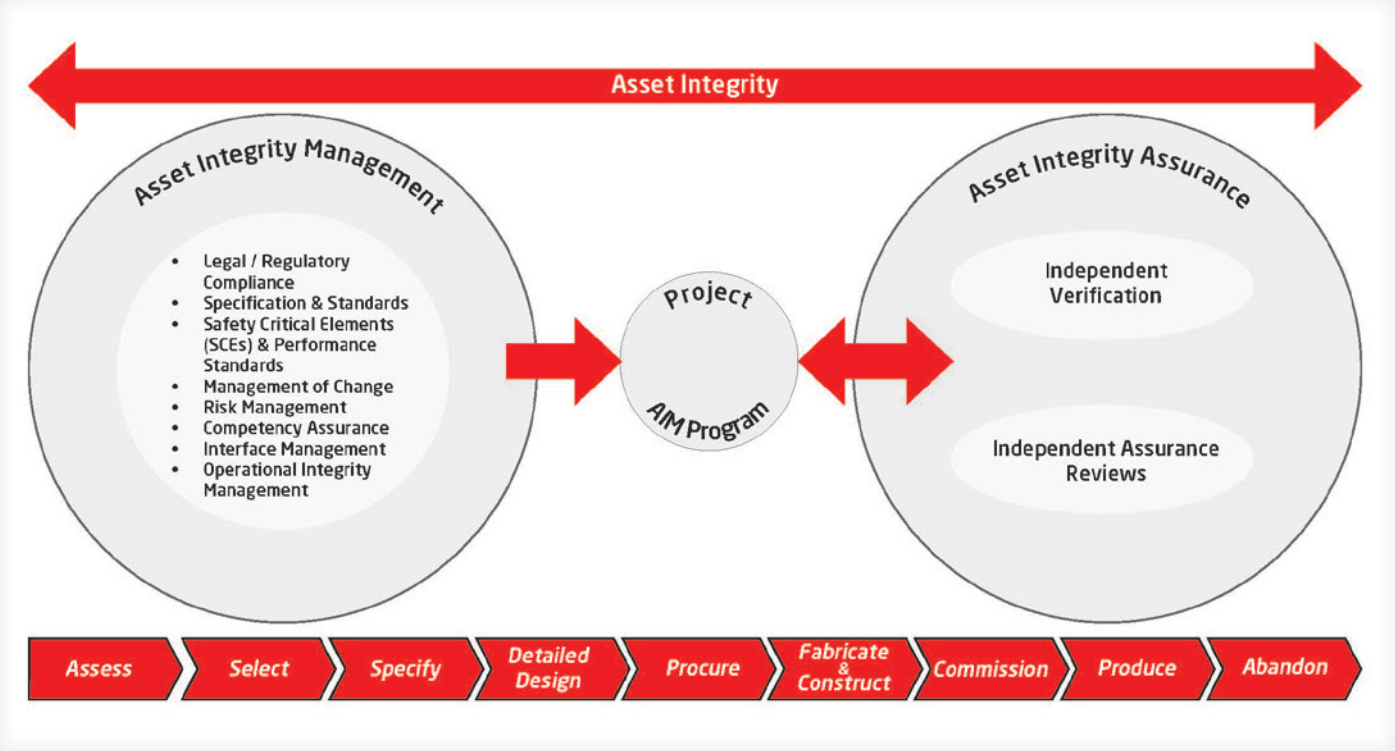


Fig. 3: Asset Integrity Overview

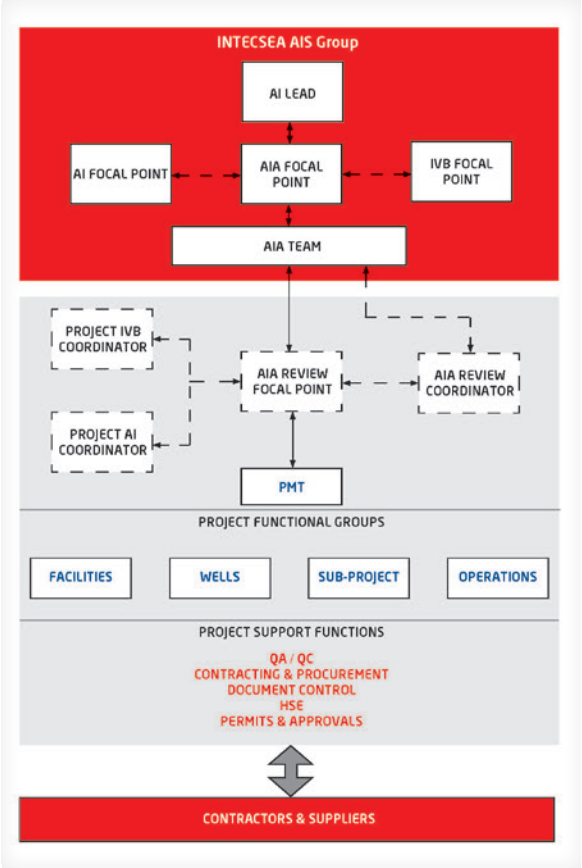


Fig. 4: AIA Interfaces within Projects

- Adding value by identifying areas of improvement that otherwise would have been missed through other review processes
- Confirming that corporate AIM requirements are being addressed and being given appropriate attention and resources
- Providing feedback on the effectiveness of project AIM programs
- Capture and transfer of creative and cost efficient AIM ideas from projects and their dissemination for adoption as best practice
- Assurance of compliance with the commitments set forward in the INTECSEA AIS Charter

Suggested Structure of AIA Management

The amount of oversight depends on the project size and risk, but it can be broadly modeled as shown in Figure 4. Everyone involved in a project has a role to play in meeting the objectives of AI. The AIA team is integrated into the corporate and project level, which ensures they are outside the influence of project politics.

Benefits

The benefits to INTECSEA and its customers are significant. They are systemic and provide commercial, reputational, and managerial results that when properly implemented make any outlay cost in its deployment acceptable in terms of the protection afforded by the approach. Clients require an optimized production asset that can be demonstrated to be safe and business effective with a traceable and demonstrable evidence trail for regulators and licensing bodies. This is essential in the event of a safety or operational outage that reaches outside of the company (i.e. Macondo).

For more information, contact gordon.mcculloch@intecsea.com.

2012 Arctic Technology Conference

by Amy Sturge, Joe Cocker, and Mike Paulin

Following a successful inaugural year, the 2nd Arctic Technology Conference (ATC), held December 3-5th, 2012, validated this event as a key Arctic conference for the international Oil & Gas Community. The event brought international parties together from all sectors including operators, engineering companies, government, service providers, universities, and product suppliers. WorleyParsons and INTECSEA shared a booth during the conference which was manned by representatives from Anchorage, Calgary, Houston, St. John's, and Woking. WorleyParsons and INTECSEA were also Corporate Sponsors and provided lanyards to the 1,243 attendees.

This year's conference theme was **"Challenges for Today, Opportunities for Tomorrow"**. The conference, which had over 150 technical presentations and posters, included 4 plenary sessions, 4 panel sessions, and topical breakfasts and luncheons. 2012 was a busy year for Arctic campaigns, projects, and technology development. Many individuals from representative companies attended the conference and presented their experiences, findings, and advancement since the last ATC conference. Representatives discussed insights from ongoing initiatives including changing our mindset in the Arctic from "the bigger the better" to better understanding reducing the overall operating footprint.

Beyond sponsorship and exhibiting, INTECSEA, WorleyParsons, and NANA WorleyParsons were well represented in the technical program. Together, they were the 2nd largest technical showing (based on primary author affiliation) with 7 oral presentations, 1 technical poster presentation, and 1 panel presentation:

- **Probabilistic Methods for Ice Gouge Analysis in the Beaufort Sea** – J. Caines, G. Lanan, A. Sturge, A. Georghiou, M. Paulin
- **Direct Electrical Heating (DEH) Provides New Opportunities for Arctic Pipelines** – R. Roth, R. Voight, D. DeGeer
- **Ice Gouge Interaction with Buried Pipelines Assessment Using Advanced Coupled Eulerian Lagrangian** – S. El-Gebaly, M. Paulin, G. Lanan, P. Cooper
- **Recognition and Management of the Distinctions of Harsh Environment FPSO Project Design and Management** – S. Leitko, A. Larson, M. Leblanc
- **Lessons Learned and Paths Forward – Fire and Gas Protective Systems for Arctic Petroleum Development** – N.K. Rhodes
- **Arctic Pipeline Integrity Management Using Risk Based Integrity Modeling** - P. Thodi, M. McQueen, M. Paulin, G. Lanan
- **HVDC Enables Subsea Arctic Production Technology** – R. W. Voight
- **Best Practice in Arctic Concept Selection – How to Avoid the Traps (Poster)** – M. Paulin
- **Panel: Flow Assurance Challenges and Arctic Production I** – S. Bufton

INTECSEA also released an updated Arctic poster, available in the December 2012 edition of Offshore Magazine entitled "2012 Survey of Arctic & Cold Region Technology for Offshore Field Development". This is an update of the poster released during the first ATC event. The poster serves as a guide for those involved in Arctic development projects due to the significant amount of information it contains.

A copy of the poster is available for download from Offshore Magazine online at www.offshore-mag.com/maps-posters.html

L-R: Premkumar Thodi, Amy Sturge, Joe Cocker and Michelle Lang

When one variable changes it can impact everything else in the recruitment process and in the worst case scenario send the search back to ground zero. This is why it is important for the recruitment professional to remain objective at all times.

The Importance of Objectivity in Recruitment

by John Sanders

The most important goal of any recruiter is to hire the best person to do the best job for the longest period of time. However, recruiters have a very small window of opportunity to evaluate and predict critical success factors that will lead to a quality hire. Within two to three meetings you have to determine if the person can do the job, will they align with company culture, can they grow into other roles over time and will they stay long enough to justify the hiring cost and have a positive impact on the business. These are just a few factors that recruiters are predicting while trying to fill a job vacancy.

Over the years I have seen that the most successful recruiters are able to maintain objectivity throughout the hiring process. Objectivity plays such an important role because there are many emotional triggers that are pulled during a full recruitment cycle. For example, the job applicant selected for hire can back out on an offer at the very last minute or the hiring manager may have a new requirement that augments the search and leaves all previous applicants unqualified. Unpredictable variables like these create frustration for recruiters who are trying to carefully balance managers' needs and job applicants' desires to ultimately meet their own objective of hiring the best person to do the best job.

When one variable changes it can impact everything else in the recruitment process and in the worst case scenario send the search back to ground zero. This is why it is important for the recruitment professional to remain objective at all times, because in a highly dynamic situation it is their job to keep a calm, cool head and keep their eye on the ball. I liken it to an NFL running back who is running forward with his eye on the football with multiple defenders trying to stop him. If his primary focus becomes the defenders then the ball may fly over him, miss his hands or worse drop after he has possession of the ball. His most important objective is to catch the ball and drive it forward past the goal line regardless of anything else.

In recruitment catching the ball is getting a requisition, driving it forward is progressing it through the recruitment life cycle and a touchdown is when a great person is hired into a great job. If at any point it becomes more than meeting a business need, doing right by the job applicant and ensuring your hiring managers conducts a legal and compliant search, then objectivity could be lost. And once objectivity is lost, predictability goes out with it. Any business person will tell you that running an unpredictable operation will lead to many sleepless nights.

The importance of objectivity in recruitment is critical to filling a job. Objectivity is also a core ingredient of emotional intelligence and some of the most successful people I know in and out of recruitment are the most objective. How does objectivity impact your job? I regularly review my own deliverables and duties to ensure I maintain the highest level of objectivity so that I can deliver a consistent and quality recruitment experience for people interested in working at INTECSEA.

In photo, L-R: Glenn Lanan, Craig Young

INTECSEA Presence in Alaska

by Amy Sturge

A new INTECSEA sign has been added at the NANA WorleyParsons office in Anchorage, Alaska. The two groups have collaborated in the past, combining NANA WorleyParsons' knowledge of Alaska's North Slope and INTECSEA's experience with Arctic offshore pipelines and installation. We look forward to continued growth and partnership to increase our presence in the evolving Alaska offshore market.

Inside INTECSEA

INTECSEA Perth and the University of Western Australia

by Jason Gibson

INTECSEA Perth's pipeline team and INTECSEA's Global Technology Manager, Phil Cooper, toured the University of Western Australia's O-tube facility on November 29, 2012 as coordinated by Jason Gibson. The main goal of the visit was to initiate future collaborations between INTECSEA and The University of Western Australia (UWA) Centre of Offshore Foundation Systems (COFS) as well as understand the technical background behind UWA's O-tube facility and COFS geotechnical testing center. UWA's O-tube program was initiated in partnership with Woodside, Chevron, and the Australian research council, with support from local engineering consultants. The O-tube began operation at the end of 2010. The O-tube is a huge closed-loop flume with a base of natural seabed soil. It contains 60 tons of water which can be rapidly circulated, simulating the underwater conditions during cyclones. It was conceived, designed, and assembled by UWA engineers.

In line with INTECSEA's global strategy on pioneering in subsea pipeline technology, collaboration with UWA's O-tube research team will expand research beyond investigations into pipeline stability on two of the three sides of the ocean-seabed-pipeline interaction triangle.

The INTECSEA team also checked out the COFS' geotechnical centrifuge testing facility and then discussed various collaboration and knowledge sharing pathways with the recently appointed SHELL EMI Chair Professor, David White. The trip was considered a great initiative towards prosperous industry-academia collaboration in Perth's subsea oil and gas industry.

For any further inquiries please contact Jason.gibson@intecsea.com

In photo, L-R: Kourash Abdomaleki, Phil Cooper, Carlos Cicilia, Andrew Campbell, Mendi Golbahar, Jason Gibson, Kenneth Gomez, Kendall Hawthorn, Professor Matthew White (UWA-Shell EMI Chairman), Ahmed Reda, and Sebastian Nollis (Head Geotech, WP)

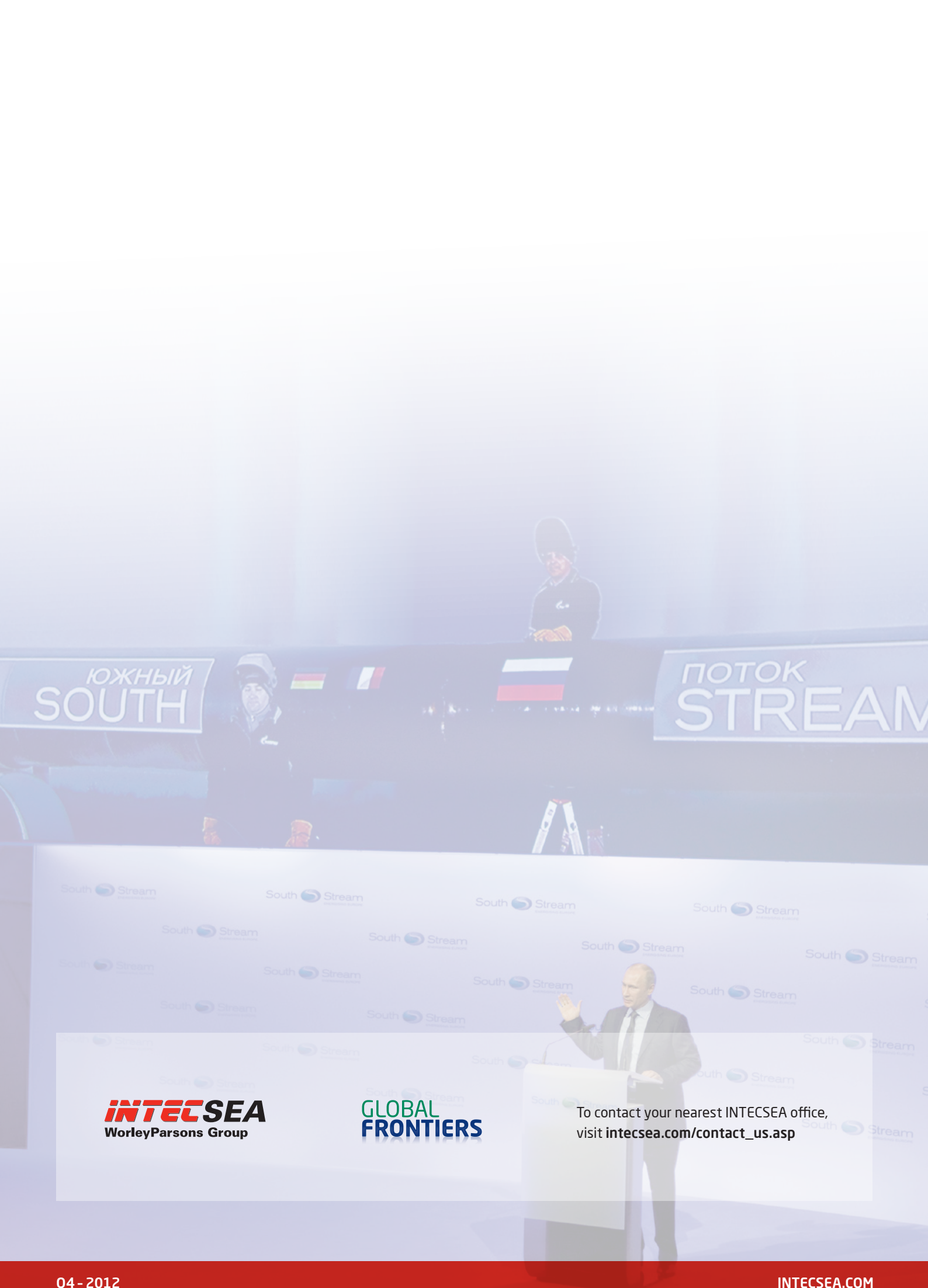
Offshore Pipeline Technology Conference

by Neil Willis

The Offshore Pipeline Technology (OPT) Conference, held in Amsterdam, is a leading international gathering of pipeline experts and is now in its 36th year. Once again, INTECSEA made a strong contribution to the event, with an invited Keynote Paper on Arctic pipelines from Mike Paulin (St. John's), and an update on the South Stream pipeline project from Arjen Meijer of the Delft office. Both papers prompted vibrant discussion in the hall.

INTECSEA also sponsored the popular Barista Coffee stand, next to our exhibition booth. The photo to the right shows INTECSEA UK Engineering Manager Neil Willis holding a "Perdido" coffee, with our chocolate logo (corporate colors had to be relaxed on this occasion). With 180 attending the two-day conference, this was the largest turnout for OPT to date. Phil Cooper (INTECSEA Global Technical Director) is on the OPT Technical Advisory Committee and chaired several of the technical sessions.

In photos, clockwise: The INTECSEA coffee menu; Neil Willis holding a "Perdido" coffee; Arjen Meijer's South Stream update.



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