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SIGTTO NEWS

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MESSAGE FROM GENERAL MANAGER



New SIGTTO focus on the environment

SIGTTO General Manager Andrew Clifton describes the creation of a new Society group dedicated to environment issues

The Society enters its fifth decade at a time of unprecedented growth for the liquefied gas shipping and terminal industry. This rapid expansion of the global trade in LNG, LPG, ethane and a range of other liquefied gas cargoes makes it a particularly exciting sector to be involved with at the moment. Not surprisingly, SIGTTO remains as busy as ever. We kicked off our full schedule of meetings in 2020 with the 8th gathering of the Society's Human Element Committee (HEC 8) at our London office on 16 January.

As well as our usual extensive programme of events scheduled for 2020, we have an increasing number of technical projects underway, several of which will result in publications due for approval during the year. Also, as described below, we have established a new focus group dedicated to environmental matters which will be generating its own body of technical guidance in the years ahead.

SIGTTO will hold its first Panel Meeting in two years in 2020. The need for the Society's Panel Meetings in recent years has been eased by the several international meetings in the LNG and Gastech series of events that have been held. SIGTTO maintains a strong exhibition presence at these global meetings and I've had the privilege of chairing all the shipping sessions featured in the two sets of conferences.

Our Panel Meeting this year, the 65th

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



"We are expecting up to 200 delegates from our worldwide membership to be in attendance at the Society's upcoming 65th Panel Meeting in Athens."

in the series, will take place in Athens in April, in tandem with 81st gathering of SIGTTO's General Purposes Committee (GPC 81) and a technical visit to Revithoussa LNG import terminal close to the Greek capital. Maran Gas Maritime is kindly hosting our 65th Panel while Hellenic Gas Transmission System Operator (DESFA) SA, the operator of Revithoussa, is sponsoring the trip to the terminal.

The 65th Panel is SIGTTO's major meeting of 2020 and we are very pleased to be holding the event in Athens once again. I was present at the last Panel held in the city,

the 48th event in the series, in September 2005 and, like all those who attended, I remember it as an excellent gathering of our membership. Maran Gas also participated in that 48th Panel, as co-host, and had just taken delivery of its inaugural LNG carrier >

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MESSAGE FROM GENERAL MANAGER

> a month earlier, becoming one of the first Greek shipowners to establish a presence in the LNG sector. Today Maran Gas operates one of the world's largest fleets of LNG carriers (see the member profile on page 12).

SIGTTO is encouraging all its members to participate in the 65th Panel. Although the agenda for the meeting and speakers are still being finalised, we can say that a portfolio of unique presentations has been planned, including a keynote speech and descriptions of several lessons learnt that are being shared for the first time. Registrations for the 65th Panel had already passed the 50 mark by the first week of January 2020 and we are expecting up to 200 delegates from our worldwide membership to be in attendance in Athens.

The LNG world will come together again in Singapore in September 2020 at the Gastech conference and exhibition. This will be my second Gastech as technical co-chair, a responsibility which involves marking and selecting the presentations for the conference programme from hundreds of submitted abstracts. SIGTTO's GPC 82 meeting will be held in conjunction with Gastech in Singapore.

In addition to the 65th Panel Meeting and Gastech, the Society has Regional Forums planned for Houston, Singapore, Livorno, Busan, Scandinavia, the Middle East, Shanghai, Perth and South America, during the course of the year. Our schedule of meetings for the first half of 2020 is completed by the Spring Board which will be held at our London office in May.

We finished 2019 with a flurry of Regional Forums. Since the last issue of our *SIGTTO News* newsletter, the Autumn 2019 edition, appeared, Regional Forums were held in Oslo, Buenos Aires, Singapore, Muscat, Houston and Perth.

At SIGTTO's Autumn Board and 2019 Annual General Meeting, which were kindly hosted by MISC and held in Kuala Lumpur last 19 November, the Society's 2020 budget was approved. It was also agreed that there would be no membership fee increase in 2020.

At the AGM Steffen Jacobsen, the CEO of Evergas, was confirmed as the new SIGTTO President, taking over the role from David Furnival of Bernhard Schulte Shipmanagement. I would like to pay tribute to David for the commitment he made to the work of the Society during his tenure. Not only was he a very supportive President to me, he oversaw a number of major changes at SIGTTO, including the formation of the new Human Element Committee (HEC), the move of our head office location in London and the adoption of our Strategic Plan.

I would also like to welcome Steffen

“The creation of a body dedicated to environmental issues represents another exciting new development for SIGTTO.”

back for his second stint as President. He previously held the position in 2012-2013 when with Maersk but had to step down due to an internal career move out of that group's gas shipping department. Also at last year's AGM, Lloyd Bland of Chevron was appointed as the Society's new Vice President.

The 2019 Autumn Board also made three other director changes and approved a new SIGTTO publication, *Recommendations for Relief Valves on Gas Carriers*. In addition four new Working Group terms of reference were approved, including those that establish the Society's new Environmental Sub-committee. The creation of a body dedicated to environmental issues represents another exciting new development for the Society and is part of the implementation of our

Strategic Plan. One of the first topics the Environmental Sub-committee is expected to cover is methane emissions on LNG carriers.

I would like to thank the chairs of the General Purposes and Human Element Committees, Mark Hodgson of Shell and Steve Allibone of MOL Europe, respectively, for their continued good work in directing the work of their respective bodies and delivering a steady stream of quality industry best practice guidance. A report from Steve on the current work of HEC can be found on page 7.

I would like to remind readers that our anniversary publication, *SIGTTO at 40 Years 1979-2019*, is freely available and, if you would like to receive copies at no charge, please contact Erin Rydings, our receptionist, at reception@sigtto.org. Released in summer 2019, this unique 124-page publication has received waves of positive feedback and several of our members have placed a copy on each ship in their fleets.

Finally, I wish to thank my dedicated SIGTTO Secretariat team who continue to work hard in a small but very busy office. I look forward to meeting many of you over the course of 2020 and hope you can attend the 65th Panel Meeting in Athens in April. It remains my honour and pleasure to serve you as SIGTTO General Manager.

UPCOMING MEETINGS 2020*

***ALL MEETINGS ARE SUBJECT TO CHANGE DUE TO COVID-19**

MEETINGS	DATE	LOCATION
81st General Purposes Committee	21 Apr	Athens
65 th Panel Meeting	22-23 Apr	Athens
Revithoussa Technical Visit	24 Apr	Athens
Spring Board Meeting	28 May	London
Pan American Regional Forum	May/June (TBC)	Houston
Singapore Regional Forum	June (TBC)	Singapore
European Regional Forum	17 June	Livorno
9 th Human Element Committee	17 July	London
Indian Regional Forum	27 Aug	Mumbai
Gastech 2020	8-10 Sep	Singapore
82nd General Purposes Committee	11 Sept	Singapore
South American Regional Forum	Oct (TBC)	(TBC)
Autumn Board & AGM	19 Nov	Athens
Pan American Regional Forum/US Coast Guard Senior Executive Forum	Dec (TBC)	Houston
Australian Regional Forum	Dec (TBC)	Perth
China Regional Forum	Dec (TBC)	Shanghai
Scandinavian Regional Forum	(TBC)	(TBC)
Middle East Regional Forum	(TBC)	(TBC)
Korean Regional Forum	(TBC)	Busan

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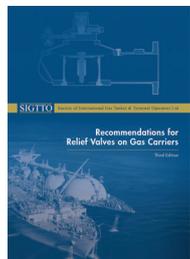
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GENERAL PURPOSES COMMITTEE WORKING GROUPS

The following paragraphs provide updates of progress being made by currently active working groups established under the auspices of the SIGTTO General Purposes Committee (GPC).



Pressure relief valves

The new guidance prepared by the Society's Secretariat, *Recommendations 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.

Floating LNG installations

The final master draft of the document prepared by the three working groups convened under the auspices of the Sub-Committee for Floating LNG Installations (SC), itself a subsidiary body of the General Purposes Committee (GPC), has been completed. The document provides guidance on the site assessment, design

criteria and operational procedures for nearshore/offshore floating LNG assets. The master draft has been sent for substantive comments by the GPC, prior to submission to the 81st meeting of the GPC (GPC 81) for approval in April 2020.

Gas carrier propulsion systems

The Propulsion System Working Group, which is chaired by Kenny English of BP, continues 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.

Gas carrier reliquefaction systems

The Reliquefaction System Working Group, which is also chaired by Kenny English, is actively engaging 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.

Emergency shutdown (ESD) systems

The 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 now met six times in SIGTTO's London office, most recently in January 2020. The ESD Systems Working Group has completed the preparation of a mature draft document and will finalise it this year.

New GPC Sub-Committee and Working Groups

SIGTTO's GPC, at its 80th meeting in Houston in September 2019, approved the establishment of the following new Sub-Committee and Working Groups:

- Environmental Sub-Committee
- Working group on the site selection and operation of liquefied gas terminals
- Working group on the design and testing of liquefied gas valves
- Working group on the salvage of liquefied gas carriers

Further details on the work programmes of these new bodies will appear in the next edition of *SIGTTO News*, i.e. the Autumn 2020 issue.

HUMAN ELEMENT COMMITTEE WORKING GROUPS

The following paragraphs provide updates of progress being made by currently active SIGTTO Human Element Committee (HEC) working groups.

Cargo control room ergonomics

Following the success of its first publication, *Recommendations for Management of Cargo Alarm Systems*, SIGTTO's Cargo Control Room (CCR) Ergonomics Working Group has completed work on its second document. 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 this year.

The CCR Ergonomics Working Group, which is chaired by Ray Gillett of GTT Training, 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.

SIGTTO suggested competency guidelines

The final master draft of *LNG Shipping Suggested Competency Standards (Third Edition)* was submitted to and approved at HEC 08 in January 2020. Steve Allibone of MOL, 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*.

Shore staff competencies

The 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.



The Shore Staff Competencies Working Group held its most recent meeting at SIGTTO's London office in February 2020

1990 – the year LNG went global

Thirty years ago the international trade in LNG was emerging from two decades of slow growth. Although great things were expected of this clean-burning fossil fuel when the first commercial cargo arrived at Canvey Island in the UK onboard the 27,400 m³ *Methane Princess* in 1964, early seaborne movements of LNG never materialised at the pace envisaged.

Within a year of that inaugural cargo natural gas was discovered in the North Sea, compromising the LNG market potential of the UK. In 1978 the US passed its Natural Gas Policy Act deregulating the wellhead price of gas. This, in turn, spurred a jump in domestic gas production and prompted the cancellation of some large US LNG import projects and the mothballing of several new LNG ships and terminals. Meanwhile, France's growing commitment to nuclear power, initiated in 1974 following the first oil price shock, lessened the attractiveness of what had been expected to be another major customer for LNG exporters.

By 1990 the global trade in LNG had reached a level of 53.8 million tonnes per annum (mta). Seven LNG export nations, most notably Indonesia, Algeria, Malaysia, Brunei and Abu Dhabi, played host to 13 liquefaction plants. At the receiving end, eight countries had LNG import terminals in place.

Japan and the rest

Over the 20 years prior to 1990 Japan had been the one bright star in the LNG firmament. The energy-deficient Asian nation's steadily rising gas needs had prompted by far the majority of investment in LNG production worldwide and in 1990 two-thirds of the global seaborne movements of LNG were directed to Japan. Fourteen of the world's 28 LNG receiving terminals then in operation were in Japan.

However, despite the lack of progress outside Japan, several other countries were in the process of waking up to the merits of LNG imports during the late 1980s, while Japan itself had not reached the halfway stage in the development of its own LNG purchase volumes. The year 1990 marked the transition point at which the LNG industry went truly global.

In February 1990, just as the UK was unloading the last LNG cargo it was to receive for 15 years, Taiwan imported its inaugural shipment of the product. With Korea having joined the list of LNG buyers in 1986, Taiwan was North Asia's third LNG importer. The groundbreaking cargo was delivered by the 137,000 m³ *Ekaputra*,



Delivered in 1990, the 137,000 m³ *Ekaputra* was the largest LNGC yet built and carried Taiwan's inaugural import cargo on her maiden voyage

purpose-built for the trade by Mitsubishi Heavy Industries and the largest LNGC yet constructed. Mitsui OSK Lines (MOL) held a 50 per cent stake in the spherical tank vessel's shipowning company, marking the first involvement of a Japanese shipping company in the LNG cross trades.

As a result of the growing requirement for LNG imports, not least by Japan, Korea and Taiwan, new LNG exporters positioned themselves to meet the needs of an expanding market. The first phase of Australia's North West Shelf (NWS) project had come onstream in 1989 and in the early 1990s Qatar, Oman, Nigeria and Trinidad took final investment decisions (FIDs) to build their inaugural liquefaction plants. In addition, Indonesia, Malaysia and Abu Dhabi pressed ahead with plans to add to their LNG export capabilities with the construction of large, new liquefaction trains.

Newbuilding order surge

As of late summer 1990, there were only six LNGCs on order, all in Japan. These comprised four 125,000 m³ ships for the NWS project and two 87,500 m³ vessels that would be the first LNGCs built to IHI's self-supporting, prismatic-shape, IMO Type B (SPB) containment system.

Then, over a six-month period from late 1990 to early 1991, LNG shipbuilders experienced an order surge. Notable amongst the newbuilding contracts was the order for a 125,000 m³ spherical tank ship to be built by Hyundai Heavy Industries (HHI) for Hyundai Merchant Marine and an early 1994 delivery. The vessel, *Hyundai Utopia*, was to be the first LNGC constructed in Korea and heralded what was to be a rapid emergence of the country as the premier builder of such vessels.

Other LNGC newbuilding contracts in that late 1990 order surge included that for

five 130,000 m³ membrane tank ships for a new Malaysia LNG export project; one for an 18,800 m³ LNGC that would be the first to carry LNG, from Malaysia, on behalf of a medium-size Japanese gas company; and two 125,000 m³ ships to be built in Japan that marked the first involvement of Japanese gas utilities in LNG vessel ownership.

Spot cargoes begin to feature

Up until 1990 virtually all LNG shipments moved under the terms of long-term sale and purchase agreements (SPAs) concluded between gas buyers and sellers and usually of 20-25 years duration. By 1992, of the aggregate total of 18,230 laden voyages undertaken by the world LNGC fleet since the industry's inception, only 11 involved

SIGTTO in 1990

SIGTTO celebrated its 11th birthday in 1990. Robin Gray was the General Manager, the Society's second, while Doug Brown was on secondment from BP as the sole Technical Adviser. SIGTTO's membership had reached 68 companies by September that year, comprising 66 Full and two Conditional Members, and documents recently published by the Society included *Recommendations and Guidelines for Linked Ship/Shore Emergency Shut-Down of Liquefied Gas Cargo Transfers*, which appeared in 1987, and the first edition of its flagship publication, *Liquefied Gas Handling Principles*, released in 1986. An important focus of SIGTTO's work programme at the time was the determination of safe loading limits for IMO Type C cargo tanks.

spot cargoes. Thereafter, however, spot cargo bookings began to increase in pace.

According to the International Group of LNG Importers (GIIGNL), in 2018 some 99.3 mt of the 313.8 mt of LNG traded worldwide moved under a spot or short-term contract, or 32 per cent of the total.

By 2000 the LNG globalisation process that had commenced in earnest in 1990 was logging major achievements. Another

16 liquefaction plant projects had been commissioned, adding 58 mta of LNG output capacity worldwide, and the international trade in LNG reached the 100 mta level.

Turkey, Greece and Puerto Rico had joined the league of LNG importers while Portugal, India and the Dominican Republic had initiated steps to join this elite group. Elsewhere, two mothballed US LNG import terminals were on the brink of reopening.

As regards the ships themselves at the turn of the millennium, the world LNGC fleet had passed the 100-vessel mark and by year-end 2000 a total of 48 such ships were on order. Yards were quoting US\$180 million for an LNGC newbuilding, down from US\$250m in 1990. In addition, the first of what was to become a flood of orders for an LNGC propulsion system that was not a steam turbine was only two years away.

VIEWPOINT

Insights from the HEC chair

Steve Allibone writes ...



SIGTTO's vision for the role of its Human Element Committee (HEC) can be summarised as follows: *An efficient, committed and well-*

organised committee producing quality gas-specific human element guidance which helps prevent accidents; makes gas shipping and terminals safer; and acts as an example to other sectors of shipping.

More specifically, the Society has tasked HEC 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

Over my years in the gas shipping and terminal industry I have developed a passion for safety and taken a keen interest in the role of the human element in the safety debate. It is a vast subject and one that the industry must come to terms with. A greater understanding of the human element can only lead to a safer working environment for our seafarers.

Formed in 2016, SIGTTO's HEC is a relatively small committee. I took over the chair in July 2019 for a period of three years. When I stepped into the role, the Committee was already developing guidance through the various working groups it had convened. HEC's first publication, *Recommendations for*



Management of Cargo Alarm Systems, was published in summer 2019 and 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.

Two further publications have been approved by HEC and are to be presented to the SIGTTO Board for final approval later this year. These are *Recommendations for Designing Cargo Control Rooms* and *LNG Shipping Competency Standards*. Work is also progressing on further publications through the Committee's various working groups. Our ongoing efforts include reviews of the Society's existing industry human element-related best practice guidelines to determine whether updates are required. The Committee has taken responsibility for the future upkeep of these publications.

In addition to the above documents, HEC has been requested by the SIGTTO Board to look at the issue of cargo control room resource management. Terms of reference for this new initiative are expected to be finalised and approved at the upcoming ninth meeting of HEC (HEC 09) in July 2020.

HEC is able to call on a number of inputs which enable it to work effectively, as follows:

- SIGTTO member input
- SIGTTO General Purposes Committee (GPC) input
- SIGTTO Board input
- HEC member input
- Incident input
- Other inputs, such as that from other industry bodies and non-SIGTTO members

It is important that incidents, including near-miss scenarios, are reported to SIGTTO 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.

HEC and its associated working groups are very active at the moment and I feel that not only are we already beginning to make a difference but also we are well down the path to making a great deal more progress. I am grateful for the strong support that I and my fellow committee members are receiving from the Society's Secretariat and Board.

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Steffen Jacobsen rebounds as SIGTTO President



Steffen Jacobsen, the CEO of Evergas, has been appointed President of SIGTTO for a second time. He succeeds David Furnival of

Bernard Schulte Shipmanagement. Steffen previously held the position of the Society's President in 2011-2013 while employed in the gas shipping department of Maersk but stepped down from his SIGTTO duties when he was appointed to a management role within the group's Maersk Drilling affiliate.

Stefen joined Evergas in 2015 and, following on, once again become a member of the SIGTTO Board. Amongst its wide range of liquefied gas shipping activities, Evergas is an industry leader in the ethane transport sector. The company's purpose-built vessels for this trade have now carried more than 3 million tonnes of ethane on deepsea routes since the first transatlantic delivery of the product was completed in 2016. The ships in the Evergas fleet of semi-pressurised/fully refrigerated (semi-ref) ethane carriers are able to carry a wide range liquefied gas cargoes and one of these versatile ships is now trading in LNG.

"I am very pleased to have been able to participate as a SIGTTO Board member for a second company, Evergas," reports Steffen Jacobsen. "It is a privilege to be once again involved in shaping the direction taken by a very active and

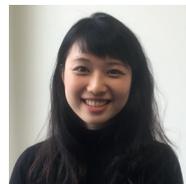
productive non-governmental organisation (NGO) that has consistently adopted a leadership position in promulgating how to do things safely for the past 40 years.

"It also gives me great pleasure to be able to resume the role of SIGTTO President for a second term, and I am grateful for the support that has led to this appointment," continues Steffen. "I have been described as the "rebound President" – a funny term but true!

"While undoubtedly an impressive organisation, SIGTTO is also a body that perhaps does not always get enough appreciation. The liquefied gas shipping and terminal industry has managed to transport, store and handle vast volumes of cargo in a safe and prudent manner for decades and SIGTTO can rightfully take much of the credit for the exemplary safety record that has been achieved.

Steffen concludes, "Quite aside from my second stint as President, Evergas has been a very active member of the Society over the years and we look forward to continuing the good work.

Bella Mao to assist on marketing front



In February 2020 Tzu-Yuan (Bella) Mao joined SIGTTO as a marketing executive on a 12-month contract, based at the London Secretariat

office and reporting to the Society's General Manager, Andrew Clifton.

A Taiwanese national now based

in London, Bella is fluent in Mandarin, English and Japanese. During her professional career she has gained experience of international brand management and integrated marketing implementation, as well as the application of digital tools to these disciplines.

"The position of marketing executive is a new one for SIGTTO," states Andrew Clifton. "The primary function of the role is to increase the size of the membership in an industry with an ever-increasing number of stakeholders. Secondary responsibilities include publication marketing and boosting the overall visibility of the Society both inside and outside the shipping industry.

"Bella is a very gifted individual with a strong marketing and brand management background and, with her three languages, can reach a large percentage of SIGTTO's potential members."

Lloyd Bland is Vice President West



At SIGTTO's Autumn 2019 Board meeting in Kuala Lumpur last November Lloyd Bland of Chevron was chosen as the Society's new Vice President West

to succeed Steffen Jacobsen, following Steffen's appointment as President.

Lloyd is Manager, Floating Systems for Chevron Shipping's Offshore & Marine Terminals division and has been a member of SIGTTO's Board since November 2016. He is a 1995 graduate of the US Merchant Marine Academy at King's Point, New York.



Dick Eddy – a true gas pioneer

It is with great sadness that we report the passing of Richard G Eddy. Dick Eddy, who died on 13 February aged 86, had an exemplary gas shipping career that spanned the best part of six decades and began with the first seaborne shipments of LNG. After receiving a naval architecture degree from New York's Webb Institute,

he joined the naval architect firm of JJ Henry and immediately became involved in the project to convert the cargo ship *Normati* into *Methane Pioneer*, the first prototype LNG carrier.

By the time the 5,100 m³ *Methane Pioneer* was ready to depart Lake Charles, Louisiana in January 1959 with its inaugural trial LNG cargo, for shipment to Canvey Island in the UK, Dick had moved over to Constock, the vessel's owner. He sailed on that historic voyage as the company's project engineer and part of an illustrious technical team monitoring ship and cargo

performance. Dick Eddy was also project engineer on the design and construction of the 28,837 m³ *Bridgestone Maru* which, when completed by Mitsubishi Heavy Industries (MHI) in 1962 was the world's first purpose-built fully refrigerated LPG carrier.

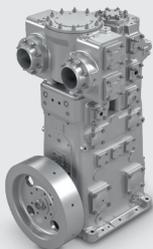
During the 1980s Dick was a director for Malaysia International Shipping Corporation in Kuala Lumpur, responsible for the construction and operation of that company's growing LNG fleet. In 1989 he joined Gotaas-Larsen in London where he was primarily involved in the development of new LNG transportation business. Amongst his various postings, Dick managed to gain an MBA from New York University. He finished his working career with a specialist team at London-based LNG Shipping Solutions, the joint consultancy established by the shipbrokers Clarksons and Barry Rogliano Salles.

Dick Eddy was well-liked and respected by all those who came into contact with him. He also had close connections with SIGTTO, being a founder director and past President of the Society. Everyone at SIGTTO would like to extend their condolences to Dick's family and friends. We have lost an industry stalwart.

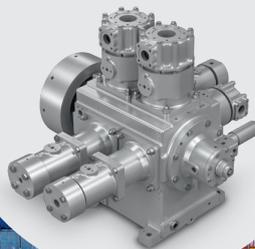
Dick Eddy in his Methane Pioneer days

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NEW MEMBERS

Duo joins the club

Two companies have joined the Society's membership since the Autumn 2019 edition of SIGTTO News was published. The new members and their date of joining the Society are shown below. The SIGTTO membership now stands at 134 full members, 49 associate members and 28 non-contributory members.

Celsius Tech	1 Jan 2020
Pavilion Energy Trading & Supply	1 Feb 2020

Celsius Tech Ltd is the in-house technical management company for Celsius Shipping's LNG and tanker fleet. Established in 2019 as a joint venture partnership with Hong Kong-based Fleet Management Ltd, Celsius Tech is currently managing two of the group's product tankers and handling site supervision for four 180,000 m³ LNG carriers that Celsius Shipping has under construction at Samsung Heavy Industries. The newbuilding quartet is due for delivery between October 2020 and August 2021 and marks the shipping group's first foray into the LNG sector.

Pavilion Energy Trading & Supply Pte Ltd is part of the Pavilion Energy group, itself established in 2013 by Temasek, Singapore's sovereign wealth fund, as a portfolio company to develop interests in the LNG sector. Over the past seven years Pavilion Energy has been developed into a fully integrated energy business that encompasses upstream investments, global LNG trading, shipping and optimisation as well as energy hedging and financial solutions.

Pavilion Energy Trading & Supply has recently strengthened both the group's global LNG trading position and access to the European market and regasification capacity through the acquisition of the portfolio of LNG assets of Iberdrola in Spain.

IMO DEVELOPMENTS

SIGTTO to present cargo alarms work at IMO



SIGTTO will outline its recent work on the management of cargo alarm systems at the 102nd session of IMO's Maritime Safety Committee (MSC 102) on 15 May 2020. The Society believes

that its *Recommendations for Management of Cargo Alarm Systems*, published in summer 2019, provide a good, tangible example of how analysis of human element considerations can lead to improved safety performance. These new SIGTTO guidelines, which will be presented at MSC 102, accord with IMO's overall ambition to focus more on human factors in its work programme over the longer term. As such, they should be of interest to the maritime industry in general.

SIGTTO established its Human Element Committee in 2016 and, shortly afterwards, the Working Group on Cargo Control Room (CCR) Ergonomics was convened as the Committee's first subsidiary body. The Working Group, in turn, identified cargo alarm management as the initial topic on which progress should be made. Outlining the importance of this aspect of cargo-handling operations to gas carrier safety, Ray Gillett, chair of the CCR Ergonomics Working Group, stated, "Smooth integration of the automation networks that monitor and control the various operating systems on a modern LNG carrier is another industry-wide challenge facing design engineers, mariners, training providers and terminal operators alike."

Following publication of *Recommendations for Management of Cargo Alarm Systems*, SIGTTO's CCR Ergonomics Working Group has gone on to produce a second document. Entitled *Recommendations for Designing Cargo Control Rooms*, the latest set of guidelines covers aspects such as control station layout, physical environment, operator interface, controls and displays, and is due to be published later this year. In addition, the Working Group has begun work on developing its third and final document. This will set out guidance on human/machine interface (HMI) issues.

SIGTTO's *Recommendations for Management of Cargo Alarm Systems* is a free, downloadable publication and the first in the Society's Human Element Series of documents. SIGTTO believes that the availability of this and the CCR Ergonomics Working Group's two subsequent 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.



COURTESY OF KONGSBERG

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

TECHNICAL VISIT

Revithoussa terminal technical visit Delegates attending SIGTTO's 65th Panel Meeting in Athens on 22-23 April will have the opportunity of visiting the Revithoussa LNG import terminal the following day. Commissioned in 1999 and located on the islet of Revithoussa 45 km west of Athens, the facility is currently Greece's only LNG receiving terminal. The technical visit is being hosted by Hellenic Gas Transmission System Operator (DESFA) SA, the operator of Revithoussa. Completed in December 2018, the terminal's second upgrade project boosted the facility's storage capacity by almost 75 per cent, to 225,000 m³; enabled LNGCs of up to 260,000 m³ to be accommodated; and increased regasification capacity by 40 per cent, to 1,400 m³ LNG/hour.



MEMBER PROFILE

Maran Gas – commitments to excellence and SIGTTO

Maran Gas Maritime Inc (MGM), which is hosting SIGTTO's 65th Panel Meeting in Athens in April, is the LNG ship management company of the Angelicoussis Shipping Group Ltd (the Group).

The Group is a privately held company, founded in 1947 by Antonis Angelicoussis, father of Mr John Angelicoussis. Over the last 70 years the family has grown the business to where it is now the largest shipping company in Greece and the largest privately held shipping company in the world. The Group owns and operates a fleet of over 150 ships, comprising dry bulk vessels, oil tankers and LNG carriers. Today the Group is led by John Angelicoussis, Chairman, and his daughter, Mrs Maria Angelicoussis, Vice Chairman.

MGM was founded in 2003 and placed its first LNGC newbuilding order at Daewoo Shipbuilding and Marine Engineering Co Ltd (DSME) in autumn 2003. That vessel, *Maran Gas Asclepius* (named after the Greek god of medicine), was delivered in 2005 and immediately entered a charter with Gaz de France (GdF). In 2007 she finished her service with GdF and went into a long-term charter with RasGas where she currently trades.

MGM's LNG fleet has grown strongly since this beginning, and now encompasses 32 vessels in operation, along with 12 more LNGCs plus one floating storage and regasification unit (FSRU) under construction.

The philosophy of MGM, as well as the Group overall, reflects the owner's commitment to excellence in the shipping services provided to clients. This is reflected in how the company is set up; all activities, from original vessel specification and newbuilding contract negotiation through to construction supervision and post-delivery technical, operational and commercial management, are done in-house. The Group is committed to having its vessels fly the Greek flag and be manned by Greek senior officers and mostly Greek junior officers with Filipino ratings. All the Group's seafarers are sourced and managed by an in-house crew department which has offices in Athens and Manila.

The Group was the first Greek shipping company to establish an in-house training centre, i.e. the Delphic Maritime Training Center (DMTC) in 2004. Today DMTC has two full-mission bridge simulators as well as tanker and LNG cargo and engine simulators. In 2019 the training

Completed in 2006, the 145,000 m³ *Simaisma* was the third newbuilding to join the Maran Gas LNG carrier fleet



centre held over 700 training courses with over 8,000 participants from all three Group ship management companies, i.e. Maran Dry (dry bulk), Maran Tankers (oil tankers) and Maran Gas (LNG).

It has been a guiding philosophy of the Angelicoussis family to develop and maintain long-term relationships. This can be seen in the Group's 25-year relationship with DSME where it has contracted over 100 newbuilding vessels. For MGM, this commitment to long-term relationships is evident in the long-term charter contracts MGM has with Qatargas, Shell, Woodside and, most recently, JERA. By investing in its people and its vessels, the Group is able to provide a superior shipping service to its charterers and thereby gain their trust for long-term charter commitments.

MGM has evolved in tandem with the LNG market, and is able to offer both long-term and short-term charters to its current and future clients. MGM has been fortunate to have served more than 20 clients over its 15 years of operations to date.

In addition, Maran Gas was the first company to form a joint venture with Nakilat (Qatar Gas Transportation Co Ltd). From four ships at its inception in 2005, the joint venture has grown steadily and now owns 15 ships. MGM and Nakilat recently formed a second joint venture which will own four newbuilding LNGCs that, upon delivery, will be commercially and technically managed by Nakilat.

"MGM has been very appreciative of the opportunity to draw upon the knowledge and guidance contained in SIGTTO publications and to participate in SIGTTO activities," states Richard Gilmore, Director Gas Fleet at MGM. "MGM was invited to join the Society's General Purposes Committee (GPC) in 2006 and has been an active

participant ever since. MGM personnel have joined various GPC working groups which developed, or are developing, guidance notes for the Panama Canal, emergency shutdown (ESD), surge, gangways, floating LNG, propulsion and reliquefaction.

"In addition, for the last two years I have been privileged to chair the SIGTTO Panel Meetings," continues Richard. "For MGM, the ability to meet and interact with others in the LNG industry across the spectrum of ship operators, terminal operators, class, etc that is possible through SIGTTO events has been an important source of knowledge on safety and international practices."

SIGTTO

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