

SIGTTO

Society of International Gas Tanker
and Terminal Operators Ltd

Continually promoting best practice
in the liquefied gas shipping and
terminal industries for 41 years



SIGTTO Purpose

SIGTTO has been organised to promote the safe and responsible operation of gas tankers, marine terminals and other shipping handling gas as a cargo; to develop advice and guidance for best industrial practice among its members; and to promote criteria for best practice to all who have responsibilities for, or interest in, the safety of gas tankers, other ships carrying gas as a cargo and terminals.



SIGTTO Vision

SIGTTO will continue to be recognised as the gas shipping and terminal industry body - a modern centre of industry expertise - with all appropriate resources available to address industry technical and operational issues; to be the industry advocate for the proactive enhancement of safe and sustainable international gas terminal and shipping operations through the provision of consistent guidelines and measures.

SIGTTO

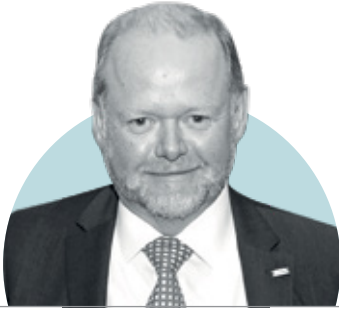
Annual Report 2019

Contents

- | | | |
|---|--|--|
| <p>5 President's report
Steffen Jacobsen presents an overview of outstanding progress in a notable year</p> <p>7 General Manager's report
Andrew Clifton looks back on important SIGTTO developments in 2019</p> <p>8 SIGTTO members
Full and Associate Members as of 31 December 2019</p> <p>9 Benefits of SIGTTO membership
Listing of the advantages that Society membership can bring</p> <p>11 SIGTTO in figures
A statistical review of SIGTTO's membership and accomplishments</p> <p>12 SIGTTO directors
SIGTTO directors and their companies, as of 31 December 2019</p> | <p>13 SIGTTO Secretariat
The Society's Secretariat office staff</p> <p>14 SIGTTO committees and sub-committees
Progress made by committees and sub-committees in 2019</p> <p>18 LNG carrier fleet in numbers
The global LNG carrier fleet breakdown, courtesy VesselsValue and others</p> <p>20 The industry year in review
Gas shipping and terminal timeline for 2019 – a year of major developments</p> <p>26 LPG carrier fleet in numbers
The global LPG carrier fleet breakdown, courtesy VesselsValue</p> <p>28 Panel Meetings and Regional Forums
Busy SIGTTO meeting schedule facilitates two-way dialogue</p> | <p>30 Industry regulations and standards
SIGTTO participation in the evolving regulatory regime governing gas ships</p> <p>32 SIGTTO's 40th anniversary
The Society's 40th anniversary celebrations in pictures</p> <p>34 New publications
Review of latest industry best practice guidelines from SIGTTO</p> <p>36 Publications list
Paid publications available from SIGTTO</p> <p>37 Financials
Statement of Comprehensive Income for the year ended 31 December 2019</p> <p>39 Inside Back Cover
Photo credits</p> |
|---|--|--|



Making preparation's at the ship's manifold, in anticipation of cargo transfer operation



Return to office smoothed by Society's strong foundations

I am pleased to present SIGTTO's 2019 annual report, my first since being re-appointed as the Society's President

SIGTTO enjoyed another very busy year in 2019. The Society's principal committees – the General Purposes and Human Element Committees – increased their efforts, outreach and productivity, while the Secretariat was expanded to cope with the increased workload and meet the latest set of strategy goals developed by SIGTTO's membership. In addition, an Environmental Subcommittee was established under the chairmanship of Rahul Kulkarni.

Steve Allibone took over as chair of the Human Element Committee (HEC), replacing John Adams who had held that position since the Society formed that body in 2016. My SIGTTO colleagues and I would like to thank John and his fellow HEC members for their sterling early work in a challenging field. Their efforts led to, amongst other things, the finalisation in 2019 of the Committee's first publication – *Recommendations for the Management of Cargo Alarm Systems*.

SIGTTO's spring 2019 Board Meeting was held in San Ramon, California, hosted by Chevron, while the autumn Board and Annual General Meetings were held in Kuala Lumpur, hosted by MISC. The presence of a high proportion of Directors of the SIGTTO Board at both events helped ensure their success.

SIGTTO's Board has been an important contributor to the Society's record of achievement. The governance and advice provided by the Directors over many years have helped mould an organisation that remains focused on delivering effective safety guidance to the industry and value for money to its members.

As mentioned, the 2019 Gastech event was held in Houston. As was done at the previous Gastech, in Barcelona, we hosted a joint exhibition stand with the Society's publishers, Witherbys, that included private space which was available to members and their business contacts. The inclusion of a meeting room on the stand that could be booked for networking proved very popular with not only members but also potential

members and other industry stakeholders.

Maintaining engagement with SIGTTO's diverse and wide-ranging membership is important and 11 Regional Forums were staged during 2019 to extend the dialogue with industry and the Society's outreach. Regional Forums took place in Oslo, Mumbai, Oman, Hamburg, Athens, Buenos Aires, Perth, and twice in both Houston and Singapore.

Regional Forums provide an excellent opportunity for the Secretariat to meet many of the Society's members and get direct feedback on important issues, including regional developments that could have relevance internationally. Such engagement at a more local level helps illuminate risk exposure within the industry, which in turn assists in defining mitigating actions that will be captured in future revisions of the Society's overall Strategic Plan.

I had the pleasure of being appointed as President of the Society during the AGM at Kuala Lumpur in November. For me this is a "return to duty" as I had to step down as SIGTTO President in 2013 due to a change in career path. Once again, I am committed to serving the Society diligently and professionally and I'd like to extend my thanks to all concerned for the vote of confidence. I would also like to thank my predecessor, David Furnival, for his leadership over the years. He has handed over the reins to what is a very healthy and professionally run industry association.

Looking to the present and the future, we have all had to face up to a very strange and demanding start to 2020 due to the presence of the Covid-19 virus. I am sure that the business and work programmes of virtually all our members have been markedly influenced, and for the SIGTTO Secretariat the impact has also been significant. Since mid-March 2020 our Secretariat team has worked from home and many of the Society's scheduled meetings, including the 81st General Purposes Committee (GPC 81) in Athens in April 2020, have been cancelled.

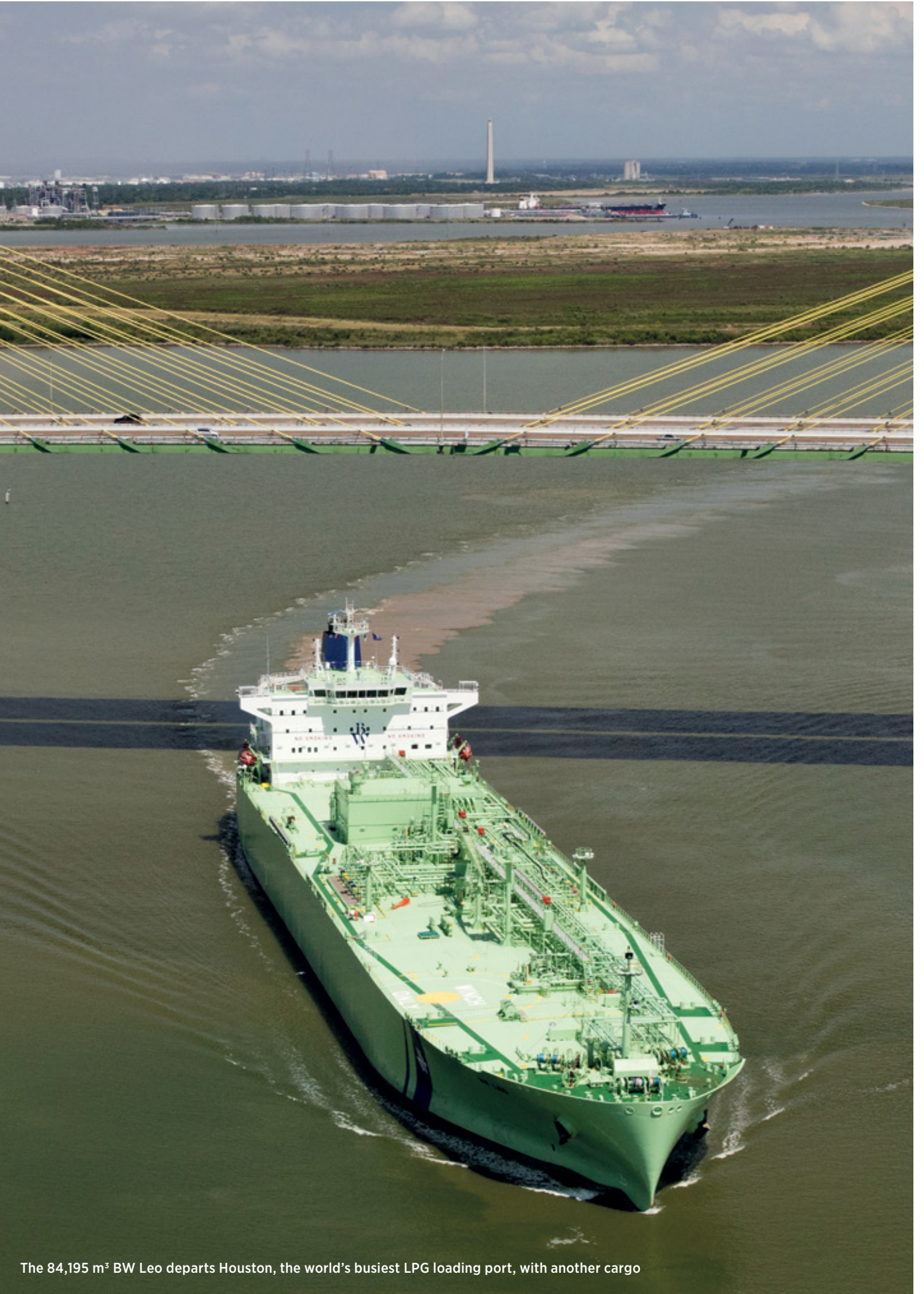
It is inevitable that these cancellations will have some impact on the Society's overall performance in 2020. However, we believe that under the diligent stewardship of our Secretariat and the leaderships of the GPC and HEC Committees, we can maintain our high and impressive levels of productivity while working from a distance.

SIGTTO continues to grow the Society's profile and activity levels on social media during these challenging times. The Secretariat has also been expanded to enhance the organisation's marketing outreach. The initiative aims to grow not only SIGTTO's membership and global profile but also participation in the many working groups convened by our Committees and Subcommittees.

A significant number of SIGTTO's members are also members of the Oil Companies International Marine Forum (OCIMF), the International Association of Independent Tanker Owners (INTERTANKO) and the Chemical Distribution Institute (CDI). Amongst his agenda items in 2020 SIGTTO General Manager Andrew Clifton will be pursuing closer working relationships and coordination with these well-established, professional non-governmental organisations (NGOs) in the drive to realise best-possible outcomes that bring mutual benefits to all elements of the energy transportation industry.

I would like to close by voicing my appreciation of SIGTTO's very dynamic and active membership. Through their dedication of time and effort in the Society's working groups, sharing knowledge and experience on a voluntary basis in the development of industry best practice guidelines, we will continue to build upon what is already a remarkable record of achievement.

Steffen Jacobsen
SIGTTO President - May 2020



The 84,195 m³ BW Leo departs Houston, the world's busiest LPG loading port, with another cargo



Celebrating four SIGTTO decades and looking forward to the next

The celebration of our 40th anniversary with a wide range of industry leaders was a key milestone for the Society in 2019

As Steffen Jacobsen, SIGTTO's President, states on page 5, 2019 was an especially busy and eventful year for the Society, and our 40th anniversary celebrations were a particularly notable highlight.

There was a net loss of three in the Society's membership in 2019, with seven companies joining and 10 resigning over the course of the year. SIGTTO had a total of 178 Full and Associate Members as of 31 December 2019.

The Board of Directors met three times during the year, as per the Society's byelaws. Held in San Ramon, California in April, the Spring 2019 Board Meeting was kindly hosted by Chevron while MISC hosted the Autumn Board and Annual General Meetings in the Malaysian capital of Kuala Lumpur in November.

Although registered in Bermuda as a "not-for-profit" entity, SIGTTO is allowed to retain surplus as reserves. We set the budget each year to generate a small surplus which goes to reserves. The reserve level we target is equal to about one year's operating costs and we continue to be comfortably in excess of this target. The Society's finances remain on a sound footing.

SIGTTO's General Purposes Committee (GPC) met twice in 2019 to manage the Society's affairs. The Committee's 79th meeting (GPC 79) was held in Shanghai in April in conjunction with the LNG 19 event while GPC 80 took place in Houston in September, this time in tandem with the Gastech conference and exhibition.

The Human Element Committee (HEC) also met twice during 2019, with both meetings taking place in London. Work on *Recommendations for Management of Cargo Alarm Systems*, the first published output from the relatively recently established HEC, was completed in late 2018 and the document was approved and published in 2019.

The Society maintains a full programme of

activities aimed at developing and updating the industry's portfolio of industry best practice guidelines. Most of these initiatives are addressed by dedicated working groups, convened under the auspices of GPC and HEC and populated by experts selected from the member companies.

No SIGTTO Panel Meeting was held in 2019 due to the clash with the international LNG 19 and Gastech events in Shanghai and Houston, respectively. A full programme of SIGTTO Regional Forum meetings continues to be held on a regular basis at various strategic locations worldwide. The timing of these Regional Forums is largely dictated by the members themselves.

Celebration of the Society's 40th anniversary was the dominant event of 2019 for the SIGTTO Secretariat in London. The occasion was marked on 10 September 2019 with a specially organised Liquefied Gas Shipping Forum followed by an evening reception on the top floor of Sea Containers House on the South Bank of the River Thames. Those attending were able to enjoy stunning views out over the river and the city's skyline as they renewed old acquaintances and met new friends. I would especially like to thank Mitsui OSK Lines, Smit Lamnalco and Excelerate Energy for their generous support of the event.

The Forum itself featured many of the Society's past and present personnel in three separate panel sessions. During the proceedings the panelists were able to contribute their personal memories and recollections of their involvement with SIGTTO over the last four decades. It certainly was a notable occasion and a great honour for me to introduce the Forum and also moderate the first panel.

The Secretariat maintains a programme of external engagements to promote the Society's profile. These include speaking to various bodies and chairing and presenting papers at conferences such as Gastech and the LNG series of events. In September 2019 SIGTTO took

a high profile at the Gastech conference in Houston where, amongst other things, I chaired the event's shipping session.

SIGTTO is scheduled to hold its first Panel Meeting in two years in 2020. The gathering, the 65th in the series, has been organised for Athens, with an accompanying technical visit to the Revithoussa LNG import terminal. Maran Gas is set to host the 65th Panel and DEPA the technical visit.

In addition, SIGTTO Regional Forums are slated for Houston, Singapore, Livorno, Busan, Scandinavia, the Middle East, Shanghai, Perth and South America in 2020. The Spring 2020 Board Meeting is due to take place in our London office while GPC 81 is fixed for Athens, to be held in tandem with the 65th Panel Meeting. (At the time of writing, it was decided to postpone our 2020 meetings, as originally scheduled, due to the Covid-19 virus.)

We welcomed two new faces to the Secretariat at the start of 2020. Bella Mao has been appointed as SIGTTO's first ever Marketing Executive while Alex Hammond, who replaces Uluc Kaypak as Technical Adviser, joins us on secondment from Shell.

This is a very exciting and challenging time to be serving as the Society's General Manager. SIGTTO continues to be the principal voice for the liquefied gas industry and prospects for the gas shipping and terminal sector continue to be buoyant despite the challenges. I look forward immensely to 2020, meeting and working with the Society's membership in the drive to sustain the exemplary safety record of an industry that is not only growing but also rapidly advancing technologically.

Andrew Clifton
General Manager - May 2020

SIGTTO members (as at 31 December 2019)

Full Members

Aegis Logistics Ltd	Exmar NV	NYK Line (Nippon Yusen Kaisha)
AES Andres	ExxonMobil - SeaRiver Maritime	Oiltanking Antwerp Gas Terminal NV
Alphagas SA	Fluxys LNG	OLT Offshore LNG Toscana SpA
Angola LNG Ltd	Freeport LNG Development LP	Oman LNG LLC
Angola LNG Marketing	GasLog LNG Services Ltd	Osaka Gas Co Ltd
Anthony Veder Rederijzaken BV	Gate Terminal BV	Pertamina Transportation LNG - JMG
Atlantic LNG Company of Trinidad & Tobago	Gazocean	Petrobras Transporte SA - Transpetro
Avance Gas Holding Ltd	Geogas Maritime SAS	Petronet LNG Ltd
Bernhard Schulte Shipmanagement Ltd	Global Meridian Holdings Ltd	POSCO
B-Gas Ltd	GNL Quintero SA	Prime Gas Management Inc
BP Berau Ltd	Golar Management Norway AS	Pronav Ship Management
BP Shipping Ltd	Golden Pass LNG	PT Donggi Senoro LNG
Brunei LNG Sdn Bhd	Höegh LNG	PTT LNG Company Ltd
BW Gas AS	Hyproc Shipping Company	Qatar Gas Transport Company Ltd
BW LPG Ltd	Hyundai LNG Shipping Co Ltd	Qatar Petroleum (Industrial Cities Ports)
Calor Gas Ltd	Iino Kaiun Kaisha Ltd	Qatargas Operating Company Ltd
Cameron LNG	Indianoil LNG Private Ltd	QCLNG Operation Company Pty Ltd
Canaport LNG	Ineos	Santos GLNG
Centrica LNG Company Ltd	Inpex Corporation	Saudi Arabian Oil Co (Saudi Aramco)
Chemgas Shipping BV	International Gas Transportation Co Ltd	SCF Management Services (Dubai) Ltd
Cheniere LNG Inc	Japan Petroleum Exploration Co Ltd	Sempra LNG
Chevron Shipping Company LLC	JERA Co Inc	Shell International Trading & Shipping Co Ltd
China LNG Shipping (International) Company Ltd	JXTG Nippon Oil & Energy Corporation	Shipping Corporation of India
Chugoku Electric Power Co Inc	Kansai Electric Power Co Inc	Shizuoka Gas Co Ltd
ConocoPhillips Global Marine	Kawasaki Kisen Kaisha Ltd	Singapore LNG Corporation Pte Ltd
CPC Corporation, Taiwan	Kinder Morgan Inc	SK Shipping
DESFA Hellenic Gas Transmission System Operation	Knutsen OAS Shipping	Sonangol Marine Services Inc
Dorian LPG Management Corp	Koch Shipping Pte Ltd	South Hook LNG Terminal Co Ltd
Dragon LNG Ltd	Korea Gas Corporation	Stena LNG Services AB
Dubai Supply Authority	Kuwait Oil Tanker Co SAK	Synergy Maritime Pvt Ltd
Dunkerque LNG	Latsco Marine Management Inc	Teekay Marine Solutions (Bermuda) Ltd
Dynagas Ltd	Lauritzen Kosan A/S	Teekay Shipping
Ege Gaz Anonim Sirketi	LNG Japan Corporation	The Bahrain Petroleum Company BSC (Closed)
Egyptian Operating Company for Natural Gas Liquefaction Projects	LNG Shipping SpA	Thenamaris LNG
Elengy	Malaysia LNG Sdn Bhd	TMS Cardiff Gas Ltd
Empresa Naviera Elcano SA	Maran Gas Maritime Inc	Toho Gas Co Ltd
Enagas Transporte SAU	Marubeni Corporation	Tohoku Electric Power Co Inc
Energy Transfer Partners	Meiji Shipping Co Ltd	Tokyo Gas Co Ltd
Enterprise Products Partners LP	MISC Bhd	Total SA
Etki Liman Isletmeleri Dogalgaz Ithalat Ve Ticaret AS	Mitsubishi Corporation	Uniper Global Commodities SE
Evergas A/S	Mitsui & Co Plant Systems Ltd	Wilhelmsen Ship Management Sdn Bhd
Excelerate Energy LP	Mitsui OSK Lines Ltd	Woodside Energy Ltd
	Naftomar Shipping & Trading Co	YPF SA
	National Gas Shipping Company Ltd	
	National Grid Grain LNG	
	Nigeria LNG Ltd	
	Northern Marine Management Ltd	

Associate Members

ABS	GNL Quebec Inc	NextDecade LLC
Anadarko Petroleum Corporation	GTT Training Ltd	Polish Oil and Gas Company
Babcock International Group	Guangdong Dapeng LNG Co Ltd	Polskie LNG SA
Boluda Towage and Salvage	Hazira Port Private Ltd	Port of Rotterdam Authority
Bureau Veritas Marine & Offshore	Indian Register of Shipping	Rimorchiatori Riuniti Spezzini – Imprese Maritime
Capital Gas Carriers Corp	Jordan Cove LNG LLC	Saga LNG Shipping Pte Ltd
China Energy Ship Management Co Ltd	Korean Register	Signet Maritime Corp
ClassNK	Kotug International	Single Buoy Moorings Inc
CNOOC-Fujian LNG Co Ltd	Kuwait Integrated Petroleum Industries Co	Smit Lamnalco
Combined Marine Terminal Operations Worldwide NV	Lloyd's Register	Svitzer A/S
Commonwealth LNG	LNG Canada Development Inc	Venture Global LNG Inc
DNV GL	Maritime and Port Authority of Singapore	Vitol Services Ltd
ExxonMobil PNG Ltd	Maritime Safety Queensland	Warsash Maritime Academy (Solent University)
FLEX LNG	Milford Haven Port Authority	Western Concessions Pvt Ltd
Fratelli Neri SpA	Minerva Gas Inc	Woodfibre LNG Ltd
Gazprom Marketing & Trading Singapore Pte Ltd	Moran Towing Corporation	

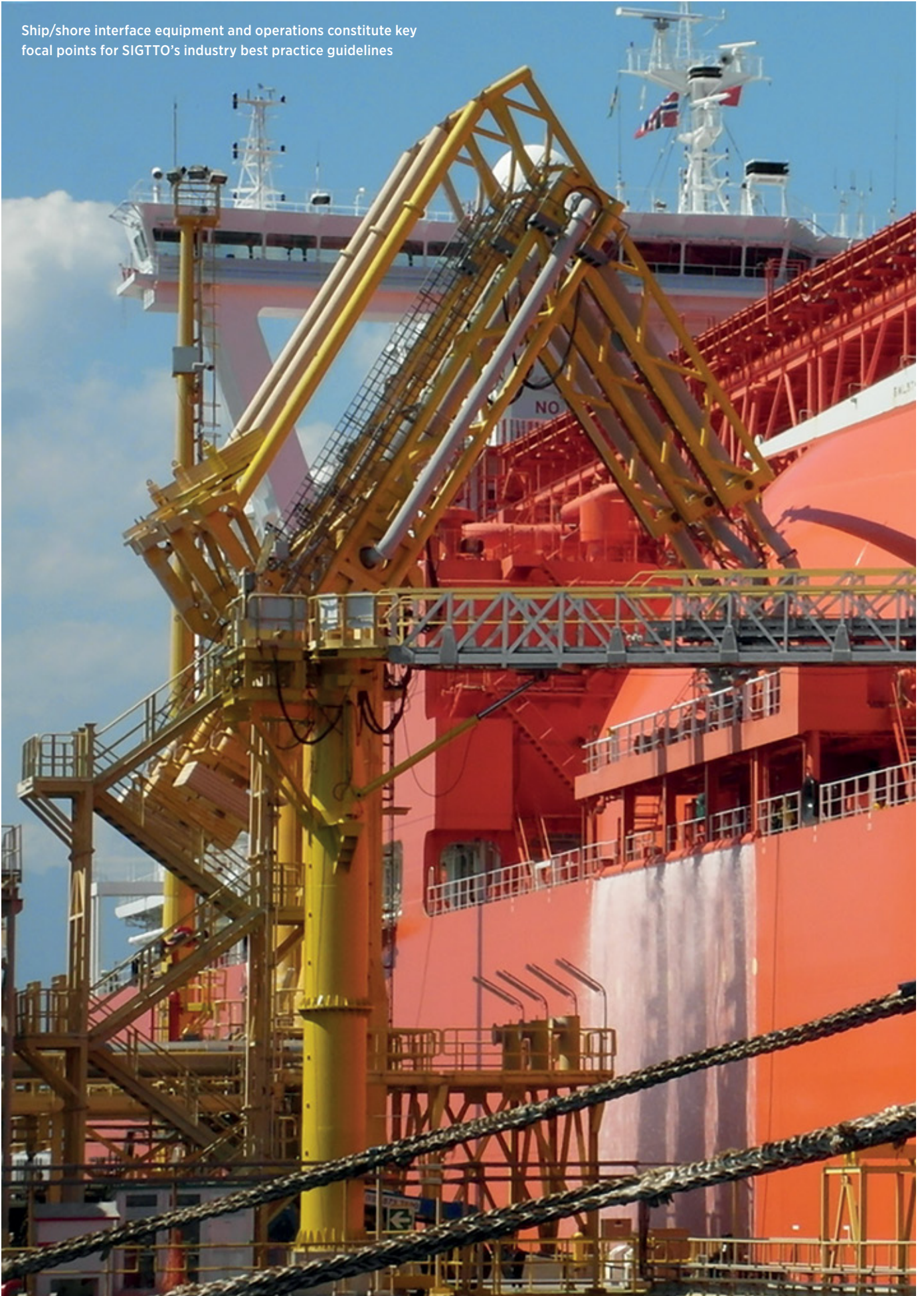
BENEFITS OF SIGTTO MEMBERSHIP

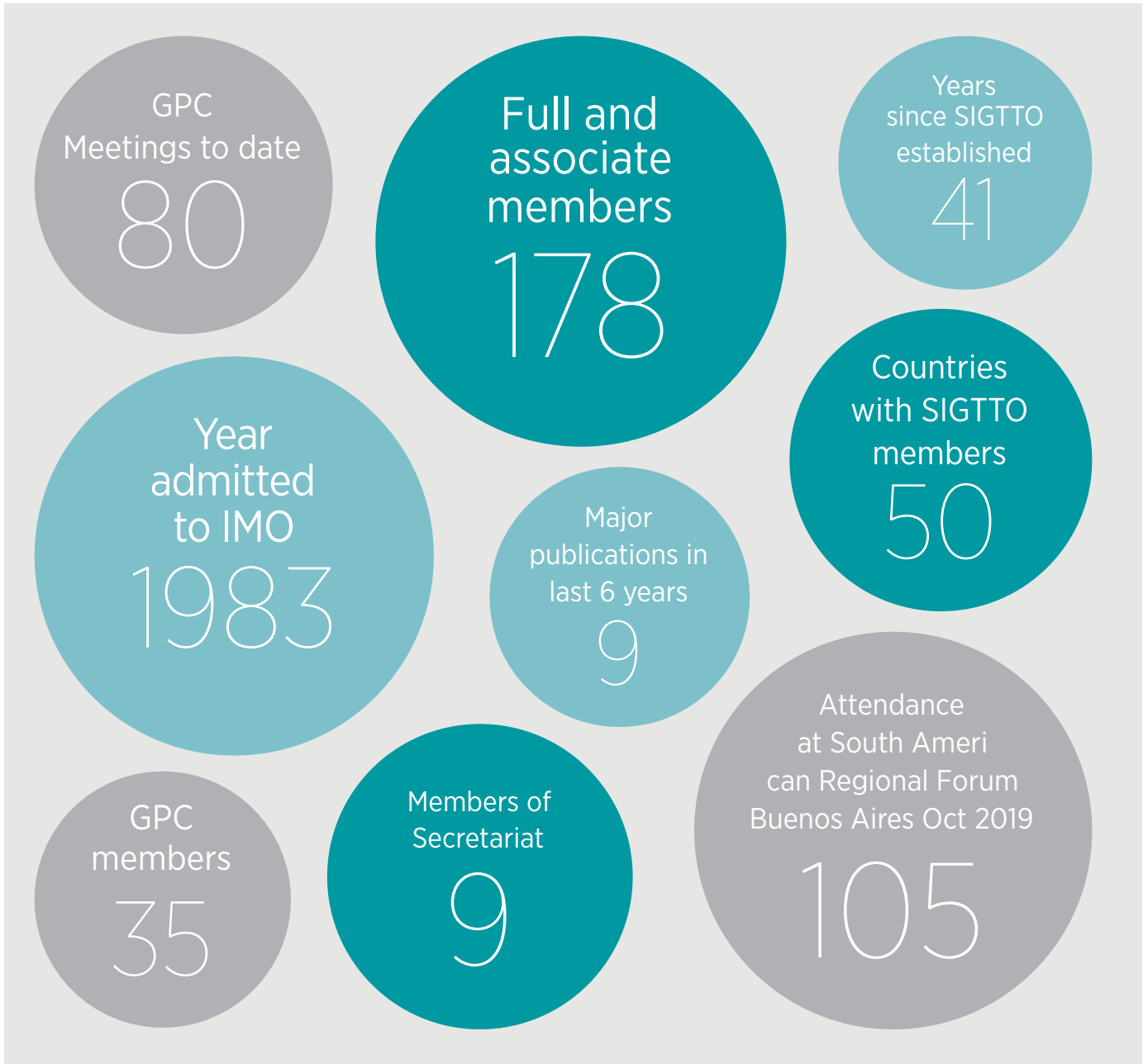
SIGTTO members are actively encouraged to promote membership when dealing with any new players in the industry. Please direct them to our website and to the London Liaison Office for further details of how to join.

In addition to the credibility in the industry that membership brings, SIGTTO members benefit by:

- Access to information that is exclusive to members, such as casualty information and industry statistics
- Regular updates on matters affecting the industry such as legislation, either new or pending, technical or operational developments
- Access to the very comprehensive technical library maintained in the London Office
- Submitting proposals for projects and studies to the General Purposes Committee
- Access to the Technical Advisers in the London Liaison Office who can give advice and obtain advice, on behalf of a member, from within the Society
- Participating in discussion forums with other members each year on topics of particular and mutual interest
- New members receive a copy of all publications, free of charge, produced by SIGTTO
- Free access to the LNGwebinfo portal for updated LNG information as required to conduct compatibility studies. This information is restricted to members of SIGTTO and GIIGNL only

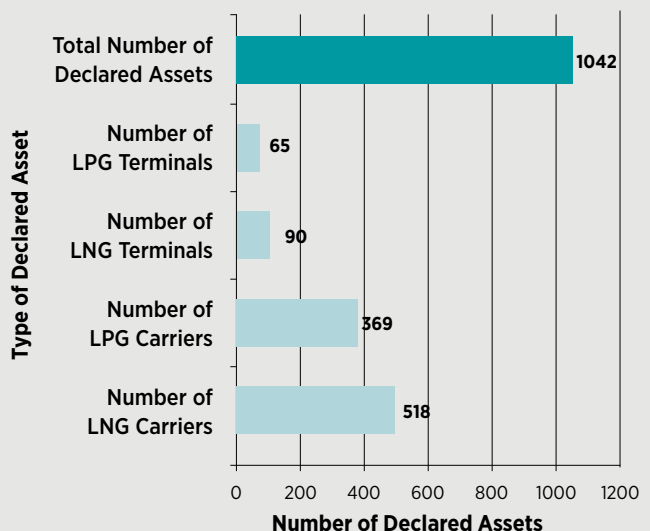
Ship/shore interface equipment and operations constitute key focal points for SIGTTO's industry best practice guidelines





Details as of 31st December 2019

SIGTTO Members' Declared Assets



SIGTTO Board of Directors (as of 31 December 2019)



Kuala Lumpur was the venue for the autumn 2019 Board; here, the Directors stopped for a photo opportunity in the walkway linking the twin towers of the Petronas building

Mr Steffen Jacobsen	Evergas [President]	Mr Raja Sager Muniandy	MISC
Mr Masayuki Ishida	JERA [Vice President East]	Mr George Paul Perantzakis	Naftomar
Mr Lloyd Bland	Chevron Shpg [Vice President West]	Mr Akira Kono	NYK Line
Mr David Furnival	Bernard Schulte Shipmanagement	Mr Abdullah Al-Sulaiti	Qatar Gas Transport
Mr Mark Fortnum	BP Shipping	Mr Emilio Tsocalis	SeaRiver Maritime/ExxonMobil
Mr Riju Cherian	BW Gas	Mr Carl Henrickson	Shell
Mr Peter Pearman	Conyers Dill & Pearman	Mr Iain Relf	Teekay Shipping
Mr Stephan Tschudi-Madsen	Höegh LNG	Mr Kentaro Kimoto	Tokyo Gas
Mr Paul Oliver	International Gas Transportation	Mr Luc Gillet	Total SA
Mr Kenta Matsuzaka	Mitsui OSK Lines	Mr Edwin Mortimer	Conyers Dill & Pearman [Secretary]



The spring 2018 meeting of SIGTTO's Board of Directors was held in San Ramon, California

SIGTTO Secretariat Staff



Andrew Clifton
General Manager



Cherian Oommen
Senior Technical Adviser



Rob Farmer
Technical Adviser



Alex Hammond
Technical Adviser



Ian Harrison
IMO Representative



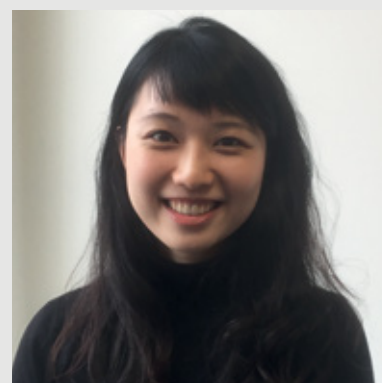
Susan Humphrey
Membership Manager



Laura Else
Technical Support Executive



Erin Rydings
Receptionist/Admin Assistant



Bella Mao
Marketing Executive

SIGTTO committees extend agendas



SIGTTO has two principal committees – the General Purposes Committee (GPC) and the Human Element Committee (HEC) - to manage and carry out its work programme.

GPC, the Society's technical body, has traditionally been responsible for developing and coordinating all the internal projects generated by SIGTTO. However, in 2016 the Society's Board of Directors agreed that, in view of the critical importance of the human factor and training in gas carrier and terminal operations, the subject should have its own dedicated focus group.

HEC was duly established and its remit includes, but is not limited to, competency and training, design and ergonomics and the human element side of incident investigation. The new committee has taken on responsibility for, amongst other things, previous guidance developed by GPC with a human element focus. The twin-pronged approach enables GPC and HEC to concentrate

on a growing range of technical and human resource-related issues facing the gas industry, as appropriate, in the drive to sustain an exemplary safety record built up over many decades.

Completion of new project work identified by GPC and HEC is carried out by working groups comprising relevant experts from amongst SIGTTO's membership. The technical publications which are the end-result of these projects are effectively the best practice procedures, recommendations and standards that guide the gas shipping and terminal industry's day-to-day operations.

GPC and HEC both meet twice a year and report to the SIGTTO Board. Smooth interfacing arrangements between the committees are an integral part of their *modus operandi*. For example, the HEC chair is also a GPC member and vice versa with the GPC chair.

At the time that HEC was formed in 2016, the SIGTTO Directors also recognised that

there was also a need to create a range of sub-committees to support and augment GPC and HEC. Such subsidiary bodies would recognise the increasingly diverse nature of the liquefied gas shipping and terminal sector and the extension of the liquefied gas supply chain into new areas currently taking place. The first two such bodies - the Floating LNG Installations and the Environmental Sub-committees - have now been established. Both are GPC subsidiaries.

General Purposes Committee (GPC)

Mark Hodgson of Shell chairs SIGTTO's General Purposes Committee. Following a three-year stint in the role, in 2019 his tenure was extended for a further three years, until 2022.

GPC, with the backing of the SIGTTO Board and the support of the SIGTTO Secretariat, has recently developed an active and comprehensive present and future agenda to deal with the current

fast-moving pace of developments in the industry. The newly configured points and systems of this agenda seek to go beyond straightforward guideline development in order to support the SIGTTO Strategy and deal with topical issues in as holistic a manner as possible.

These initiatives include ensuring balanced representation, not least by encouraging increased participation in GPC working groups by SIGTTO member companies that are not GPC members; key performance indicators that have been established to gauge the extent to which the issues identified in the SIGTTO Strategic Plan are being dealt with; and the utilisation of risk-based assessment in addressing the development and review of industry best practice guidance.

The topics that GPC currently has in focus are propulsion systems, reliquefaction systems, gangways, pressure relief valves and emergency shutdown systems. Working groups, comprising relevant industry experts from amongst the membership, have been established to examine each issue.

The Propulsion System and Reliquefaction System Working Groups are both chaired by Kenny English of BP Shipping. During 2019 the Propulsion System Working Group continued to gather industry best practice guidance from operations and incidents pertaining to the varied propulsion systems encountered in today's LNGC fleet of 500-plus ships. The group is now focused on developing the initial draft master document for further review and revision.

The Reliquefaction System Working Group was also actively engaging throughout 2019 with ship operators and small and medium-sized enterprises (SMEs) on the topic of the reliquefaction systems utilised onboard modern gas carriers. A new publication containing operational best practice guidance for the safe and efficient use of these systems is to be prepared, and the group is now focused on developing the initial draft of this master document for further review and revision.

The Pressure Relief Working Group completed its work during the year. The new guidance, *Recommendations*



HEC's Shore Staff Competencies Working Group holds its meeting at SIGTTO's London office

for Relief Valves on Gas Carriers, was approved by the SIGTTO Board in November 2019. Now published and available for purchase, the document updates the gas carrier cargo system pressure relief valve (PRV) design and maintenance guidance previously issued by the Society in 1998.

The Gangways Working Group also achieved its goal. The SIGTTO General Purposes Committee, at its 80th meeting in Houston in September 2019 (GPC 80), approved the draft guidance that had been developed for designers, terminals, vessel owners and operators on safe landing areas and gangway operations.

The Emergency Shutdown (ESD) Systems Working Group was established to revise *ESD Arrangements and Linked Ship/Shore Systems for Liquefied Gas Carriers*, a SIGTTO publication produced in 2009. The group, which is chaired by Ajay Edakkara of Shell has met six times in SIGTTO's London office, including throughout 2019 and most recently in January 2020. The ESD Systems Working Group has completed the preparation of a mature draft document and will finalise it in 2020.

Also at its 80th meeting GPC approved the establishment of the Society's

new Environmental Sub-committee and working groups dealing with (a) the site selection and operation of liquefied gas terminals, (b) the design and testing of liquefied gas valves and (c) the salvage of liquefied gas carriers. The Environmental Sub-committee will focus on measures that achieve continued improvements in the environmental protection performance of the gas shipping and terminal sector.

Floating LNG installations

Tasked with considering the many aspects of the rapidly expanding fleet of floating LNG regasification, storage and production vessels, the SIGTTO Sub-committee for Floating LNG Installations initially formed three working groups. These were focused on site assessment, design criteria and operational guidance, respectively, as they relate to nearshore/offshore floating LNG assets.

Following kick-off meetings in 2018, the Floating LNG Installations working groups continued development work on their draft industry guidance throughout 2019. The master draft was sent for substantive comments by the GPC at its 80th meeting in September 2019, with the intention of having the final document ready for review at GPC 81 in spring 2020.

Committees and Subcommittees

The 78,945 m³ *Lycaste Peace* inaugurated a busy traffic in LPG through the Panama Canal when, on 27 June 2016, it became the first very large gas carrier (VLGC) to transit the waterway's new enlarged locks



Human Element Committee

On the establishment of HEC in 2016, SIGTTO tasked the new committee with focusing on the following work programme items:

- Identifying gas-specific human element issues
- Determining major incident risks and adopting a risk-based approach to safety
- Reviewing incidents to determine human element impacts and solutions
- Preventing the occurrence of incidents
- Communicating the human element message to all those on the frontline
- As a result of progress on the above items, achieving marked improvements in safety

Steve Allibone of Mitsui OSK Lines (MOL) was appointed to chair HEC in July 2019, in succession to John Adams, for a period of three years. HEC currently has three active working groups underway, on cargo control room ergonomics, the Gap analysis of competency guidelines and shore staff competencies.

Under the chairmanship of Ray Gillet of GTT Training, the Cargo Control Room (CCR) Ergonomics Working Group completed its work on *Recommendations for Management of Cargo Alarm Systems* in October 2018. The guidelines, which were approved by the SIGTTO Board in May 2019, constitute the first document to be published under the auspices of HEC. Its provisions align with a number of relevant international standards that were already in place. The document has proved popular and its contents are being discussed at IMO and amongst the classification societies. It has also caught the attention of shipbuilders.

Following the success of this publication, the CCR Ergonomics Working Group went on to complete work on its second document in 2019. Entitled *Recommendations for Designing Cargo Control Rooms*, the latest document covers aspects such as control station layout, physical environment, operator interface, controls and displays. The group's second document was approved at HEC's 8th meeting (HEC 08) in January 2020 and its publication is expected later in 2020.



HEC convenes at SIGTTO's London office for its eighth meeting in January 2020

The CCR Ergonomics Working Group has now embarked on developing its third and final document, a set of guidelines on human/machine interface (HMI) issues. The group had its second meeting on this new topic in February 2020. The overall aim of the CCR Ergonomics Working Group has been to develop guidance for operators on how to improve cargo-handling safety through detailed consideration of operational practice within the specification and design of CCR workstations and HMI.

Another document which was submitted to and gained approval at HEC 08 was the final master draft of *LNG Shipping Suggested Competency Standards (Third Edition)*. Steve Allibone, the HEC chair, also chaired the working group that has updated and revised the previous Second Edition of the publication.

The new edition provides additional clarification and updates to existing topics and incorporates advances in technologies currently being used in the LNG industry. Specifically new to this version was the development of suggested competencies for floating storage and regasification unit (FSRU) cargo operations as a stand-alone annex for FSRU personnel. FSRU competencies are not part of the core LNG shipping suggested competency standards.

This working group will now generate new terms of reference for the SIGTTO Board and HEC to enable it to start revision work on the *LPG Shipping Suggested Competency Standards*.

HEC's Shore Staff Competencies

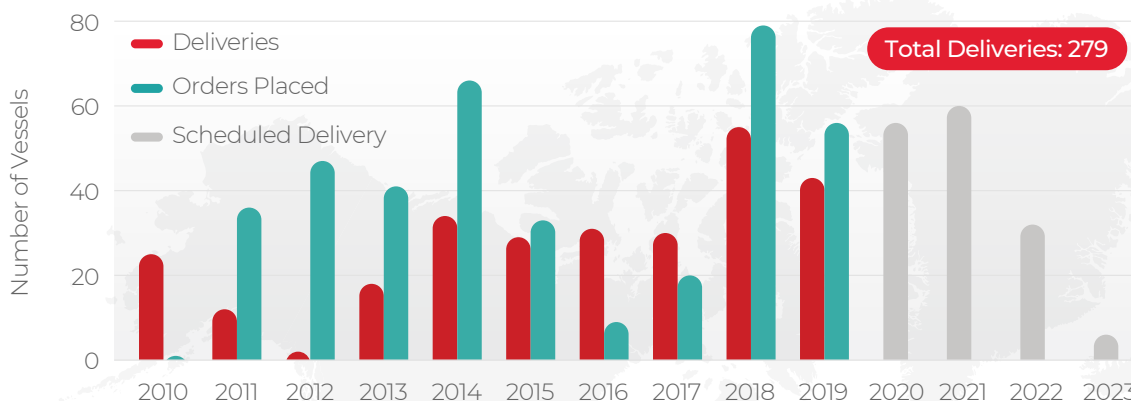
Working Group, which is chaired by Jo McDade of Chevron, continues to refine the philosophy that will underpin the guidance document it is developing and to establish the best practices principles relevant to building and sustaining suggested competencies for shore staff personnel. The group will align the liquefied gas shore staff guidance that it produces with relevant International Standards Organization (ISO) and UK Health and Safety Executive (HSE) standards. The working group is now focused on developing the initial draft master document for further review and revision.

Looking further ahead, HEC has been requested by the SIGTTO Board to consider the issue of cargo control room resource management.

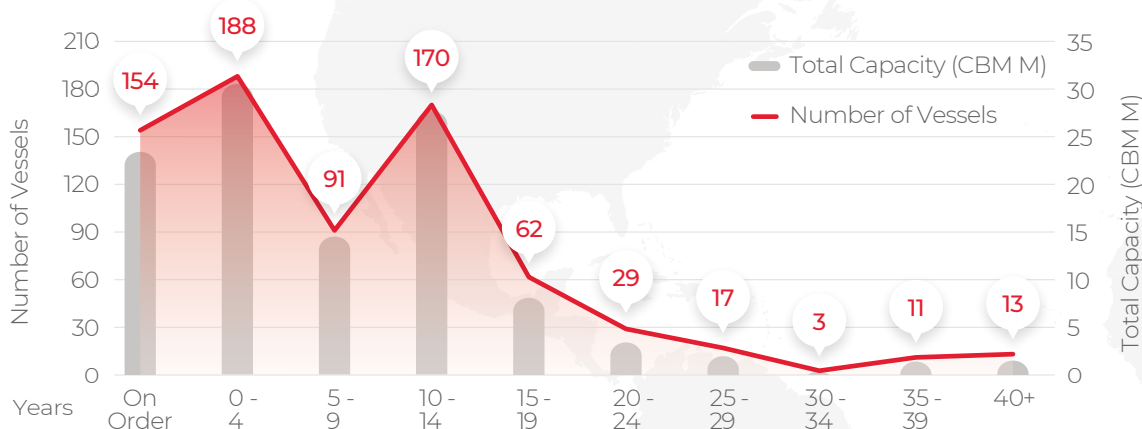
Another important part of the learning curve when it comes to promoting safe operations is incident reporting. SIGTTO encourages its members to provide, in confidence, information about the circumstances behind incidents, including near-miss scenarios, so that everyone in the liquefied gas shipping and terminal industry can learn the necessary lessons and relevant remedial measures can be drawn up and implemented. Incidents are reviewed by SIGTTO's GPC and HEC to determine technical and human element findings, leading to the development of guidance aimed at preventing a reoccurrence. In addition, SIGTTO members are encouraged to raise human element issues that may stem from their own experience for HEC to consider.

GLOBAL LNG CARRIER FLEET 2019

LIVE LNG FLEET DELIVERIES AND ORDERS PLACED



LNG FLEET AGE PROFILE



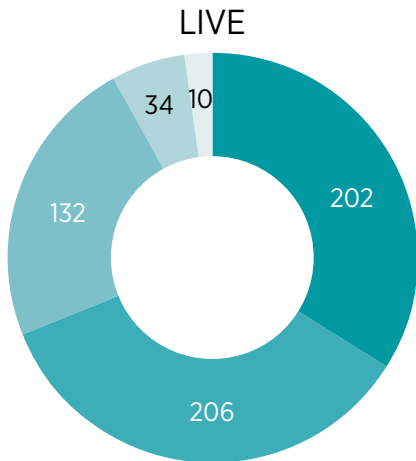
TOP LIVE & ON ORDER LNG OWNER NATIONS BY TOTAL CAPACITY CBM M

1. Greece 127 Vessels	21.38 CBM M	6. Norway 56 Vessels	7.91 CBM M
2. Japan 128 Vessels	18.71 CBM M	7. United Kingdom 36 Vessels	5.22 CBM M
3. Qatar 59 Vessels	12.26 CBM M	8. Malaysia 31 Vessels	4.23 CBM M
4. South Korea 61 Vessels	8.76 CBM M	9. Bermuda 22 Vessels	3.34 CBM M
5. China 56 Vessels	8.32 CBM M	10. Russia 19 Vessels	3.00 CBM M

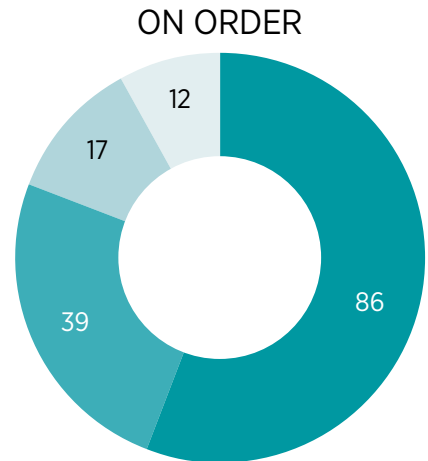
Source: VesselsValue as of 31st December 2019
Does not include floating production vessels.

LNG Carrier fleet breakdown

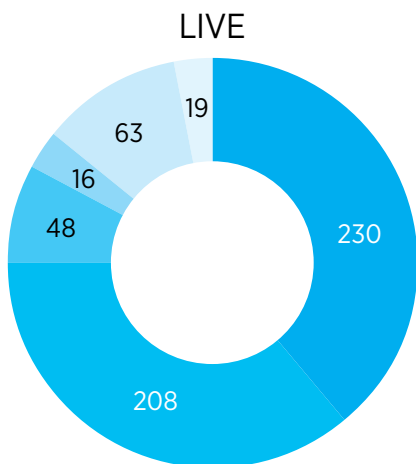
LNG CARRIER FLEET BY CONTAINMENT SYSTEM



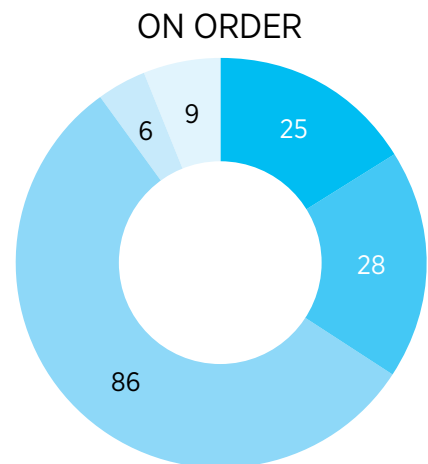
202	GTT Mark 111	86
206	GTT NO96	39
132	Moss Spherical	0
34	Type C	17
10	Others	12



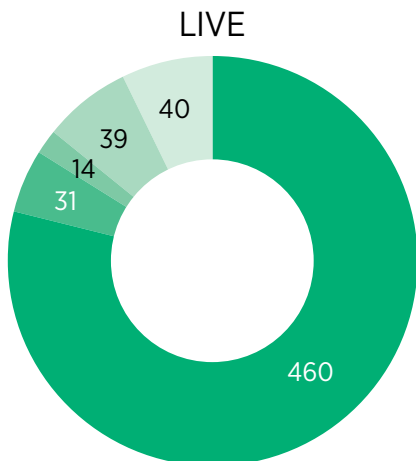
LNG CARRIER FLEET BY PROPULSION SYSTEM



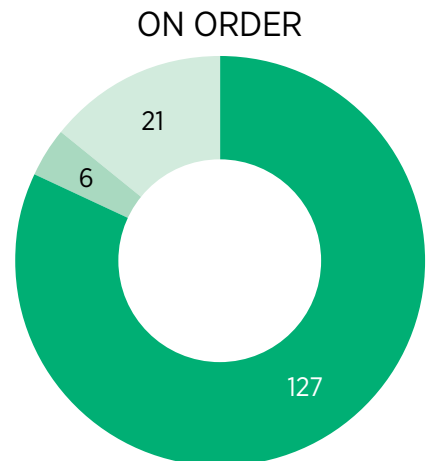
230	Steam Turbine	0
208	DFDE	25
48	MEGI	28
16	X-DF	86
63	Low Speed Diesel	6
19	Unknown	9



LNG CARRIER FLEET BY VESSEL TYPE



460	Large LNG	127
31	QFLEX	0
14	QMAX	0
39	FSRU/FSU	6
40	Small LNG	21



Sources: GIIGNL, IGU, GTT, SIGTTO; fleet as of 31st December 2019
Does not include floating production vessels; small LNG carriers are those of less than 50,000m³

Gas shipping and terminal timeline 2019

A roundup of key gas shipping and terminal developments in 2019 highlights many aspects of a dynamic industry. These include the spread of an increasingly diverse global infrastructure; the application of new technologies; the emergence of new players and cargoes; and the introduction of new vessel types.

In 2019 the global trade in LNG passed the 350 million tonnes per annum (mta) mark, three times the annual volume shipped by sea at the start of the millennium. Worldwide movements of LPG in 2018 exceeded the 100 mta level for the first time in 2019.

January

- Russia's first LNG import terminal, at the Baltic Sea enclave of Kaliningrad, was commissioned. However, the facility, based on the use of the 174,000 m³ floating storage and regasification unit (FSRU) *Marshal Vasilevskiy*, did not process any LNG cargo and the vessel spent the year trading as a conventional LNGC.
- Commissioning work began at Gibraltar's small-scale LNG receiving terminal. The Shell-controlled facility has five horizontal cylindrical storage tanks totalling 5,000 m³.
- CNOOC's 0.6 million tonnes per annum (mta) Fangchenggang LNG receiving terminal on the Tonkin Gulf near the Vietnam border in Guangxi province opened for business. The 30,000 m³ *Hai Yang Shi You 301* carries most of the inbound LNG to the small-scale Chinese facility from CNOOC's nearby Hainan terminal while road tankers handle much of the onward distribution of LNG to final customers.



Hai Yang Shi You 301 is delivering much of the LNG received at Fangchenggang



Built initially as an LNG import terminal, Golden Pass is to be provided with three 5.2 mta liquefaction trains

February

- Exceleerate Energy's Northeast Gateway receiving facility off the coast of Massachusetts handled its peak delivery rate of 15,000 tonnes of LNG per day. The record-breaking volume was accomplished through the simultaneous discharge of regasified cargo by two of the company's FSRUs, *Exemplar* and *Express*, through the terminal's twin submerged turret loading (STL) buoys. *Exemplar* had earlier received its cargo from *Arctic Voyager* in a jettyside operation in the Bahamas, the first-ever ship-to-ship (STS) LNG transfer in the island nation. Also in February, Exceleerate Energy successfully completed its 1,500th LNG STS operation. The transfer was carried out at the Engro Elengy terminal in Pakistan's Port Qasim.
- Polskie LNG agreed to expand the capacity of its Swinoujcie import terminal by 50 per cent, to 5.75 mta, by the second quarter of 2023. A third 180,000 m³ storage tank will be built at the Baltic Sea installation near the German border.
- Golar LNG agreed a lease and operate contract with BP under which it will provide a floating LNG production (FLNG) vessel for 20 years to realise the gas riches of the Greater Tortue/Ahmeyim project off the coasts of Mauritania and Senegal. Golar will convert the 125,000 m³ LNGC *Gimi* into an FLNG vessel for the project, on which BP and its partners made the final investment decision to proceed in December 2018. The target start-up for the Greater Tortue/Ahmeyim scheme is 2022.
- Singapore completed modifications to its second jetty to enable the reception and reloading of small LNG carriers down to 2,000 m³ in size. The new capability will enable the loading of both LNG bunker vessels serving ships in the port and LNGCs delivering fuel to small and mid-scale gas-fired power plants in the region.
- Qatar Petroleum and ExxonMobil agreed to press ahead with a project to make its Golden Pass LNG receiving terminal in Texas a bi-directional facility with the ability to export LNG. Golden Pass will be provided with three 5.2 mta liquefaction trains and the aim is to load the first cargoes in 2024.

March

- India's new 5 mta Ennore LNG import terminal, the country's fifth and first on its east coast, was commissioned with the arrival of a cargo, of 35,000 tonnes, delivered by *Golar Snow*.
- Petronas, Malaysia's state energy company, relocated its FLNG vessel, *PFLNG Satu*, from the Kumang cluster field offshore Sarawak to the Kebabangan cluster field offshore Sabah. *PFLNG Satu*, the world's first FLNG vessel to go into operation, produced its first LNG in December 2016 and processed 19 cargoes at Kumang.

April

- The FSRU *Golar Nanook* began to process a commissioning cargo for the Sergipe LNG import project in Brazil. *Golar Nanook* carried the shipment from Cameroon in West Africa but the vessel will be stationed at Sergipe to regasify inbound cargoes for the scheme's associated gas-fired power plant.
- Novatek and Gazprombank launched operations at their 0.66 mta mid-scale LNG production terminal in the Russian Baltic port of Vysotsk. The Baltic LNG bunker market will be an important target for the facility's output.
- JERA and EDF Trading completed the merger of their LNG businesses and created JERA Global Markets (JERGM) to manage their collective short and medium-term LNG trading and optimisation activities in the wholesale markets. The venture, which is 66.7 per cent controlled by JERA and 33.3 per cent by EDF, has access to a combined 35 mta of LNG supply worldwide.
- Summit LNG, Bangladesh's second LNG import terminal and its second to be based on the use of an FSRU, opened for business. The 138,000 m³ *Summit FSRU* (ex-*Excelerate*) has been chartered for 15 years and is stationed 6 km off Moheshkhali Island in the Bay of Bengal. The vessel has the capacity to regasify 3.5 mta of LNG and makes use of a submerged turret loading (STL) buoy to discharge regasified cargoes to the shore grid.

May

- Cameron LNG, a Sempra Energy enterprise, loaded the first LNG export cargo at its Louisiana terminal, to the 177,000 m³ *Marvel Crane* for delivery to Spain.
- Golar LNG received a notice to proceed with the conversion of its 140,000 m³ LNG carrier *Golar Viking* into a 1.8 mta FSRU for use by LNG Croatia as the Balkan country's first LNG import terminal. To be owned by LNG Croatia, the regasification vessel will be stationed at Krk Island for operation by Golar under a 10-year contract.
- AltaGas inaugurated its Ridley Island LPG export terminal in British Columbia with the dispatch of a cargo of propane onboard the 82,416 m³ very large gas carrier (VLGC) *Sumire Gas* to Japan's Kyushu Fukushima LPG terminal. The AltaGas facility is the first LPG export terminal on Canada's Pacific Coast.



Marvel Crane lifted the inaugural Cameron LNG export cargo



AltaGas is Canada's first Pacific Coast LPG export terminal

Gas shipping and terminal timeline 2019

June

- Cheniere Energy took the final investment decision (FID) to proceed with the construction of a sixth 4.5 mta liquefaction train at its Sabine Pass LNG export terminal in Louisiana. A 2023 start-up for the unit is planned.
- The Tango floating LNG production (FLNG) unit, stationed in the Argentine port of Bahia Blanca, began loading its first export cargo onto a waiting LNG carrier. The 30,000 m³ shipment, ensuring Argentina's entry into the record books as the world's 21st LNG export nation, was carried by the 149,170 m³ *Fuji LNG*.
- The Tornio Manga LNG receiving terminal in the Finnish port of Tornio at the head of the Gulf of Bothnia was formally commissioned.
- Nakilat-Keppel Offshore & Marine (N-KOM) completed its 200th LNG carrier repair at the Erhama bin Jaber Al Jalahma shipyard in Qatar's Ras Laffan port. The servicing of the 135,295 m³ *Al Khor* represented the third time that the vessel had visited the yard for a scheduled drydocking.
- Shell's Prelude FLNG vessel completed the loading of its first LNG export cargo, becoming the second FLNG project within a month to commence operations. Prelude, stationed in deep water off Western Australia, is able to produce almost eight times the volume of LNG annually as Tango, this month's other FLNG start-up. The inaugural Prelude shipment was transported to Korea by the 173,400 m³ *Valencia Knutsen*.



Valencia Knutsen lifted Prelude's first LNG export cargo

- Petronet completed the latest phase of the expansion of the LNG-handling capabilities at its Dahej import terminal in Gujarat, from 15 to 17.5 mta.
- Developers of the Mozambique LNG export project made an FID to proceed with the US\$20 billion, 13 mta East African scheme.
- Mitsui OSK Lines (MOL) concluded a long-term charter deal with Hong Kong LNG Terminal Ltd covering the provision of an FSRU to enable Hong Kong to commence LNG imports in 2021. MOL will supply the 263,000 m³ *MOL FSRU Challenger*, the world's largest FSRU, for the project.

July

- The first cargo produced by the 4.5 mta Train 2 of Cheniere Energy's Corpus Christi LNG export project departed the Texas terminal.
- Shell's Prelude FLNG exported its first LPG cargo. The shipment, for discharge in Korea, was loaded onboard Petredec's 84,000 m³ VLGC *Secreto*, currently serving on a 10-year charter to Shell.
- Solvang took delivery of its four 21,293 m³ ECO-class ethylene carriers during the year. The Norwegian shipowner pointed out that its hybrid exhaust gas cleaning system, in combination with a low-pressure exhaust gas recirculation technology, enables the heavy fuel oil-burning vessels to comply with both IMO's Tier III nitrogen oxide and global sulphur oxide emission reduction requirements.
- The first eastbound Yamal LNG cargo of the year, carried along Russia's Northern Sea Route to Asia, arrived in Korean waters. It was delivered by the 172,000 m³ *Arc7* icebreaking LNG carrier *Vladimir Rusanov*.



Vladimir Rusanov carried the first Yamal LNG eastbound cargo of 2019

August

- Venture Global LNG made an FID to proceed with its proposed 10 mta Calcasieu LNG export project in the US state of Louisiana. The terminal will feature 18 modularised liquefaction compression trains and first production is set for 2022.
- Shenzhen Gas, a city gas distributor, received a first cargo at its new small-scale, 0.8 mta LNG receiving terminal in Shenzhen, situated only 10 km distant from CNOOC's Dapeng LNG import terminal.
- Turkey's Karadeniz and Japan's MOL unveiled their Karpowership LNG-to-powership project, earmarked for Nacala in Mozambique. The plan calls for an MOL FSRU to supply regasified LNG to an adjacent Karadeniz floating, gas-burning power plant.

Ethane transport gathers pace in 2019

Ethane has emerged as a new liquefied gas carrier cargo on deepsea routes in recent years as a result of the US shale gas revolution. Buyers are lining up to secure the product as a competitively priced feedstock for ethylene production and, following on, the manufacture of a wide range of petrochemicals.

The 3.9 million tonnes per annum (mta) Sunoco Logistics ethane-loading facility at Marcus Hook near Philadelphia on the US East Coast came onstream in March 2016 while the 7.6 mta ethane export terminal of Enterprise Products Partners (EPP) at Morgan's Point at the entrance to the Houston Ship Channel in Texas commenced operations in September 2016.

In May 2019 Evergas, part of the JACCAR Group, took delivery of the 85,000 m³ *JS Ineos Marlin*, the first very large ethane carrier (VLEC) to join its fleet and also the first VLEC to be built in China. Like the eight 27,500 m³ Dragon-class ethane carriers operated by Evergas, *JS Ineos Marlin* has been taken on long-term charter by INEOS Trading & Shipping. The vessel is being utilised in the transport of US ethane to China on behalf of SP Chemicals.

JS Ineos Marlin is the world's largest gas carrier to be equipped with IMO Type C cargo tanks. The tri-lobe tank design was developed by JHW Engineering & Contracting in collaboration with the Hartmann Group in Germany. *JS Ineos Marlin*, the first of a pair of such vessels from China's Dalian Shipbuilding Industry Company (DSIC) yard, is powered by a dual-fuel MAN engine able to utilise ethane cargo boil-off as a propulsion system fuel.



The 85,000 m³ *JS Ineos Marlin* is the largest gas carrier ever built with IMO Type C cargo tanks

By the end of 2019 ethane exports from Marcus Hook and Morgan's Point had built up to the 6 mta level, up 13 per cent from the 5.3 mta loaded at the two terminals in 2018. Developments continued apace during the course of the year, setting the scene for higher US ethane export volumes over the next few years.

In January 2019 American Ethane Company began building a new US ethane export terminal. The 10 mta facility is being constructed at Beaumont in eastern Texas with the aim of shipping the product to at least three major Chinese petrochemical firms to feed a number of new ethylene crackers being planned for the country.

In April 2019 Mitsui OSK Lines (MOL) agreed to acquire an ownership stake in six 87,000 m³ VLECs wholly owned by Reliance Industries Ltd. MOL has been operating the six-ship fleet since their delivery in 2016 and 2017, carrying ethane from Morgan's Point to India on behalf of Reliance. The MOL ships all have GTT Mark III membrane containment systems designed by Gaz Transport & Technigaz (GTT).

In September 2019 GTT was contracted to provide its Mark III membrane containment systems for three/option three 98,000 m³ VLECs ordered at Hyundai Heavy Industries and Samsung Heavy industries in Korea. The vessels will be utilised to transport US ethane to China on behalf of Zhejiang Satellite Petrochemical and will be certified as "LNG-ready", able to switch to the carriage of LNG if required.

Energy Transfer is building an 3.7 mta ethane export capability, under the Orbit Gulf Coast NGL Exports banner, at its LPG-loading terminal in Nederland, Texas to meet the requirements of Zhejiang Satellite. Zhejiang Satellite has signed up for 3.2 mta of Nederland's ethane output, which had been due onstream late in 2020. The start date has been put back due to terminal construction delays caused by the Covid-19 virus.

In December 2019 the Jiangnan yard in China secured orders from compatriot company Pacific Gas for two 99,000 m³ VLECs. The dual-fuel pair will feature the new Type B Brilliance cargo containment system developed by the Chinese yard.

Tug in attendance during the transshipment of LNG cargo from Gaslog Savannah to FSRU Toscana



September

- Freeport LNG shipped the first commissioning cargo from Train 1 of its newly configured 13.2 mta export terminal in Freeport, Texas. The cargo was lifted by the 150,000 m³ *LNG Jurojin*.
- Participants in the Arctic LNG 2 project, planned for a location in the Russian High Arctic close to Yamal LNG's Sabetta export terminal, made the FID to proceed with the US\$21.3 billion, 19.8 mta scheme. Each of the three trains will be built on gravity-based structures also able to store LNG.
- Korea Gas Corporation's new coastal LNG receiving terminal in the port of Aewol on Jeju Island received its inaugural cargo. The shipment was transported by the 7,500 m³ *SM Jeju LNG No1*.

November

- Both the Cove Point terminal in the US and the Ichthys terminal in Australia loaded their 100th cargoes during the month. In Cove Point's case the landmark shipment occurred 19 months after the start of export operations; for Ichthys it was 13 months. The Ichthys terminal had also loaded 24 LPG and 46 condensate cargoes since October 2018.



Ichthys loaded 100 LNG, 24 LPG and 46 condensate cargoes during its first 13 months of operation

December

- Nigeria LNG took an FID to proceed with the construction of the 4.2 mta Train 7 at its Bonny Island export terminal. In addition, debottlenecking work will be carried out on the existing six trains to yield another 3.4 mta of production capacity, boosting the overall output potential of the facility from 22.5 to 30 mta.
- The 159,800 m³ *Maran Gas Lindos* arrived at the Elba LNG terminal in the US state of Georgia to load the installation's first export cargo.
- Freeport LNG shipped its first Train 2 commissioning cargo, onboard the 177,000 m³ *Sohshu Maru*. The operation was carried out only three months after the project's first Train 1 shipment was despatched.

Summary

The seaborne trade in LNG increased by a healthy 13 per cent year-on-year in 2019, to reach 354.7 million tonnes (mt), following expansions of 8.3 per cent in 2018 and 9.9 per cent in 2017. The annual trade growth in 2019 was the LNG industry's second largest on record, after 2010. The expansion in trade was primarily driven by new production from the US, where output was up by 13.1 mt compared to 2018, Russia, up 11 mt, and Australia, up 8.7 mt. Europe's LNG imports jumped by 75 per cent in 2019, to 85.9 mt in 2018. China's inexorable rise as an LNG import nation continued in 2019, with inbound shipments climbing 14.2 per cent to reach 61.7 mt. Japan is the only country with a larger LNG purchase slate but its imports declined in 2019, down 6.8 per cent to 76.9 mt.

In addition to the strong growth in global seaborne movements of LNG in 2019, the year was also notable for the record volume of new production capacity that was sanctioned. Decisions taken during the year will enable the liquefaction of an additional 71 million tonnes per annum (mta) of LNG from six new projects.

The buildup in shipments from the new Sabine Pass project helped the US boost year-on-year LNG exports by 64 per cent in 2018



A total of 44 LNGCs were delivered in 2019 while 62 newbuildings were contracted, including 10 vessels of under 50,000 m³. The global fleet of LNGCs stood at 601 vessels at the end of 2019, including about 20 laid-up ships, while 154 LNGCs were on order.

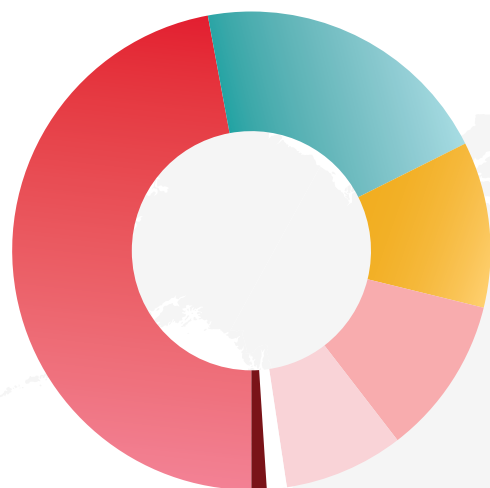
Of the 103.5 mt of LPG moved by sea in 2019, over 80 per cent was carried by fully refrigerated very large gas carriers (VLGCs) of 75,000 m³ and above on deepsea routes. The US overtook the Middle East for the first time in 2019 to become the world's largest LPG export region. Some 40.2 mt of LPG was exported from the US during the year, versus 39 mt from the Middle East. China was the largest importer of LPG in 2019, with 19.4 mt purchased, followed by India, with 14.2 mt.

At the end of 2019 there were 285 VLGCs in service, following the completion of 17 newbuildings during the year, and 41 such ships on order.

LPG carrier fleet by type, age, flag state and owner nation

LPG ANNUAL REPORT 2019

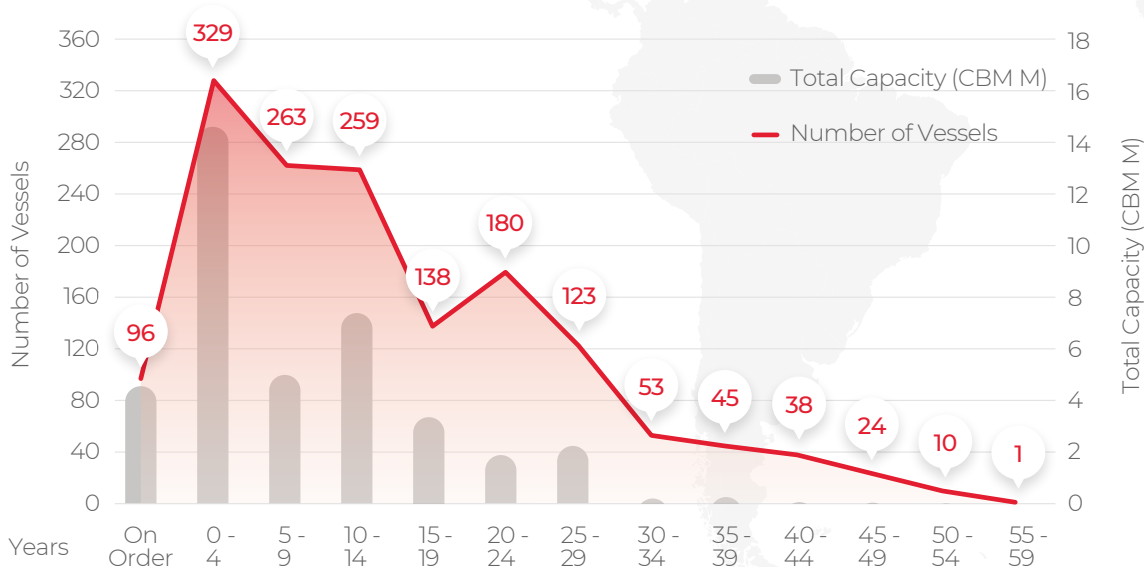
LPG FLEET BY NUMBER OF VESSELS



LPG Type	Number of Vessels	Total Capacity (CBM M)
Fully Pressurised	734	2.49
VLGC	320	26.27
LEG	175	2.03
SP FR LPG	167	1.84
MGC	126	4.27
LGC	21	1.25
VLEC	16	1.47

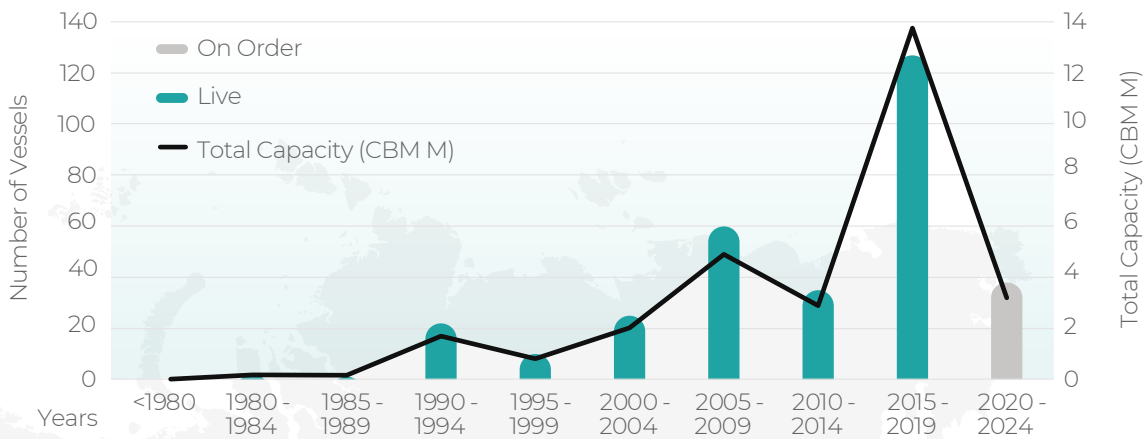
Total of **1,559** vessels
96 of which are currently on order

LPG FLEET AGE PROFILE

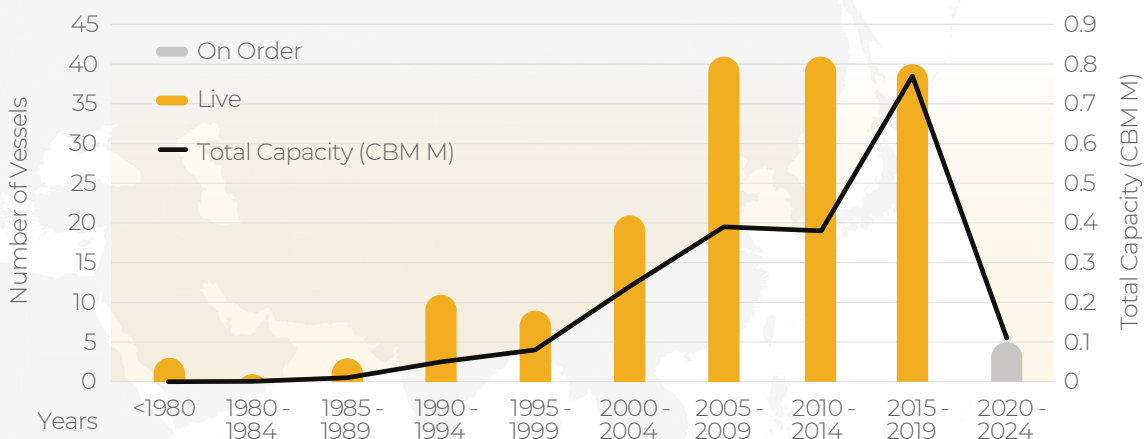


Source: VesselsValue as of April 2020
 Does not include floating production vessels.

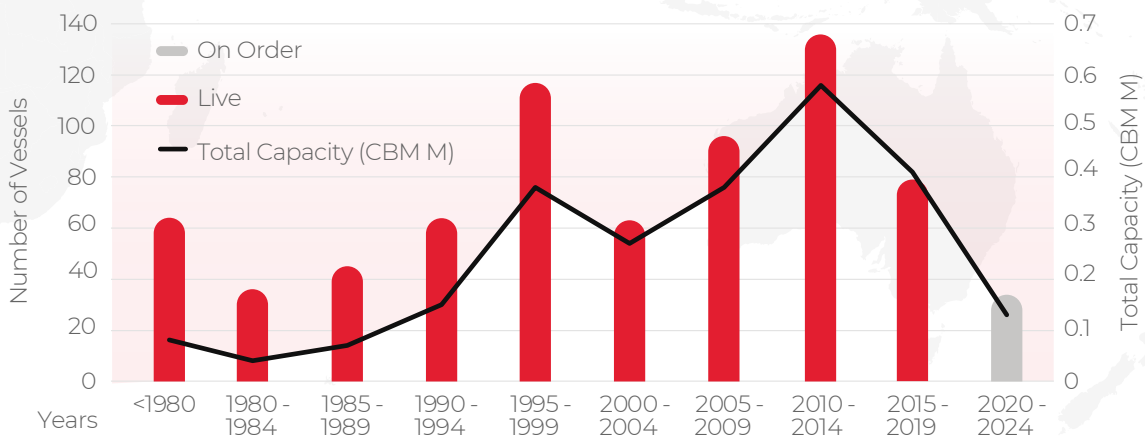
VLGC DELIVERY SCHEDULE



LEG DELIVERY SCHEDULE



FULLY PRESSURISED DELIVERY SCHEDULE



Source: VesselsValue as of April 2020
Does not include floating production vessels.

SIGTTO meetings focus on membership outreach



SIGTTO's busy schedule of Panel Meetings and Regional Forums enables the Society to maintain a regular and ongoing dialogue with its full membership. On the one hand, the events provide opportunities for the Secretariat and members participating in current project working groups to highlight the key issues concerning the industry to the wider membership. And, on the other, the get-togethers enable each Society member to contribute to the discussions and raise new matters for SIGTTO's General Purposes Committee (GPC) and Human Element Committee (HEC) to consider for future projects involving the development of industry best practice guidelines.

Panel Meetings are held once or twice a year, typically in conjunction with a spring General Purposes Committee (GPC) meeting in April and/or an autumn GPC meeting in September/October. Panel Meetings attract large attendances and are open to every member of the Society as well as a limited number of guests such as potential members or subject matter experts.

Generally taking place over two days, Panel Meetings provide opportunities for a frank and free exchange of views and opinions on matters of current interest to the industry, plus a series

of presentations on topical subjects. The latter can include talks on lessons learnt, which are shared under Chatham House Rules. SIGTTO Panel Meetings can be held anywhere in the world, the location depending on the that of the Society member hosting the event.

SIGTTO Regional Forums are held regularly to address local issues and to provide those members without the resources to travel to distant Panel Meetings with an opportunity to participate directly in the Society's proceedings. There are typically around 12 Regional Forums per year, each lasting a day. Forum agendas are proposed by the local members themselves while the SIGTTO Secretariat acts as secretary to the meetings. The events are open to members along with selected invited guests.

SIGTTO Regional Forums currently take place on a regular basis worldwide under the following event headings:

- Pan American
- South American
- Western European
- Scandinavian
- Mediterranean
- Australian
- Middle Eastern
- Asia Pacific
- Indian

Unusually, no SIGTTO Panel Meeting was held in 2019 due to the possible clash with the latest meetings of the two key international series of industry events. LNG 19 took place in Shanghai in April while Houston played host to the Gastech 2019 conference and exhibition in September.

There was nevertheless a considerable SIGTTO presence at both events. Quite aside from the attendance of significant numbers of individual Society members at both gatherings, the 79th meeting of SIGTTO's General Purposes Committee (GPC) was held in Shanghai in conjunction with the LNG 19 event while GPC 80 took place in Houston in tandem with Gastech 2019.

In addition, Andrew Clifton, SIGTTO's General Manager, chaired the shipping sessions at both LNG 19 and Gastech 2019. As at previous Gastechs SIGTTO once again shared a large exhibition stand with Witherbys, the Society's publisher, at Gastech 2019 and the availability of meeting facilities at the site was appreciated by the membership.

Regional Forums

A total of 11 Regional Forums were held during 2019 to extend the dialogue with industry and the Society's outreach. Forums took place in Oslo,

Mumbai, Oman, Hamburg, Athens, Buenos Aires, Perth, and twice in both Houston and Singapore.

Regional Forums enable the Secretariat to meet many more of the Society's members than otherwise would be possible and gain direct feedback on important issues, including regional developments, that could have relevance internationally. At the same time the presentations arranged for the Regional Forums allow local memberships to keep up to date with key international developments and new technologies impacting the industry.

One example of the exchange of information and insights made possible by Regional Forum presentations was a paper given by Aziz Bamik of GTT North America at SIGTTO's Pan American Regional Forum in Houston in May 2019. His update on the latest developments with the two signature membrane tank containment systems of Gaztransport & Technigaz (GTT) provided delegates with an insight into the considerable amount of development work underway at the company.

LNG carriers have been fitted with membranes of the GTT Mark III and GTT NO 96 family types for over 50 years and, as at the end of 2019, 70 per cent of the in-service LNGC fleet sported GTT tanks of one type or the other. GTT's work programme is focused upon maintaining and strengthening that leading position.

Over the past 10 years, with the introduction of fuel-efficient two-stroke, dual-fuel engines for conventional LNGCs, GTT has been refining its Mark III and NO 96 technologies to achieve further cargo boil-off gas (BOG) rate reductions. As Aziz Bamik told those attending the Pan American Regional Forum, the Mark III system, with its characteristic waffled stainless steel primary barrier and Triplex secondary barrier, has been improved with the Mark III Flex and Mark III Flex+ systems, yielding BOG rates of 0.085 and 0.07 per cent, respectively.

Refinements to the NO 96 system, which features primary and secondary barriers of invar alloy with a 36 per

cent nickel content, have also resulted in major BOG rate reductions. The new NO 96 GW system provides a rate of 0.13 per cent, while NO 96 LO3 offers 0.11 per cent and NO 96 LO3+ 0.10 per cent. The next step in this evolutionary process will be the NO 96 Flex technology, a design that incorporates elements of the Mark III membrane to achieve a BOG rate of 0.07 per cent.

Extraordinary Forum

Although there were no Panel Meetings in 2019, SIGTTO did organise an extraordinary meeting on 10 September in London. The Liquefied Gas Shipping Forum brought together representatives of many member companies, friends of the Society and members of the press to celebrate SIGTTO's 40th anniversary.

The Forum featured many of the Society's past and present personnel in three separate panel sessions. During the proceedings the panelists were able to contribute their personal memories and recollections of their involvement with SIGTTO over the last four decades.

The kick-off group consisted of three past SIGTTO General Managers and two Technical Advisers, and their combined reminiscences gave those attending a unique insight into the Society's formative years, including

the primary liquefied gas issues of concern and the industry's leading lights during those pioneering early days. Panelist Robin Gray, the Society's second General Manager, stole the show with his razor sharp memory and insightful and amusing recollections of events, projects and people during his time at the helm, from 1985 to 1991.

While the second panel session concentrated on the Society's middle years, when the gas shipping and terminal industry began to put down strong roots and gain momentum, participants in the third gave their insights into the current situation and the principal challenges which lie ahead for the liquefied gas sector in general and the Society in particular. As the discussion highlighted, the current strong expansion of the industry and the rapid pace of technological advance pose both opportunities and challenges.

Backing up the SIGTTO General Managers and Technical Advisers in attendance was a formidable array of former and current Society directors and members, along with other industry stakeholders, and several of these participated in Liquefied Gas Shipping Forum's panels. The panel proceedings along with a notable evening reception combined to make it a memorable day.



Now well established as an annual event, the South American Regional Forum is one of SIGTTO's most popular meetings

SIGTTO involvement in IMO rulemaking process



At its 101st Session in June 2019 IMO's Maritime Safety Committee agreed to a SIGTTO proposal that the provisions governing the entry into enclosed spaces, as applied to gas carriers, be reviewed

At any one time a number of rulemaking initiatives are underway at the International Maritime Organization (IMO), the European Union (EU) and the US Coast Guard (USCG) which impact gas carrier operators engaged in international trade. Because close alignment of systems and procedures at the ship/shore interface is critical to safe and reliable gas ship operations, many maritime legislative decisions also affect terminal operators.

SIGTTO plays a key role in the rulemaking processes of the various agencies, contributing information necessary for the drafting and implementation of sound and effective regulations; representing member interests on issues of gas ship safety and reliability; and disseminating the results of the progress being made at the various regulatory meetings amongst the membership.

IMO is the leading international body for maritime safety and environmental protection affairs and

has a busy schedule of committee and subcommittee meetings each year. The following paragraphs detail IMO considerations impacting on the design, construction and operation of gas carriers during the course of 2019.

Gas carrier firefighting

IMO work on the revision of its *Guidelines for the approval of fixed dry chemical powder fire-extinguishing systems for the protection of ships carrying liquefied gases in bulk* (MSC.1/Circ.1315) continued and was under discussion once again at the 6th Session of its Sub-committee on Ship Systems and Equipment – (SSE 6) in March 2019.

IMO's Maritime Safety Committee had agreed to consider amendments to the guidelines at its 98th Session (MSC 98) in June 2017 following the submission of a proposal. The proposal highlighted the lack of detailed "fire-extinguishing capability test" requirements and the fact that the then-current guidelines specified only the use of powder based on the salts of potassium when other media were available.

The guidelines were further developed at SSE 6, but not finalised. A correspondence group (CG) was re-formed to progress the work and was requested to report to the SSE 7 meeting which was held in London early in March 2020.

The definition of "cargo area" for the purposes of firefighting arrangements (paragraph 11.1.4 in the revised International Gas Carrier (IGC) Code) had been considered at SSE 5 in March 2018. At that meeting it was agreed that when there is a fuel tank adjacent to the cargo area, the weather deck area above should be considered as "cargo area", in the same way that a void space or ballast tank would be. A revised Unified Interpretation (UI) to this effect was agreed by SSE 6.

A joint submission by SIGTTO and the International Association of Classification Societies (IACS) on installation testing for dry chemical powder fire-extinguishing systems (IGC Code 11.4.8), proposing a new UI, was also agreed at SSE 6. This paper

was concerned with the onboard installation test of dry chemical powder fire-extinguishing systems, with particular reference to the vague expression "sufficient amounts of dry chemical powder". The UI makes it clear that testing arrangements should involve the discharge of dry chemical powder from all monitors and hand hose lines on board, but it is not required to fully discharge all the installed quantity of dry powder.

Energy Efficiency Design Index (EEDI)

IMO's Marine Environment Protection Committee (MEPC) is carrying out a review of the Energy Efficiency Design Index (EEDI) provisions applicable to new ships, including gas carriers. An IMO correspondence group (CG) reviewing the EEDI Phase 3 requirements with a view to potentially changing the implementation date and emission reduction requirements reported to the 74th Session of the Marine Environment Protection Committee (MEPC 74) in May 2019.

The Committee agreed to leave the emission reduction rate at 30 per cent for both "LNG Carriers" and "Gas Carriers", but advance the date to 2022, except for small gas carriers of less than 15,000 dwt which retain the original 2025 date.

Enclosed spaces and IGC cargoes

SIGTTO submitted a proposal (MSC 101/21/11) to the 101st Session of IMO's Maritime Safety Committee, which was held in London in June 2019, for a new output to refine Resolution A.1050(27) (*Revised recommendations for entering enclosed spaces aboard ships*) regarding its application to gas carriers. Delegates agreed to pursue the matter and the item was placed on the agenda for consideration at 7th Session of IMO's Sub-committee on Carriage of Cargoes and Containers (CCC 7) which is scheduled to convene in September 2020.

MSC 101 also formally approved several items, including many IGC Code UIs previously agreed at SSE 6 and CCC 5. These were subsequently published in three MSC Circulars, i.e. MSC.1/Circ.1606,

MSC.1/Circ. 1607 and MSC.1/Circ.1617.

The MSC.1/Circ. 1607 circular approved by MSC 101 in June 2019 deals with the carriage of cargoes specified in Chapter 19 of the IGC Code. The UK had earlier proposed to make consequential amendments to Chapter 19 of the revised International Gas Carrier (IGC) Code, which entered into force in 2016. Chapter 19 provides a summary of the minimum requirements for gas carrier cargoes, and the amendments were deemed to be necessary to correct those anomalies introduced during the IGC Code revision process that result in differences between the "old" and "amended" Codes.

Following on, CCC 5 had acknowledged that the list of products as provided in Chapter 19 of the IGC Code for ships constructed on or after 1 July 1986 and before 1 July 2016 was not up-to-date. Under the terms of the MSC.1/Circ. 1607 circular, unless expressly provided otherwise, ships constructed between those two dates wanting to carry additional cargoes listed in Chapter 19 of the amended IGC Code may carry these products provided they are listed in the addendum to the Certificate of Fitness and meet the requirements of the applicable IGC Code.

More IGC Code UIs

The 6th Session of the Sub-committee on Carriage of Cargoes and Containers (CCC 6), which took place in September 2019, considered over 20 proposed Unified Interpretations (UIs) of the IGC Code.

Those agreed include the following:

- (a) tee welds in type A or type B independent tanks (concerning paragraph 4.20.1.1 of the IGC Code);
- (b) welds of type C independent bi-lobe tanks with centreline bulkheads (4.20.1.2);
- (c) outer duct in gas fuel piping systems (5.4.4 and 5.13.2.4);
- (d) cargo sampling (5.6.5);
- (e) cargo filters (5.6.6);
- (f) cargo piping insulation (5.12.3.1);
- (g) type testing requirements for valves (5.13.1.1.2);
- (h) guidance for sizing pressure relief systems for interbarrier spaces (8.1);
- (i) emergency fire pumps (11.2 and 11.3.4);
- (j) fire pumps used as spray pumps (11.3.4);
- (k) level indicators for cargo tanks (13.2.2);
- (l) inhibition of cargo pump operation and opening of manifold emergency shutdown (ESD) valves with level alarms overridden (table 18.1, note four and 13.3.7);
- (m) oxygen deficiency monitoring equipment in a nitrogen generator room area (13.6.4);
- (n) integrated systems (13.9.3); and
- (o) suitable pressure relief system for air inlet, scavenge spaces, exhaust system and crank case (16.7.1.4).

The agreed UIs were due to be submitted to the postponed MSC 102 meeting, which had been scheduled for May 2020, for approval. Once approved in due course, they will be published in an IMO Circular.



IMO has cleared up some of the anomalies surrounding which cargoes are permitted for carriage on ships built prior to the introduction of the revised IGC Code in 2016

40th Anniversary Forum & Reception

SIGTTO held a special Liquefied Gas Forum and reception at Sea Containers House in London on 10 September 2019 to commemorate its 40th birthday



Forum Panel 1 covered the Society's early days; from left to right, Dick Chadburn, Robin Buncombe, Bill Wayne, James MacHardy, Robin Gray and panel chair Andrew Clifton



Forum Panel 2 focused on the turn of the millennium, when the liquefied gas market and technology both began to gain momentum; from left to right, Mark Ross, Mike Corkhill, Ed Carr, John Cumming and panel chair Chris Clucas



Forum Panel 3 brought things up to date, looking at not only the current situation but also future prospects; from left to right, Anita Odedra, Steve Allibone, Mark Hodgson, Steffen Jacobsen, David Furnival and panel chair Iain Macneil



Andrew Clifton (centre) with a gathering of SIGTTO Presidents and Vice Presidents past and present; from left to right, Masayuki Ishida, Mark Ross, David Furnival, Andrew, Steffen Jacobsen, Gary Smith and Blair MacIntyre



The reception provided an ideal opportunity to renew acquaintances and make new friends



Amongst those gathered together for the group photos were past and present members of SIGTTO's General Purposes and Human Element Committees

40th Anniversary Forum & Reception



There was a good number of current and previous SIGTTO Directors present at the 40th anniversary celebrations; from left to right, Masayuki Ishida, Carl Henrickson, Riju Cherian, Iain Relf, David Furnival, Paul Oliver, Steffen Jacobsen, Anita Odedra, George-Paul Perantzakis, Peter Justesen, Ed Carr, Edwin Mortimer, Blair MacIntyre, Takeshi Hashimoto, Gary Smith, Mark Ross



Nice to get out of the office the SIGTTO Secretariat staff, from left to right, Sue Humphrey, Andrew Clifton, Erin Rydings, Uluc Kaypak, Cherian Oommen, Rob Farmer, Laura Else and Ian Harrison



An array of past and present SIGTTO Technical Advisers; from left to right, Dick Chadburn, Paul Steele, Andrew Clifton, Chris Snape, Uluc Kaypak, Ian Harrison, Rob Farmer, Cherian Oommen, Robin Buncombe and John Cumming



The top floor of Sea Containers House offered panoramic views of the London skyline

SIGTTO at 40 special issue



SIGTTO has published a special 40th anniversary publication to celebrate the sterling service provided by the Society on behalf of the liquefied gas shipping and terminal industry over the past four decades.

The backbone of the 124-page *SIGTTO at 40 years: 1979-2019* publication is comprised of 31 contributed articles by people who

have played key roles in SIGTTO activities over the years. The compilation includes six submissions by SIGTTO General Managers, six by former Technical Advisers, five by past and present Presidents and Vice Presidents and eight by former and current members of the Society's General Purposes Committee (GPC). There are also six 'miscellaneous' contributions, including input from the Company Secretary, SIGTTO's publisher, the organiser of the Gastech series of meetings and a representative of the US Coast Guard.

Many of the contributors are SIGTTO multi-taskers, having served the Society in a diverse array of roles other than the one they are most renowned for. All have had long and varied careers in industry and their commentaries in this commemorative issue reflect how their day jobs and work for SIGTTO intertwined to the great and strategic benefit of both.

The technical detail in the personal commentaries, which highlight how the liquefied gas industry evolved and how SIGTTO helped gas ship and terminal operators meet all the safety challenges encountered along the way, are complemented by humorous anecdotes about people, places and situations encountered enroute. There is also no shortage of individual views on future challenges and optimum solutions.

There is much to enjoy in the *SIGTTO at 40 years: 1979-2019* commemorative publication. Complimentary copies can be requested by contacting Erin Rydings, SIGTTO Receptionist, at reception@sigtto.org.

Renewing industry best practice portfolio



The updated SIGTTO guidance document on pressure relief valves covers all types of liquefied gas carrier

Continually refreshed, SIGTTO's portfolio of publications provides an unparalleled source of sound advice on safe gas ship and terminal operations.

For SIGTTO the proactive development of industry best practices and guidelines is one of the five central pillars in its drive to promote safe, environmentally responsible and reliable gas shipping and terminal operations. Work on this portfolio of guidance began with the establishment of the Society 41 years ago and the library has constantly been updated and augmented, as required, ever since.

A listing of SIGTTO's paid publications is given on page 36. These various sets of guidelines and recommendations are augmented by more than 60 free SIGTTO publications, newsletters, annual reports and articles, details of which are given on the Society's website: www.sigtto.org. One of the free publications issued in 2019 was *SIGTTO at 40 Years 1979-2019*, a 124-page magazine celebrating the Society's 40th anniversary. Further details about this notable collection of reminiscences and achievements are given on page 33.

During the middle years of the most recent decade the majority of SIGTTO's publication-producing energies were

given over to the revision of two of the industry's landmark liquefied gas documents and the development of a major new IMO instrument with a liquefied gas focus. This mammoth effort resulted in the entry into force of the revised *International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code)* in July 2016 and the new *International Code of Safety for Ships using Gases or other Low-Flashpoint Fuels (IGF Code)* in January 2017, as well as the publication of the 4th Edition of SIGTTO's *Liquefied Gas Handling Principles: on Ships and in Terminals (LGHP4)* in 2016.

Representing a major clearing of the decks, the completion of these three keynote publications enabled the Society to move on and catch up with a range of other projects involving the development and revision of industry best practice guidelines. Over the past six years SIGTTO has issued nine major new publications for the liquefied gas industry. The following paragraphs describe the Society's notable 2019 publishing achievements.

Pressure relief valves

New SIGTTO guidance on a critical piece of gas carrier safety equipment,

Recommendations for Relief Valves on Gas Carriers, was approved by the Society's Board in November 2019 and published early in 2020. The publication is the third edition of SIGTTO's guidance on relief valves and updates the previous edition, *An Introduction to the Design and Maintenance of Cargo System Pressure Relief Valves on Board Gas Carriers*, published in 1998.

The new relief valve guidance document covers both pilot-operated and spring-operated valves as well as preventative and planned maintenance for this equipment. The emergency closure of pressure relief valves is covered as are the potential operating problems and faults encountered when these valves are in service.

Cargo control rooms and the human element

In summer 2019 SIGTTO issued *Recommendations for Management of Cargo Alarm Systems* as a free publication. The first document to be prepared by SIGTTO's recently established Human Element Committee, the publication recommends the implementation of alarm management philosophies for cargo alarm systems on gas carriers, specifically calling for shipowners to work with

system designers, classification societies and shipyards to create an effective management system for cargo alarms on each ship.

Information in the document is based on existing philosophies in the International Safety Management (ISM) Code, the Code on Alerts and Indicators, the International Gas Carrier (IGC) Code and the IEC 62682 standard dealing with the management of alarm systems used in the process industries. Alarm management is a good example of how human element considerations can lead to improved safety performance.

Recommendations for Management of Cargo Alarm Systems was compiled by HEC's Cargo Control Room (CCR) Ergonomics Working Group. The CCR Group has been tasked with developing guidance for operators on how to improve cargo-handling safety through detailed consideration of operational practice within the specification and design of CCR workstations and the human/machine interface (HMI).

During 2019 the CCR Ergonomics Working Group moved on to focus on cargo control room layout and ergonomics, considering aspects such as control station layout, physical environment, operator interface, controls, displays and HMI. Work on its second document, entitled *Recommendations for Designing Cargo Control Rooms*, was completed in 2019 and it is due for publication later in 2020. The CCR Group is now developing its third and final document, a set of guidelines on HMI issues.

The Society believes that the availability of the three CCR Ergonomics Working Group publications will lead to enhanced safety by facilitating the provision of cargo control room layouts and equipment designed around the needs of operators and the tasks they perform. As a SIGTTO recommendation, the new cargo alarm guidance will be included in gas carrier newbuilding contracts. It will thus be a strong driver for encouraging equipment designers to follow these newly established industry best practices.

LNG shipping competency standards

Another HEC working group completed work on updating SIGTTO's LNG shipping competency standards during 2019. The draft *LNG Shipping Suggested Competency Standards (Third Edition)* received HEC approval early in 2020 and the intention is to publish the document later in the year.

The new edition provides additional clarification and updates to existing topics and incorporates advances in technologies currently being used in the LNG industry. Specifically new to this third edition is the development of suggested competencies for floating storage and regasification unit (FSRU) cargo operations as a stand-alone annex for FSRU personnel. FSRU competencies are not part of the core LNG shipping suggested competency standards.

Information papers consolidated

Another new Society publication that appeared in 2019 was *SIGTTO Information Papers (Consolidated Edition 2019)*. Compiled as a handy, single-volume reference tool for use by the industry, the document brings together all the SIGTTO Information Papers that were in force as of March 2019. The contents

of the publication are as follows:

1. A Justification into the Use of Insulation Flanges (and Electrically Discontinuous Hoses) at the Ship/Shore and Ship/Ship Interface
2. ESD Arrangements & Linked Ship/Shore Systems for Liquefied Gas Carriers
3. ESD Arrangements & Linked Ship/Shore Systems for Liquefied Gas Carriers (2009) – Addendum
4. Fire Prevention in the Cargo Containment Systems of Liquefied Gas Carriers in Shipyards
5. Gas Concentrations in the Insulation Spaces of Membrane LNG Carriers
6. Guidance for the Prevention of Rollover in LNG Ships
7. Guide for Planning Gas Trials for LNG Vessels
8. LNG and LPG Experience Matrix (Including Guidelines for Use)
9. LNG Marine Loading Arms and Manifold Draining, Purging and Disconnection Procedure
10. Report on the Effects of Fire on LNG Carrier Containment Systems
11. Simulation Information Paper
12. Suggested Quality Standards for LNG Training Providers
13. Thermowells in LNG Carrier Liquid Lines
14. The Selection and Testing of Valves for LNG Applications
15. The Selection and Testing of Valves for LPG Applications



SIGTTO's new cargo alarm guidance is aimed at smoothing integration of the automation networks that monitor and control gas carrier operating systems

SIGTTO paid publications



Recommendations for Relief Valves on Gas Carriers, 3rd Ed (2020; £175.00)

Liquefied Petroleum Gas Sampling Procedures (2010; £25.00)

SIGTTO Information Papers, Consolidated Ed 2019 (2019; £175.00)

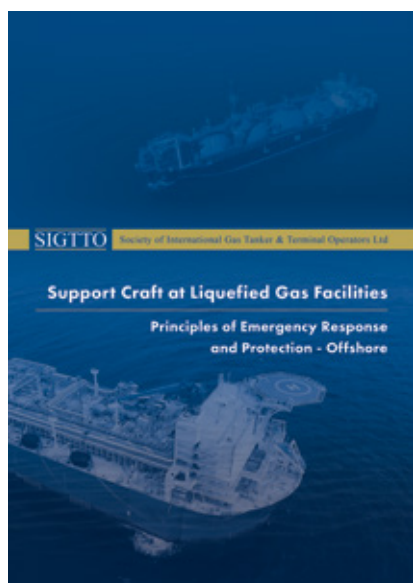
LNG Steamship Suggested Competency Standards for Engineers (2010; £125.00)

Recommendations for Liquefied Gas Carrier Manifolds (2018; £175.00)

LPG Shipping Suggested Competency Standards (2008; £125.00)

Ship/Shore Interface for LPG/ Chemical Gas Carriers and Terminals (2018; £175.00)

LNG Shipping Suggested Competency Standards, 2nd Ed (2008; £125.00)



Guidelines for the Alleviation of Excessive Surge Pressures on ESD for Liquefied Gas Transfer Systems (2018; £175.00)

Jetty Maintenance and Inspection Guide (2008; £175.00)

LNG Emergency Release Systems - Recommendations, Guidelines and Best Practices (2017; £125.00)

Hydrates in LPG Cargoes (2008; £75.00)

Liquefied Gas Handling Principles on Ships and in Terminals, 4th Ed (LGHP4) (2016; £275.00)

Liquefied Gas Fire Hazard Management (2004; £175.00)

Support Craft at Liquefied Gas Facilities: Principles of Emergency Response and Protection - Offshore (2016; £125.00)

Crew Safety Standards and Training for Large LNG Carriers: Essential Best Practices for the Industry (2003; £75.00)

Support Craft at Liquefied Gas Facilities: Principles of Emergency Response and Protection - Onshore (2015; £125.00)

LNG Operations in Port Areas (2003; £75.00)



Ship-to-Ship Transfer Guide for Petroleum, Chemicals and Liquefied Gases (2013; £225.00)

Guide to Contingency Planning for Marine Terminals Handling Liquefied Gases in Bulk, 2nd Ed (2001; £40.00)

Liquefied Gas Carriers: Your Personal Safety Guide (2012; £25.00)

Guidelines on the Ship-Board Odourisation of LPG (2000; £40.00)

Site Selection & Design for LNG Ports & Jetties (Information Paper No 14) (1997; £40.00)

Application of Amendments to Gas Carrier Codes Concerning Type C Tank Loading Limits (2012; £25.00)

Details of more than 60 free SIGTTO publications, newsletters, annual reports and articles are given on the the Society's website: www.sigtto.org

SIGTTO

Society of International Gas Tanker and Terminal Operators Limited

Statement of Comprehensive Income For the year ended 31 December 2019

	<u>Note</u>	<u>2019</u> £	<u>2018</u> £
Revenue			
Members' annual dues		1,326,446	1,347,552
Royalties		177,384	302,479
Interest receivable		1,120	7,373
	2(b)	<u>1,504,950</u>	<u>1,657,404</u>
Expenditure			
Employee benefit expense	5	702,121	641,307
Office supplies, web and library costs		83,505	64,484
Members' meetings		298,524	239,678
Rents, rates and services		206,514	267,853
Professional fees		281,184	304,086
Project costs		-	14,454
Communications		9,162	4,776
Depreciation	6	84,784	55,023
Amortisation of right-of-use	8	150,808	-
Miscellaneous expenses		8,253	14,787
Finance expense	7	39,782	-
		<u>1,864,637</u>	<u>1,606,448</u>
(Deficit)/surplus for the year		<u><u>(359,687)</u></u>	<u><u>50,956</u></u>

The society has no items of other comprehensive income.

SIGTTO

Society of International Gas Tanker and Terminal Operators Limited

Statement of Financial Position at 31 December 2019

	<u>Note</u>	<u>2019</u> £	<u>2018</u> £
Non-current Assets			
Property, plant and equipment	6	185,711	258,570
Right-of-use assets	8	1,206,464	-
		<u>1,392,175</u>	<u>258,570</u>
Current Assets			
Trade and other receivables	9	636,848	650,477
Cash and cash equivalents		2,443,041	2,558,876
		<u>3,079,889</u>	<u>3,209,353</u>
Total Assets		<u><u>4,472,064</u></u>	<u><u>3,467,923</u></u>
Current Liabilities			
Trade and other payables	10	595,230	627,566
Lease liabilities	8	144,170	-
		<u>739,400</u>	<u>627,566</u>
Non-current Liabilities			
Lease liabilities	8	1,220,168	-
Total Liabilities		<u><u>1,959,568</u></u>	<u><u>627,566</u></u>
Capital and Reserves			
Called up share capital	11	33,130	33,549
Retained earnings		2,479,366	2,806,808
Total Equity		<u><u>2,512,496</u></u>	<u><u>2,840,357</u></u>
Total Liabilities and Equity		<u><u>4,472,064</u></u>	<u><u>3,467,923</u></u>



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