MESSAGE FROM GENERAL MANAGER

Where there’s a will, there’s a way

Two key issues impacting shipping are Somalian piracy and the drive to reduce ship greenhouse gas emissions. There appears to be a lack of political will to resolve either.

As I look back over previous issues of the SIGTTO Newsletters, one common feature in the articles, which is rather depressing, is the continuing threat of piracy off Somalia. As I write this, the situation seems to be getting worse. The cost of ransom settlements is on an upward spiral while the time between a vessel being taken until its eventual release is also extending. Ship detention periods of over five months now seem to be average.

As I write it is reported that there are some 700 seafarers and 30 vessels forcibly detained off the coast of Somalia. Also, we seem to be entering a new phase characterised by an increasing number of cases involving violence towards, and in some cases the murder of, seafarers.

From the industry side SIGTTO fully supports the concepts laid down in the Best Management Practice to Deter Piracy off the Coast of Somalia and in the Arabian Sea Area, 3rd edition June 2009, usually referred to as ‘BMP3’, available from SIGTTO website or from www.mschoa.org. However, the document’s provisions represent the minimum that all ships should be implementing. Having implemented the guidance, each ship management team, together with its shore-based management team, should then critically review the situation to assess the need for any additional measures.

SIGTTO was a joint signatory on a letter written to the Secretary General of the United Nations, Ban Ki Moon. The objective of the initiative is to draw the piracy issue to the attention of the UN Security Council and thus to raise awareness of the impact of piracy at the highest political levels possible.

Despite this activity on the part of the shipping industry, we are left with a feeling that there is a lack of political will to resolve this issue and one is left wondering what it will take to get effective political action.

The Secretariat would like to draw members’ attention to a new website, http://saveourseafarers.net. Please visit it and register your support for the ‘Save our Seafarers campaign’.

Turning to environmental issues, after a long wait, the EC Commission Decision 2010/769/EU was issued on 13 December 2010. This had the effect of formalising the use of the fuel equivalency method for LNG ships as being in compliance with the requirements of the EU Directive 2005/33/EC, i.e. the ‘Fuels Directive’. This method demonstrates that the sulphur emissions stemming from the visit to an EU port by an LNG vessel can be less than that if 0.1 per cent sulphur fuel was used for the visit by burning a combination of boil-off gas and a pilot of fuel oil. The document contains guidance on the mass ratio of fuel oil to gas for a range of fuel oil sulphur contents which will satisfy compliance.

The IMO Marine Environment Protection Committee met for its 61st Session (MEPC 61) while SIGTTO was holding its September 2010 Panel Meeting in Denpasar. At a political level progress on the issue of reducing emissions of greenhouse gases from...

continued on page 3
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The SIGTTO focus in the IMO debate on ship greenhouse gas emission reductions is on energy efficient ship design.

In a previous submission to IMO (MEPC 60/4/44) SIGTTO reviewed data submitted by members. The conclusion was that proposals, initially developed by Denmark for gas ships, were acceptable for LPG ships but there were problems in applying them to LNG ships. Specifically, for the vessels employing slow-speed diesel engines with reliquefaction plants there are only effectively two data points, i.e. two discrete sizes. Statistically, it is not possible to develop a baseline curve through two points or, to be more accurate, an infinite number of curves can be developed through two points. However, if these ship types are evaluated against the LPG curve developed by Denmark, they come close to the results and this may be a way forward.

For LNG carriers using gas as a primary fuel, i.e. steam driven LNG vessels and dual-fuel diesel electric (DFDE) ships, there are also problems with the data assessment. The current IMO work excludes DFDE and steam plants, as highlighted by the following section of the IMO document 

As regards the regulatory response to environmental challenges at IMO, the work is divided into two areas. The first is addressing the use of ‘market based instruments’ (MBIs) while the second deals with technical methods to incentivise more efficient ship designs. The latter initiative is focussed on developing the Energy Efficiency Design Index (EEDI), the Energy Efficiency Operational Index (EEOI) and the Ship Energy Efficiency Management Plan (SEEMP).

Our effort at the SIGTTO Secretariat is concentrated on the EEDI since this will affect future ship designs. The index is shown as a curve against ships size expressed in deadweight tonnes.

The SIGTTO General Purposes Committee (GPC) has initiated a further submission to IMO, with help from members, specifically addressing the DFDE ships. There are still some underlying problems, primarily because the data set is small. Although there are now 31 such ships in service, because many are sisterships there are only 8-10 data points and these fall over a limited ship size range.

As regards other IMO matters the submission of the draft revised IGC Code to IMO, specifically at the 15th Session of the Bulk Liquids and Gases Subcommittee (BLG 15), is reported elsewhere in this issue.

The September 2010 SIGTTO General Purposes Committee (GPC) and Panel Meetings were held in Denpasar, sponsored by the Tangguh LNG project and the Joint Transportation Group at Pertamina. We had an interesting programme and the event was attended by over 120 members and guests.

In November 2010 the Board meeting and AGM were held in Houston. As is usual for autumn meetings, there were a number of resignations and new appointments to the Board in Houston. The following directors stepped down:

Mr H Asano - Chubu Electric
Mr Y Aoki - MOL
Mr Joe McKechnie - GDF SUEZ
Mr Morten Steen Martinsen - BW Gas
Mr T Maeda - Tokyo Gas

I would like to record the Society’s thanks to these directors for their service and contribution to the smooth running of the Society. The following new directors were appointed:

Mr Z Aizawa - TEPCO
Mr T Hashimoto - MOL
Mr Rudolf Adamiak - GDF SUEZ
Mr Øyvind Solem - BW Gas
Mr S Hirano - Osaka Gas

Mr Aizawa has taken over the role of senior vice president formerly held by Mr Asano.

I noted at the end of the last Message from the General Manager that staff changes within the Secretariat were in the offering. I would now like to welcome Captain Craig Jackson and Captain Cherian Oommen to our office as technical advisors. More details about our new Secretariat staff members are provided on page 9.

The science of fighting liquefied gas fires has changed little over the past 25 years but other things have

**TRAINING**

**Firefighting film, take two**

The SIGTTO General Purposes Committee (GPC) has initiated a project to remake the liquefied gas firefighting film. The current version was made in the mid 1980s and, whilst the science of fighting fires has changed little, the ships shown in the film as well as the style of dress portrayed in the firefighter protective gear instantly date the production and hence reduce its value as a training aid.

The updating work is being carried out jointly with Videotel, a company specialising in training films and computer-based training (CBT) programs. In addition, expert guidance is being provided by Neil Ramsden who has helped SIGTTO in the past with the writing of the Liquefied Gas Fire Management book.
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Henri Systems Holland BV
t: +31 78 610 0999
e: mdv@hsh.nl
IGC CODE

IGC Code revision enters its final phase

As indicated in the Autumn 2010 edition of SIGTTO News, the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code), which had been extensively revised by industry under SIGTTO coordination, was returned to IMO.

The revised document, representing some three years concentrated work, was formally presented to IMO government delegates at the 15th Session of the Bulk Liquids and Gases Subcommittee (BLG 15) which was held on 7-11 February 2011. While the draft of the revised IGC Code was generally well received, there was an inevitable desire on the part of some of the government delegates to scrutinise the work; it was a large piece to swallow at one go!

There were a number of options going forward. The one selected at BLG 15 was to appoint a correspondence group to investigate any outstanding technical issues and report back to the next meeting, BLG 16, in early 2012. Over the coming year SIGTTO will need the support and goodwill of key people involved with the revision, particularly the chairmen of the various working groups established by industry to carry out the revision work. It is important that, where appropriate, careful explanation of why changes were introduced is given to the government delegates at IMO through the correspondence group.

In effect, what is happening now is that the phase where industry had direct input to the IGC Code revision, i.e. the technical work, is now over and the political process of shepherding the revision through the IMO committee system has started.

If all goes according to plan, the report of the correspondence group will be reviewed at BLG 16 early next year. There will be some internal IMO processes to follow, including the review of specific elements by other IMO subcommittees, but everything should be on track for entry into force of the revised IGC Code in 2014.

Due to the IMO rules that limit the number of correspondence groups that can be active at any one time, the IGC Code correspondence group has been combined with the correspondence group charged with developing the new International Code of Safety for Gas Fuelled Ships (IGF Code).

The IGF Code is being developed to cater for the expected increase in the use of gas as a general marine fuel in the years ahead. Gas fuel is regarded as a way of complying with the increasingly strict controls governing ship emissions of harmful atmospheric pollutants which offers a number of benefits. The preferred option is to supply the gas bunkers to the ship in the form of LNG for storage and regasification onboard. SIGTTO Secretariat staff are also engaged with development work on the IGF Code to ensure that best use is made of the gas shipping industry’s long experience with cargo boiloff gas as a propulsion system fuel. The aim of the initiative is to have the new IGF Code enter into force also in 2014.

NEW MEMBERS

New pair welcomed

Two companies involved in the LNG sector have joined SIGTTO as full members since the last Newsletter was published. The listing of the companies below shows their date of joining the Society. The SIGTTO membership now stands at 122 full members, 59 associate members and 20 non-contributory members.

<table>
<thead>
<tr>
<th>Company Name</th>
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<tr>
<td>Japex</td>
<td>1 January 2011</td>
</tr>
<tr>
<td>Esso Highlands Ltd</td>
<td>1 February 2011</td>
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Headquartered in Tokyo, Japex is engaged in crude oil and natural gas exploration and production activities in Japan and overseas as well as in LNG distribution operations in Japan. The company uses its LNG satellite system to meet the demand for gas in certain regions of the country not served by the gas pipeline network or coastal terminals. On the main island of Honshu Japex supplies northern regions with LNG received at the Niigata import terminal. Onward distribution is handled by means of cryogenic road tankers and multimodal tank containers transported by both rail and road.

On the island of Hokkaido Japex distributes LNG, again by road tankers and tank containers, from a small liquefaction plant it built to serve the domestic Yufutsu oil and gas field. The company is currently building a small LNG receiving terminal at Yufutsu. To be commissioned later in 2011, this facility will enable shipments of LNG from other Japanese LNG terminals using a small coastal tanker.

In June 2009 Japex signed a memorandum of understanding with Gazprom of Russia and Japan’s Itochu Corp under which the partners will investigate the feasibility of an LNG export terminal at Vladivostok to enable the exploitation of Russia’s eastern Siberia gas resources. The initiative moved ahead in January 2011 when senior Gazprom and Japanese government figures signed an agreement of cooperation covering the preparation of a joint feasibility study.

Esso Highlands Ltd, a subsidiary of ExxonMobil, is constructing and will operate the new PNG LNG project in Papua New Guinea. The company is undertaking the role on behalf of its partners in the venture – Oil Search, Krotos No 2, Santos, JX Nippon Oil and Gas Exploration Corp, Mineral Resources Development and Eda Oil.

PNG LNG is an integrated development that includes gas production, pipeline connection and processing facilities in the Southern Highlands and Western Provinces of Papua New Guinea. The LNG terminal, including liquefaction and storage facilities, is being built at a location on the Gulf of Papua northwest of Port Moresby. It will have a capacity of 6.6 million tonnes per annum of LNG.

PNG LNG exports are scheduled to begin in 2014.
Hazards of cargo line pressure testing
Provisions in gas ship safety procedures requiring the pressure testing of deck cargo lines should be queried as to the specified pressure and whether such tests are necessary at all

Periodically, the SIGTTO Secretariat receives enquiries from members about the need to conduct pressure testing of the deck cargo lines on liquefied gas carriers.

By way of background understanding, it became practice some years ago to pressure test bunker transfer lines following a number of pollution incidents due to leakage, typically as a result of corrosion of the pipework. This practice of pressure testing lines has since been extended to all deck cargo lines on oil tankers. Lines are pressure tested to a defined pressure, usually once per year.

The pressure testing of oil tanker cargo lines is a pollution protection measure aimed at minimising the leakage of MARPOL Annex 1 cargoes, i.e. persistent oils. The requirement for cargo line testing is included in the Ship Inspection Report (SIRE) Vessel Particulars Questionnaire (VPQ) for oil tankers, but not for gas carriers. Such testing is reasonably easy to implement on an oil tanker.

If a gas ship operator decides that the pressure testing of cargo lines should be done, it is important that they are tested to the working, and not the design, pressure.

Liquefied gases are not Annex 1 cargoes and the SIGTTO Secretariat does not view the annual pressure testing of cargo lines on liquefied gas carries as necessary. However, SIGTTO is aware that some member companies have written cargo line pressure testing provisions into the safety management system (SMS) procedures for their gas carriers. SIGTTO’s major concern in this respect lies in some of the terminology that is used to define pressure ratings and the possibility that misinterpretation of this terminology could lead to unsafe testing practices.

The term ‘design pressure’ is often found in practical engineering and design codes such as the IMO’s International Gas Carrier (IGC) Code. This is the pressure used in design calculations to determine the strength requirements of components, typically wall thickness when dealing with pressure. The design pressure will always be equal to or greater than the working pressure.

The definition of ‘working pressure’ is not so clear but is usually taken as the highest pressure experienced in normal, steady state operations. Occasionally, the term ‘maximum allowable working pressure’ (MAWP) is encountered. This is interpreted as being the same as design pressure. The MAWP terminology is more often found in the US. However, the Secretariat has also come across the term ‘design working pressure’. This is confusing. Is it design pressure or working pressure?

It is also notable that the IGC Code states that for gas ships the design pressure for deck liquid lines “should not be less than 10 bar gauge” (IGC Code paragraph 5.2.3.3).

Testing to working pressure, or near to, on a liquefied gas carrier in service is achievable, but testing to design pressure is not. The Secretariat knows of no safe practical method for a liquefied gas carrier to test its cargo lines to design pressure in service. It would be a major exercise to do so in a refit yard. (If any member does know a safe practical method, please share it with the Secretariat and other members!)

Design pressure cannot be generated using the cargo or stripping pumps installed on a gas carrier. It has been suggested that on a refrigerated LPG or LNG vessel some liquid could be locked in, after which the thermal in-leak could be allowed to raise the pressure. Such a practice is potentially dangerous as the process is uncontrollable and gas is being used to generate the pressure (see comments below on pressure testing with compressed gases). Additionally, such an approach cannot be used on pressurised LPG ships. Others have suggested the use of dry nitrogen to pressure test cargo lines on gas carriers.

Pressure testing with compressed gases is regarded as potentially dangerous owing to the stored energy in the system; if there is a failure, the resulting energy release can be catastrophic. Classification societies have expressed reservations about compressed gas testing as a procedure because it is potentially so dangerous.

In this respect the UK Health & Safety Executive (HSE) document Safety in pressure testing. Guidance note GS4 is worth reviewing. The paper is available as a free download or for purchase under ISBN 978 0 7176 1629 9.

Among other things, this paper contains the statement “Although pressure testing using a liquid as the pressurising medium (usually referred to as hydraulic testing) is not without risk, it is by far the safer method and should be used wherever practical. Pressure testing using air, steam or gas as the pressurising medium (usually referred to as pneumatic testing) is potentially more dangerous because of the higher energy levels involved.”

The HSE document also contains a calculation method to estimate the stored energy in a system. The Secretariat applied this method to the deck liquid line of a typical LNG carrier and the stored energy at a design pressure of 15 bar g is estimated to be about 130 MJ. Whilst some may quibble at expressing this as a TNT explosive equivalence, the figure is about 30 kg of TNT on an energy equivalency basis. This is the energy release in the event that the cargo line ruptures during pressure testing.

Another relevant document is the European standard EN 1473:2007 Installation and equipment for liquefied natural gas. Design of onshore installations, which includes a table of recommended safety distances during pneumatic testing as an example. The sample case is a pneumatic test on 300 metres of 2-inch line. This could be equivalent to, say, a drain line on a fully refrigerated LPG ship. For testing at 10 bar the recommended safety distance in EN1473 is 30 metres. Clearly, for larger diameter liquid transfer lines, where the stored energy is greater, the safety distance increases.

The US Code of Federal Regulations (CFR), in section 33 CFR 156.170, contains a clause about pressure testing to 1.5
Nitrogen hazards

A trawl through the industrial accident records shows that between 1992 and 2002 there were 85 incidents involving nitrogen asphyxiation in the US. Out of the 150 people injured in these incidents, 80 died.

Many of the victims were not in enclosed spaces when they were overcome. However, they were adjacent to a nitrogen-filled enclosed space, a fractured line or other source of nitrogen that had displaced the oxygen in the ambient air. Asphyxiation resulted from the absence of oxygen and the process was relatively rapid.

Nitrogen is particularly dangerous because there are almost no warning signs; two breaths are sufficient to cause unconsciousness. There is no discomfort, smell, visual clue, headache or other sign to indicate to a person or an observer that they are being asphyxiated.

During normal breathing the stimulus or urge to breathe is the result of a carbon dioxide buildup in the blood when oxygen is converted to carbon dioxide. When there is little or no oxygen to breathe, there is not enough carbon dioxide produced to stimulate breathing.

The risk of exposure to nitrogen onboard gas carriers is rising in tandem with the increasing use of this inert gas to purge lines, maintain barrier spaces and as a refrigerant. Such exposures may occur during routine maintenance or as a result of some system or equipment failure.

By educating ship and terminal staff on the hazards posed by nitrogen during day-to-day operations, and sharing some examples, the risk of such incidents occurring can be greatly reduced. Any training programme on nitrogen hazards needs to cover not only operational staff but also those who might participate in the rescue teams responding to an incident. The accident records show that approximately 10 per cent of the deaths due to nitrogen exposure highlighted above involved rescue team members.

MANNING

Officer experience matrix

SIGTTO has prepared guidance on the recommended minimum seagoing experience and training qualifications for the full range of senior officer grades on LNG carriers and LPG carriers. The document is entitled The SIGTTO LNG/LPG Officer Experience Matrix.

The LNG officer matrix covers sea and LNG-specific experience for navigating officers while the recommendations for engineering officers deal with general sea experience as well as that onboard steam turbine vessels on the one hand, and diesel and dual-fuel diesel electric ships on the other.

For navigating officers on LPG carriers the SIGTTO matrix similarly covers sea and LPG-specific experience. The recommendations for engineering officers on LPG ships cover general sea experience as well as that on diesel-powered vessels. The matrices for both LNG and LPG officers also specify recommended training qualifications and competencies.

SIGTTO has developed the guidance as part of the drive to maintain the safety record of LNG/LPG shipping and to protect the environment. The LNG/LPG officer experience matrix offers transparent guidance for assessing the risk profile of the officer complement by balancing thresholds of experience in ranks.

The Society points out that when evaluating risk in the event of non-compliance with a particular element of the experience matrix, consideration should be given to other mitigating factors. Such factors can include bespoke training, the manning scale in place, time served with the LNG/LPG shipowner/operator and the wider competence management systems employed by the ship operator in officer recruitment and development.

UPCOMING MEETINGS

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<tr>
<td>63rd General Purposes Committee</td>
<td>24 Mar</td>
<td>Amsterdam</td>
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<tr>
<td>Pan American Regional Forum</td>
<td>14 Apr</td>
<td>Cove Point</td>
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<td>Board Meeting</td>
<td>9 Jun</td>
<td>Isle of Man</td>
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<td>64th General Purposes Committee</td>
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<td>56th Panel Meeting</td>
<td>21-22 Sep</td>
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<tr>
<td>Board and AGM</td>
<td>16 Nov</td>
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**TECHNICAL ADVISERS**

**Technical duo welcomed onboard**

As noted in the General Manager’s message on page 1, there have been some changes of staff in the Secretariat. We invite all members to welcome to the team two Technical Advisers, Captain Craig Jackson and Captain Cherian Oommen.

Capt Craig Jackson has been seconded from Teekay and has taken over the role previously filled by Capt Andy Murray. His background includes sailing on LNG and LPG ships. He left the job of manager, health safety and quality assurance in the Vancouver office of Teekay to come to the Society’s London headquarters. He brings to the Secretariat up-to-date experience from a large ship management office.

Captain Cherian Oommen has filled the place vacated by Teo Popa. He has been seconded from Maersk Tankers. Most recently he was a master on vessels carrying vinyl chloride monomer (VCM), ammonia, and LPG. He brings current experience of seagoing operations on LPG and chemical gas carriers.

As a result of these appointments, we now have a full team in the Secretariat with a diverse range of skills and experiences to serve the needs of the members.

We would also like to record our thanks to their employers for supporting SIGTTO in this way and making them available for the benefit of the membership.

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**SHIP/SHORE INTERFACE (1)**

**Manifold guidance revised, consolidated**

SIGTTO and the Oil Companies International Marine Forum (OCIMF) have jointly developed Manifold Recommendations for Liquefied Gas Carriers. The guidance given in the document is intended for new vessels and it is not implied that arrangements on existing vessels should be altered. The document is in the final stages of the review process and will be published shortly.

The recommendations have been developed to bring together in one document the manifold arrangements and cargo strainer guidelines for LPG and LNG carriers with the aim of promoting improved efficiency in operations and to assist in planning the position of loading and discharging facilities on new jetties.

These recommendations represent a revision to and a consolidation of earlier guidance published by OCIMF and SIGTTO. The previous guidelines are entitled Standardisation of Manifolds for Refrigerated Liquefied Gas Carriers for Cargoes from 0°C to Minus 104°C, Recommendations for Manifolds for Refrigerated Liquefied Gas Carriers (LNG) and Recommendations for the Installation of Cargo Strainers on LNG Carriers, Second Edition October 1992.

The updated guidance reflects the challenges of defining spacing, recognising the particular issues related to the use of emergency release couplers (ERCs) and quick connect/disconnect (QCDC) couplers commonly found on jetties for LNG carriers and large refrigerated LPG carriers and heights brought about by the use of rigid cargo arms, or any type of transfer lines, particularly for refrigerated gas carriers, incorporating emergency shutdown systems to give spill and cargo arm protection.

The manifold guidance advises positioning the manifold arrangement as close to the ship’s mid-length as possible.

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LNG ship-to-ship

SIGTTO’s new LNG Ship to Ship Transfer Guidelines have been published by Seamanship Witherby. The document is available either as a book, an e-book or a bundled combination of the two.

Ship-to-ship transfers of LNG have become increasingly commonplace in recent years, following the first commercial operation of this type in February 2007. There are now 10 LNG regasification vessels (LNGRVs) in service and these and other ships are often provided with cargoes by means of STS transfers. For example, the small-scale end of the LNG supply chain is currently expanding and STS operations to supply small LNG ships are likely to figure more prominently in the years ahead.

SIGTTO has developed the LNG Ship to Ship Transfer Guidelines to offer guidance to the masters and operators of vessels undertaking STS transfers of LNG. The Society points out that when following this guidance, due consideration should also be given to the specific procedures contained within a ship operator’s safety management system (SMS) and any other relevant references.

The titles and format of the SIGTTO LNG STS document are aligned with those in Oil Companies International Marine Forum (OCIMF)/International Chamber of Shipping (ICS) publication Ship to Ship Transfer Guide (Petroleum) 4th Edition, which should be referenced for additional information.

These SIGTTO guidelines cover side-by-side STS transfer operations involving commercially trading LNG carriers at anchor, alongside a shore jetty or while underway. The guidance applies to seagoing ships and may also be useful for reference when establishing rules and procedures for transfer operations between seagoing ships and LNGRVs or LNG floating storage and offloading vessels (FSOs) in inshore waters.

Another gas carrier STS guide is currently the subject of attention. The established Ship to Ship Transfer Guide (Liquefied Gases), which principally deals with LPG cargoes, is being revised. The updated document will be formatted in a similar manner to the LNG STS document in that sections which are common to all gas carrier and oil tanker STS operations, such as ship handling, will reference the OCIMF/ICS Ship to Ship Transfer Guide (Petroleum) publication.
Towards greater ERC understanding

One of the most critical operations in the LNG supply chain is the transfer of cargo through marine loading arms at the terminal jetty. Because the LNG transfer rates maintained by terminal pumps at loading facilities and by ship pumps at unloading terminals are high, it is essential that ship and shore staff are fully conversant with the proper operation and maintenance of the jetty-side cargo transfer equipment, including the loading arms, their emergency release couplers (ERCs) and quick connect/disconnect (QCDC) couplers.

A small number of incidents involving jetty-side cargo transfer equipment have occurred recently which resulted in the release of relatively minor volumes of LNG. Fortunately, the circumstances in these incidents were such that the repercussions were limited in nature but, had conditions been different, larger volumes of LNG could have been released.

In reviewing the handful of incidents concerned it is clear that the staff were not aware of the full range of correct operational and maintenance requirements for the equipment in question. In one incident it was found that the terminal’s planned maintenance system for its loading arms and associated equipment was incomplete because the manufacturers’ specifications for maintenance and tests had not been fully documented and incorporated into site procedures. On another occasion a full set of checks had not been carried out prior to the start of operations and an equipment fault had been allowed to develop over time that went unrecognised.

The SIGTTO Secretariat has started discussing such failures and what can be done to reduce the likelihood of an ERC-related incident and is pleased to report a very positive response from the equipment manufacturers contacted to date. It is notable that at least one manufacturer now offers training on the operation and maintenance of such equipment and that the training can be customised to clients’ requirements. Although general jetty safety awareness and familiarisation courses are available, such a focused equipment training package has not previously been on offer.

Streamlining port operations

ISO EN 28460:2010, a new international standard covering LNG carrier equipment and operations at the ship/shore interface, has been published. Entitled Petroleum and natural gas industries. Installation and equipment for liquefied natural gas. Ship-to-shore interface and port operations, ISO EN 28460 replaces EN 1532 which was issued in 1997.

The new standard specifies requirements for ship, terminal and port service providers to ensure the safe transit of LNG carriers through the port area and the safe and efficient transfer of LNG cargoes. The work involved in the preparation of ISO EN 28460 has recognised the latest versions of relevant publications and requirements issued by IMO, SIGTTO, GIIGNL and OCIMF.

The working group responsible for the compilation of ISO EN 28460 was chaired by Roger Roue, SIGTTO technical adviser. Membership of the group included representatives from AP Moller, North West Shelf Shipping Service Co, Tokyo Electric Power Co, National Grid, GDF Suez and BG Group.

The rapid expansion of the LNG industry in recent years has been characterised by a growing number of ships and terminals and a rise in the volume of short-term and spot cargo movements. The new standard has been promulgated to help ensure that ship/shore interface issues are not only standardised as much as possible but also well understood to support a continuation of the LNG shipping industry’s exemplary safety record.

At the same time the ISO EN 28460 standard acknowledges that national and/or local laws and regulations must take precedence where they are in conflict with its provisions. In the same way it is necessary that each LNG port facility and terminal has its own specific safety and operational systems that accommodate local conditions.
LNG goes Dutch

At a time when delegates are gathering for the Gastech 2011 event in Amsterdam on 21-24 March 2011, the 25th meeting in the series, it is appropriate to focus on recent developments in the Netherlands. Of particular interest is the new Gate LNG receiving terminal in the Maasvlakte area of the port of Rotterdam which is due to commence operations this coming September. It will be the first such facility in the Netherlands. Gate Terminal BV is a SIGTTO member.

LNG had not come onto the radar for the Netherlands until comparatively recently. Thanks to the discovery of the Groningen gas field in 1959, Europe’s largest, the country has been not only self-sufficient in gas over the past 60 years but also a leading exporter of pipeline gas to its neighbours. The Groningen reserves are now more than one-half depleted and, although there are sufficient remaining supplies to meet Dutch needs for at least half a century, adding LNG imports to the national energy mix is now deemed prudent.

Vopak and its project partner Gasunie launched the project to build the Gate import terminal in 2005. Gate is an acronym for Gas Access To Europe and, as conceived by the partners, the scheme accords with the energy policies of both the Netherlands and the European Union as a whole. These policies are built on the pillars of strategic diversification of LNG supplies, sustainability, safety and environmental awareness.

The Gate LNG terminal has been built on 35 hectares of reclaimed land adjacent to the Maasvlakte Oil Terminal and near the entrance to what is Europe’s largest port. In its initial phase of operation the facility will be able to handle up to 9 million tonnes per annum (mta) of inbound LNG at its two jetties.

Prior to regasification the LNG will be stored in three 180,000m³ storage tanks. Ships up to and including the 265,000m³ Q-max size can be accommodated at the Gate jetties.

Long-term offtake contracts have been signed with Dong Energy, EconGas OMV, RWE/Essent, E.ON Ruhrgas and Eneco. They will share Gate’s combined throughput of 9 mta of LNG, split equally between them. This level of throughput will involve a total of approximately 180 LNG carrier deliveries per annum. As part of the preparations for the start of operations at Gate, the Port of Rotterdam Authority (PRA) has studied how best to accommodate LNG ship movements amongst its busy overall maritime traffic. Rotterdam plays host to 36,000 oceangoing vessel visits each year which means that each day approximately 100 ships arrive at the 24-metre deep harbour entrance and 100 ships depart. The harbour master’s responsibility for incoming ships starts when they are still 60 km out at sea.

As part of the effort the Dutch maritime research organisation MARIN was commissioned to carry out a quantitative risk assessment for Rotterdam and its proposed LNGC traffic. MARIN concluded that, provided all the established procedures are followed, the overall risk of an LNG carrier being involved in a collision in port waters will be very small. The Gate terminal’s LNG carrier traffic will be monitored particularly closely during the early days of operations to ensure that experience matches the predictions.

Plans have been drawn up for an expansion of the capacity at Gate to 12 mta at some future date. The Phase 2 project, which has already received the required approvals, would require the construction of a fourth 180,000m³ storage tank.

A further role for Gate beyond that of a baseload regasification terminal is being considered. This involves the distribution of LNG to additional downstream customers, including for use as a transportation fuel. Gasunie and Vopak are investigating a range of options for the construction of a small scale LNG plant on the Maasvlakte, linked to Gate by an LNG pipeline.

The intention is that the facilities would be built at this small-scale plant to enable LNG ship bunkering and road tanker loading operations. Such an arrangement would ensure the separation of small-scale LNG distribution activities from the core Gate terminal business of discharging large LNG carriers and regasifying the LNG cargoes delivered by these vessels.

The small-scale LNG and breaking bulk options associated with the operation of the Gate ‘satellite’ terminal will be examined by Gasunie business development manager Piet Kager in a presentation at Gastech 2011.