RAIndrops

Robert Allan Ltd. Information & News Issue 11

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SAFETY ISSUE

ROBERT ALLAN LTD.

NAVAL ARCHITECTS AND MARINE ENGINEERS

Raising the Bar

by: Mike Fitzpatrick
President

Settling into this new role my thoughts have inevitably been drawn to the future of Robert Allan Ltd. The current position of the company is enviable; in 2014 more than 70 self-propelled vessels to our designs were delivered internationally, as well as more than 100 barges. Together these vessels represent well over a billion dollars investment by our clients, which is a responsibility we take very seriously. Last year, and for the last 30 or so years the vast majority of the vessels we have designed and had built were tugboats of some variety, and I am quite certain that tugs will remain the primary focus of our activities for many years to come. Maintaining and expanding our position as the leading independent designer of tugboats internationally is of the utmost importance to Robert Allan Ltd. and this means we need to be continuously improving both the way we design vessels and the vessels that we design. New Robert Allan Ltd. tugboat designs should and will be safer and more efficient to operate than tugboats designed in the past.

Raising the bar for overall tug safety will be one of our primary goals for the next few years. We have had the privilege of working with some of our excellent client companies that put safety first and foremost in everything they do. We have learned a tremendous amount from these clients and with their support will do our best to emulate them. At Robert Allan Ltd., with the majority of our employees safely stationed at their desks in an office, a dedication to safety for us means something quite different than it does to a shipyard, towage operator, or mining company. To us, a dedication to safety means making our vessels safer for the men and women operating them in potentially very dangerous conditions. We have made safety the main focus of this issue of RAindrops and will continue to push this topic in the years ahead. Rob's article on the following pages should be considered very carefully by everybody in this industry.

Fig. 1 - Capsized 30 m. tug ***Wanshenzhou 67***

How SAFE are Tugs Today?

by: Robert G. Allan, P. Eng.
Executive Chairman of the Board

Regrettably one does not have to look too far recently to find instances of tugs being involved in accidents of one form or another. Critically, we have seen a few tug capsizings internationally in the past few years involving loss of life. The most significant of these is the sinking in China of the ***Wanshenzhou 67*** (Fig. 1) with the astounding loss of 22 lives, which must certainly place this amongst the worst tragedies in tugboat history. Unfortunately facts available to the public to date concerning that accident are few, and may never be fully revealed. As there were several international visitors lost in the accident one can only hope that the real facts will emerge so that the industry in total can benefit from a proper understanding of how such a tragedy could happen on a new tug.

This tragic accident, combined with the recent loss of the ***Fairplay 22*** (Netherlands, 2011), the capsize of the ***North Arm Venture*** (B.C., 2009), the ***Bourbon Dolphin*** incident (Orkney, 2007), the ***Diver Master*** (Denmark, August 2014), and in March of this year the ***Sea Bear*** (US east coast) and ***Asterix*** (UK), and more than a few more should give us as designers, and in fact everyone in the industry, pause to consider why such a rash of incidents has occurred, and more importantly what should we be doing about it, individually and collectively.

No-one questions that towing can be a dangerous activity, but why is it that in today's world what can only be considered as "unsafe" vessels are being put into service in such duties? The ***Fairplay 22*** was only 4 years old and the Dutch Authority's enquiry found "***Fairplay 22*** *did not have the required level of safety in accordance with the stability requirements and the stability criteria for modern tugs.*" The Chinese tug was running on trials and capsized and sank within seconds. *"Initial investigations found that it capsized due to "improper operations". According to the JMSD, the tugboat operators did not complete the compulsory procedures needed for trial operations, nor did they report the tug's conditions to authorities. The boat sank in the midst of a full circle swinging due to improper handling."*

Regardless of whether an "authority" has seen the condition of the tug or not, how is it possible that a supposedly modern vessel could be designed and built today apparently in accordance with current standards and then capsize just by executing a turn, regardless of how quick that turn was?

It is, I believe, quite fair to say today that this is further evidence that the technology of tug

design and operations has far outstripped the regulations, and thus at Robert Allan Ltd. we believe it is almost solely our responsibility as Professional Engineers and Naval Architects to ensure that the tugs we design are as safe as they can possibly be for our Clients and their operating crews. Unfortunately there are also those who feel that by relying solely on local or even Class Society regulations for tug safety that all will be well. Even more critically, there are those who believe that by simply meeting the minimum standards of such agencies that they have designed a "safe" vessel. Nothing could be further from the truth. Some very serious research is required right now to initiate a much better understanding of how tugs react to the forces encountered in typical operations today. We cannot hope to see Flag State authorities stepping up to do the research necessary in any reasonable time frame, nor do they typically have the expertise necessary to understand the complexity of a modern tug or even normal tug operations. A few Classification Societies have embraced the concept of harmonized rules for tug design and tug safety, with Bureau Veritas taking a strong lead and doing excellent work to improve safety standards aboard tugs. We at Robert Allan Ltd. are very pleased to support and participate with BV on this critically important work.

But can we rely on rules to legislate safety or should we not be acting as serious engineers and doing our very best independently to ensure that our designs are as safe as possible? It is likely impossible to develop a completely foolproof design, as designers have no control over the manner in which the vessel will be operated. We can however do our best to identify areas of operation where there are serious risks if the tug is mishandled or used in an inappropriate application. We also have some extremely powerful tools at our fingertips today with which to evaluate the "safety envelope" of a tug and then clearly tell the Operator where he can expect to be pressing the margins of safe tug operations.

Let's look at some of the situations which can arise and negatively impact tug safety today:

Ship-handling

The losses of ***Fairplay 22*** and ***Diver Master*** illustrate the perennial problem of tugs being over-run by the ships they are attending. In these instances inadequate new vessel stability and an inappropriate choice of an older tug of limited capability for the task were cited as contributing causes to the loss of the tugs and crew. In both cases the tugs were also operating in the "danger zone" at the bow of the ship. Capt. Hank Hensen, writing in International Tug & OSV in August 2012 gave an excellent summary of some of the issues associated with tugs in this mode of operation. He concludes that a tractor tug is the safest tug to use in the bow tug position. However a well-designed ASD tug that can steer effectively running at relatively high speed astern can also perform this duty equally well, and exercise exactly the same forces as a tractor tug. Far too many ASD tugs are badly designed for this purpose and have square, bluff transoms which result in a virtually uncontrollable tug when running astern, or which build up a large wall of water which then collapses over the stern and can result in the tug burying its stern in the sea, further putting the tug and crew seriously at risk. Therefore because there are some poor designs in service, a whole genre of tug is unfortunately being labeled as inappropriate for this sort of task. The designer must understand where the safety limitations are, and advise the tug owner and the operator what sort of operations to avoid. This could be easily accomplished as a "Note to the Master" in the Stability Book or preferably in a separate "*Guidelines for Tug Operations*" (GTO) document.

Fig. 2 - Tug with low freeboard engaged unsafely in escort work, burying its deck to an extreme

Fig. 3 - Tug "self-burying" during a powered turn

Ship Escort

The forces exerted on a tug during escort operations are amongst the highest conceivable for a controlled towing operation. The tug is heeled over to a large angle and is expected to sustain a high lateral load for the duration of that operation. Although the presence of a render-recover winch ought to be the safety valve which prevents an overload in such a situation, failure to use this device properly can jeopardize a safe escort operation. With the high forces involved and the fact that thrust becomes a significant component of the stability equation, the potential for a sudden change in righting moment due to either loss of or even an application of thrust needs to be carefully assessed. Understanding how to establish a "fail-safe" configuration of tow-point is critical to ensuring that in the event of a failure on the tug there is no chance that the tug could be tripped. However it is quite common for ASD type tugs in particular to be quite close-coupled between the thrust point and the aft tow-point and with the high lateral forces which can be developed the risk of girting during routine towing (not escort) can also be high. The stability of tugs in escort mode needs to be assessed much more rigorously than at present, taking into account all the dynamics involved in all modes of operation, especially those where thrust is providing a significant righting component. The lack of freeboard indicated in many tugs engaged in escort operations is alarming. A plethora of photos (such as Fig. 2, preceding page) exist on the internet illustrating so-called "escort tugs" with their decks completely buried, a situation which ultimately may result in another fatal incident.

Powered turns

The ability of tugs with omni-directional drives to bury their decks during high-speed turns is another phenomenon which requires careful design assessment. It is quite probable that this was a major cause of the recent tug sinking in China. The fact that tugs can develop sufficient forces to put themselves in precarious positions such as that illustrated in Fig. 3 (above) suggests the need for a careful assessment of the dynamic forces involved in such a turn as part of the basic design process. At Robert Allan Ltd. we have long recognized the risk of such tug behavior and in general our hull forms are configured to develop lifting forces during lateral movements. Unfortunately this is not a universal trait. Wall-sided hull forms

build up water in turns which can collapse over the deck resulting in serious loss of waterplane inertia and a consequent "dive" under power. If all closures are not in place during such an exercise the results would be catastrophic.

Barge-handling

Although recent incidents of tug loss while barge-handling are thankfully relatively rare, the well-documented 2009 capsize (www.youtube.com/watch?v=JgC2SOQNCTk) of the ***North Arm Venture*** in Skookumchuck Narrows north of Vancouver illustrates very clearly how large forces can develop quickly and cause a girting. The absence of any towline pull criteria for tug safety in the Canadian regulations is (or at least should be!) a long-standing embarrassment to this country. As designers however we must be aware of the potential for such incidents and use the tools available to us to make our designs as capsize-resistant as possible. We cannot design against the "immovable force", but we can pay attention to the relative position of thrust and tow points and understand how tugs operate in this sort of barge-handling operation.

The foregoing is but a brief treatise on some of the risks faced during what are today routine tug operations. The ability to determine tug safety in these differing situations is well beyond the capabilities of the simplistic static type analysis which has been in use for decades. It is important to really understand the dynamics of all these operations, in particular of escort towing, and ensure that all tugs are designed to the very highest standards of safety.

In order to properly address this gap in the knowledge, Robert Allan Ltd. is about to embark on an internal research study of tug dynamic stability and of all its contributing factors. We will be sharing that information with all of our Clients and with various Regulatory Authorities, and would welcome all feedback on this critical topic. We will also focus on how to best convey the safe operational limits to those working about our tugs.

Where the River Narrows

by: Philippe Whyte
Marine Engineering Technologist

"Where the river narrows" is the meaning of the Algonquin word "kebec" and the origin of the name of Quebec City. This defining feature in the Saint Lawrence River near the city serves as inspiration to one of the many roles of the ***TundRA 100*** Class vessel ***Ocean Tundra***; to provide safe passage of vessels through the cliff-lined gap near "Cap Diamant".

Quebec City is one of the Canada's major maritime centres that experiences significant tanker traffic and is also in an environmentally important area. Although tanker safety has improved greatly recently, tug escort provides an additional measure of safety and could mean the difference between uneventful passage and environmental disaster. This is something that Robert Allan Ltd. is passionate about and we are proud to share with the vessel Owner, Group Ocean. As the most powerful tug in Canadian registry and with a nominal 100 tonnes Bollard Pull, the ***Ocean Tundra*** is well suited to escort duties in Quebec City and anywhere else in its operational area. During escort operations, one tug is tethered to the stern of the tanker (see picture at right). The high performance, all-electric, render/recover escort hawser winch fitted to the bow affords the Captain of the tug precise control of the hawser, including control and monitoring of towline tension.

In addition to safely handling tankers, the ***Ocean Tundra*** is also a capable ice-breaker. Both extensive model testing and operational experience with similar Robert Allan Ltd. tugs ensures superior performance in ice while also providing the best possible escort and open water performance, despite the contradictory hull geometry requirements. The vessel continues to offer escort services in ice (although ice is a very effective means of controlling ship off-course deviation!) and also assists with keeping the Saint Lawrence Seaway open for safe transit of vessels until the intended season closure date. This has proven to be useful with particularly extreme winter conditions experienced near the end of the 2014 season. Furthermore, the ability of the vessel to operate in ice in conjunction with the Client-supplied extending ramp allows Group Ocean to continue to safely transfer Pilots to tankers and other vessels when traditional Pilot boats are unable to do so in the winter months.

Safety onboard the vessel for the crew is also crucial and must not be overlooked. As one might expect, it is relatively simple to design a vessel to meet safety regulations and standards such as those included in Class Rules, Flag State Regulations, SOLAS (IMO), etc. We aspire to go above and beyond these basic requirements. Though not always top of mind when one thinks of safety, a comfortable crew is of great importance. As with the vast majority of our designs, meticulous attention has been paid to minimizing noise and vibration onboard. Measures to reduce noise and vibration include resiliently mounting the main and auxiliary engines, isolating all exhaust system components, high-attenuation exhaust silencers, and the use of visco-elastic floating floor systems and sound-absorbing lining, partitions, and ceilings throughout the accommodations and control spaces. The end result is an extremely quiet vessel throughout which will subsequently reduce crew fatigue and stress levels. A wheelhouse with very low noise levels (in the low 60 dBA range or better) allows for clearly audible radio communications and improves the ability of Captain and crew to communicate effectively with one another reducing the risk of accidents. The switchboard room provides refuge for engineering crew from the noise of the engine room while maintaining a watch on the machinery via the sophisticated Techsol alarm and monitoring system, and very quiet cabins allow crewmembers to get valuable rest.

Whether keeping coastlines unspoiled, or aiding to ensure a comfortable crew, Robert Allan Ltd. takes every step necessary to provide safety through performance.

Green Tugs without Sacrificing Safety?

by: Allan Turner, P.Eng.
Mechanical Engineer

Modern escort and ship assist tugs play a critical safety role in global trade, by assisting with the safe passage of larger vessels through coastal and harbour waterways where the risk of collision and grounding is much greater than on the open ocean. The tug's ability to complete the mission and provide assistance to its full capability is a key factor in the overall mission safety. It is critical to maintain or improve on the high level of dependability and safety of today's conventional tugs in the greener, more environmentally friendly tugs of the future. Whether it is consideration of hybrid propulsion systems, alternate fuels or emission reduction technologies, they all introduce further complexity into the tugs propulsion systems that needs to be managed, ideally without compromising the tugs operability or safety.

There are many possible considerations to be evaluated in the design of a green propulsion system. The following are some examples of the design considerations for determining a propulsion system that is both efficient and mission safe:

Hybrid Propulsion system; Diesel Engine Capacity

How best to utilize a hybrid system in achieving the tugs performance goals/Bollard Pull (BP)?

One option is to install lower-powered main engines and have supplementary power from generators or stored power from batteries to provide the total power necessary to achieve maximum bollard pull (BP). Alternatively, higher power main engines capable of providing full BP could be utilized, with a hybrid system capable of cross-connection and supplemental/stored power for lower power manoeuvres and vessel transit.

The full BP of a tug is very rarely used and reducing engine size can improve efficiency. However, this can come at the cost of the capability to run at full BP indefinitely if that situation arises. From the point of view of overall mission safety, it is likely the better choice to use the second option and focus on energy efficiency returns during lower power operations.

NOx Emission Reduction Technology

For a tug operating in an ECA what is the right technology; Integral or off-engine after-treatment?

Which technology would enable a higher degree of mission safety? The key considerations would be;

a. how would failure of the emission control system affect the overall engine operation
b. would poor fuel quality or high sulphur content affect engine operation, and
c. can the engine still operate in the event of emission equipment failure (although non-emission compliant)

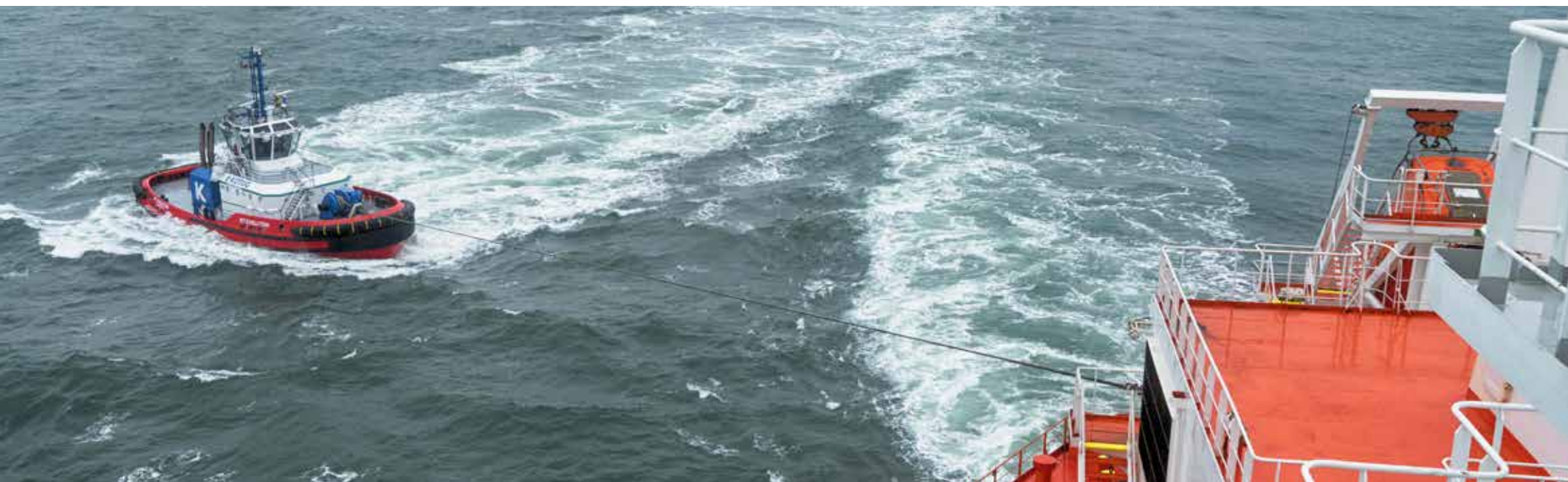
These are all important questions to consider when selecting emission reduction technology.

Automatic Shutdowns

Are they suitable for tugs escorting or assisting ships?

Automatic shutdowns are applicable to both conventional and green propulsion systems, but should the number of regulatory automatic shutdowns be limited on escort and ship assist tugs? A loss of tug power due to an automatic shutdown during an escort manoeuvre could have disastrous consequences for the ship being escorted/docked. From the perspective of overall mission safety it would be advisable to limit auto shutdowns and accept the higher potential for machinery damage which in turn would have to be balanced with crew safety. In fact this exemption from rule compliance has been used for many years with just cause, but the rules have not changed.

The above are but a few of the factors that must be considered when evaluating a "Green" propulsion system for an escort or ship assist tug. However when the options are considered and properly implemented a tug fitted with a "Green" propulsion system can and should have an equivalent level of safety as a conventional tug. This will maintain the tug's critical safety role in global trade, and at the same time achieve a smaller carbon footprint.



Safer by Design

Contributions by:
Darren Hass, P.Eng.
Naval Architect / Engineer

Norbert Schumacher, EIT
Mechanical Engineer

Bart Stockdill, P.Eng.
Project Engineer, Senior CFD Engineer

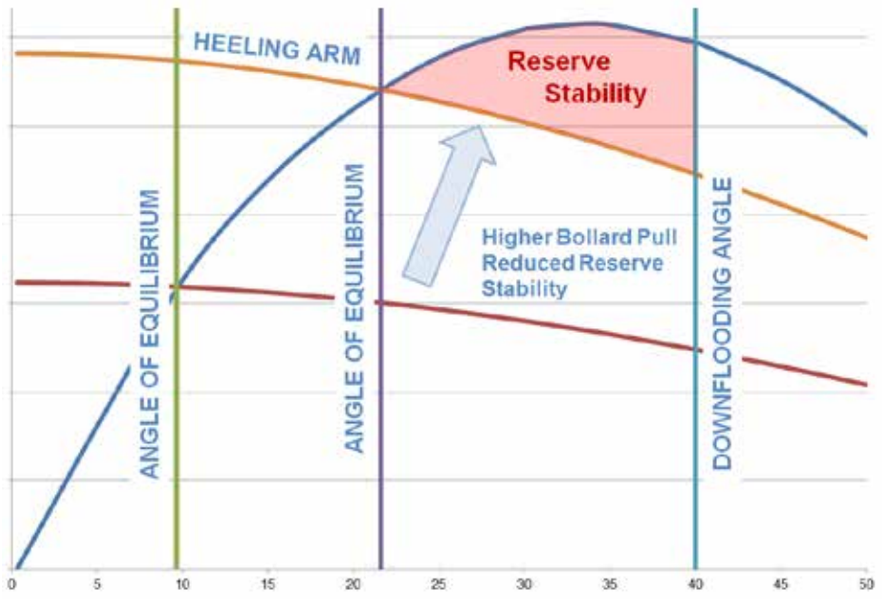
As professional Naval Architects and Engineers we are responsible to ensure that every aspect of the vessels we design are in compliance not only with all the regulatory requirements and the fundamentals of sound ship design, but also that we have paid appropriate attention to the details of design and construction which can influence the safe operation of the ship and ultimately the safety of the crew aboard. The following highlight some of the aspects of tug safety review which are embodied into our standard work practises at Robert Allan Ltd.

Stability

The efficacy of current regulations aside, per the discussion in the introductory article, it is still essential that every new design be verified for compliance with existing requirements, both regulatory and operationally. It is typically the case that the operation of a modern tug dictates stability requirements far in excess of regulatory minima, and hence our job is to establish, in consultation with the Owners, just what those "real" standards should be.

All new tugs should be designed with significant stability margin in the normal upright condition, notably with righting area and metacentric height (GM) several times above what is required by the regulatory criteria. This high margin allows the vessel to withstand the heeling forces associated with a towing or escort operation. The greater the vessel's bollard pull and resulting tow heeling moment, the lower the reserve stability. Considering these forces dictates the ultimate dimensions of the hull. Ensuring the tow point is low will also help to minimize the heeling moment. The addition of sponsons such as in our ***RAstar*** Class tugs provides a significant increase in stability during escort towing operation which will allow the vessel to accommodate a higher lateral force.

The stability group at Robert Allan Ltd. consists of 20 naval architects who are responsible for preparing over 50 stability booklets annually for new vessel designs. Each final stability booklet is reviewed and stamped by one of the ten Registered Professional Engineers in the group, in accordance with our QA system.



Detailed Structural Design

As the power of tugs has increased, so too have the loads associated with all towing operations. The failure of highly loaded points, as shown above (NOT a Robert Allan Ltd. design!!), illustrates clearly that a rigorous approach to determining structural safety is essential in modern tug design. Failure of a key structural component can jeopardize the tug and certainly is a risk to crew.

Robert Allan Ltd. has conducted Finite Element Analysis (FEA) of supporting structures for over a decade. Instead of relying completely on historical, empirical designs, the opportunity has emerged due to technological advances to be able to refine and standardize these designs, either to make them stronger or lighter (or both), and certainly to make them "smarter." As a matter of due diligence, pride, and frequently a Regulatory/Class expectation, all highly loaded structures on our designs are now analysed using FEA.

At Robert Allan Ltd., these analyses are prepared by individuals with academic backgrounds in FEA, who have received training on the specific software used, "ANSYS Workbench". The work is always peer checked, reviewed and approved by a Professional Engineer, and a formal report is produced which summarizes the results. This makes the work independent of software and is an excellent way to convey the results of the analysis to clients, regulatory bodies, and other engineering firms. The analyses may contain many different loading scenarios which are clearly defined and summarized in the reports.

Hydrodynamic Performance by CFD

Computational Fluid Dynamics (CFD) is a powerful hydrodynamic performance prediction tool that is rapidly becoming indispensable to the naval architects in our office particularly in the area of tanker escort tug design. Internal R&D efforts continue to improve the fidelity of the escort towing performance predictions

and to take advantage of our recent significant investment in increased computing power.

The speed of the escort prediction process has improved to the point where a full set of simulations which once took two weeks of computer time now takes about 24 hours. This means that escort predictions can provide critical guidance early in the design process. Ideally this happens at the concept design stage so that key design parameters such as hull beam, skeg shape and towing staple position can be adjusted to optimize escort performance. This is much better than running an escort simulation as an afterthought once the design is complete, or once the vessel is under construction.

Early design stage escort predictions may show that the tug is hydrodynamically capable of exceeding the escort heeling moment limits prescribed by Class. Heel angle limits must then be applied with the expectation that the tug Master will follow them. It is far preferable to design a tug which is not hydrodynamically capable of exceeding the heeling moment limits which then makes it inherently self-enforcing.

This approach was recently followed for development of the new ***RAstar 4000*** Dual Fuel tug which is capable of generating 170 tonnes of steering force at 10 knots. Escort simulations were run at the concept design stage which provided the performance information necessary to make adjustments to the hull geometry, skeg profile, size and staple position as well as to evaluate the impact of a bow thruster tunnel, all before model testing.

Model testing confirmed the general performance of the design but also allowed for a comparison with the CFD escort prediction. The correlation is quite good as seen in the bow quarter view as shown below, for the model test on the left and the CFD simulation on the right.

We expect that this CFD-based approach will become standard in the near future for all our new escort tug designs, not only to improve design quality and efficiency but also to ultimately ensure tug safety during escort operations.

Participation in Safety?

Many executive personnel from Robert Allan Ltd. either serve on or are a part of some safety related programs in the maritime industry.

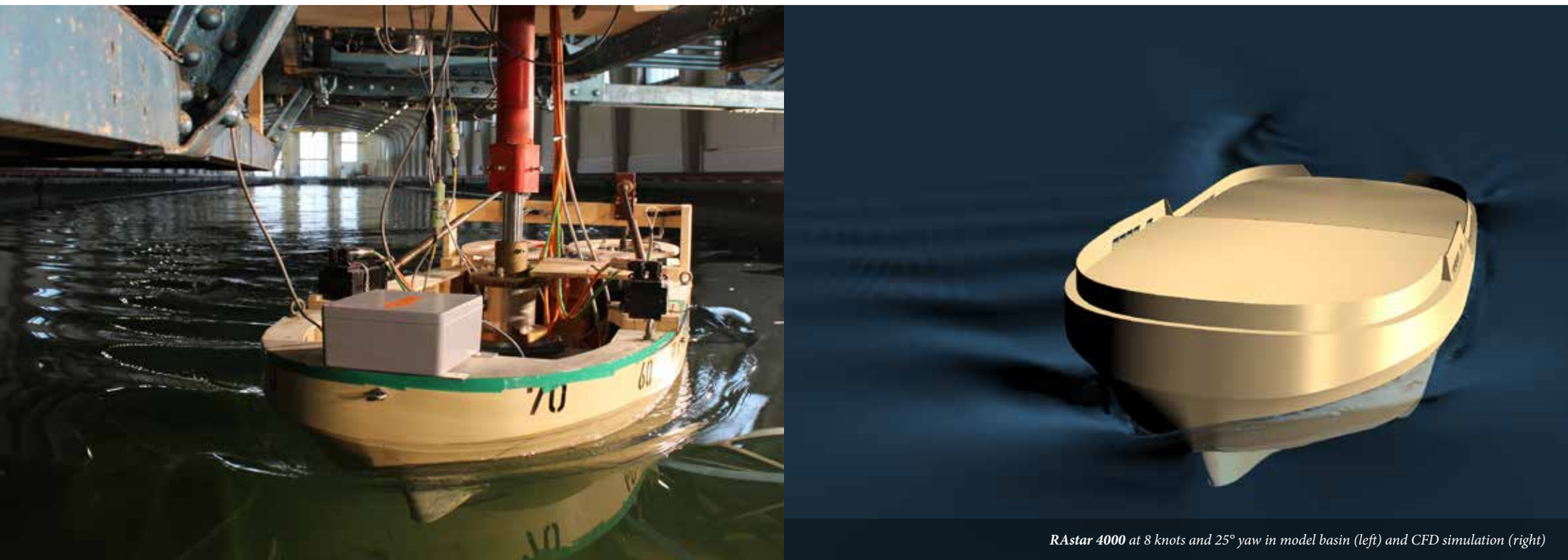
Ken Harford, P.Eng. is a member of the ABS Small Vessels Rules Committee which reviews proposed rule changes for vessels smaller than 90 metres.

Derek Noon is a part of the NFPA Committee 1925 for standards on Marine Fire-Fighting vessels.

Vince den Hertog, P.Eng. is an ASTM member and on the committee F25 on Ships and Marine Technology. The scope of the committee is "to develop standard specifications, test methods, terminology, practices, and guides for the design, construction, operation and repair of marine vessels, structures, systems, equipment and materials." The committee is responsible for over 170 standards, published in the Annual book of ASTM Standards, Volume 01.07.

Robert Allan Ltd. Contributions to Bureau Veritas Tug Rules – Vince den Hertog, P.Eng.:

In our daily interaction with classification societies, we continue to advocate for harmonization of Class rules applicable to tugs. Robert G. Allan's 2006 ITS paper "A Proposal for Harmonised International Regulations for Design and Construction of Tugboats" highlighted the considerable discrepancies between the rules of major classification societies and threw down the gauntlet to work together toward a unified standard. Since then, Robert Allan Ltd. has worked with various classification societies to that end. In particular, we have had the opportunity to work with Bureau Veritas which has taken a lead to develop harmonised rules, under Gijsbert de Jong's capable guidance, through a joint industry project with American Bureau of Shipping and Lloyd's Register and consultations with industrial stakeholders like Robert Allan Ltd. We are pleased to have been involved in this effort, which has culminated in the new Bureau Veritas "Safety Guidelines for Design, Construction and Operation of Tugs" released last year. The next step is moving international harmonisation forward at IACS and IMO level.



RAstar 4000 *at 8 knots and 25° yaw in model basin (left) and CFD simulation (right)*

Our Work Environment

by: Dave Christopher, IEng IMarEng, MIMarEST, MNI
Senior Marine Engineer /
Chief Engineer / Manager, QA

A healthy and safe working environment is critical for our employees and plays a big part in assuring our colleagues that Robert Allan Ltd. is a great place to work. Our offices are inspected regularly to not only make sure they meet local codes, but also by a Safety Committee to ensure we have the right things in the right place... first aid kits, equipment, fire extinguishers etc.

Local legislation in BC dictates that *"every employer must ensure the health and safety of all workers working for that employer, and any other workers present at a workplace at which that employers work is being carried out... remedy any workplace conditions that are hazardous to the health and safety of employers workers... establish occupational health and safety policies and programs in accordance with the regulations"*

(Excerpts from Part 3 Division 3 of the British Columbia Workers Compensation Act)

At Robert Allan Ltd. we have a firmly established Occupational Health and Safety Programme, which provides guidance to all employees on all things related to safety in the workplace and on work-related activities outside the office. These guidelines have been developed by our own in-house Safety Committee, who have similarly taken guidance from the Act and WorkSafe BC. The Safety Committee is made up of volunteers that represent a full cross section of the work force, from management to administrative staff.

Each member of the committee brings with them a skill set and/or experience in being able to provide assistance and guidance in an emergency. First Aiders are available during normal office hours to render immediate first aid in a variety of instances. They have been trained, and certificated in the immediate use of medical equipment, and the protocols required in providing emergency services with appropriate critical information. Should it be necessary to evacuate our building, Floor Chiefs offer direction to our Muster Station and conduct roll calls to ensure that everyone is accounted for. They will also liaise with emergency services as required.

In order for us to provide our clients with the best possible service, it is on occasion appropriate for members of a design team to conduct site visits. This may be a vessel visit for an inclining experiment or lightship survey, time at a shipyard during a refit or dry-docking, extended periods at a yard during construction, or attending sea trials. These trips are not always local to Vancouver; our designs under construction and working all over the world.

Before any staff member undertakes such a site visit a Field Work Safety Briefing is conducted to provide staff with insight into the field work environment that they will be working in, covering;

- Being aware of what you can expect on arrival at a yard or vessel
- Use of Personal Protective Equipment (PPE)
- Permits to Work
- Safe work practises, especially when entering confined spaces

The type of visit dictates the level of briefing and in some cases will also involve providing the appropriate PPE.

My personal background as a professional seafarer, and construction superintendent exposed me to the hazards of the industry first hand. The offshore oil patch can be a dangerous place to work, and rigorous safety regimes both onboard support vessels and rigs/platforms ensure that we were able to conduct our work and live our lives safely. I was previously instrumental in the development of a companywide Safety Management System (The ISM Code) when it first evolved, and now I am fortunate that I can pass this onto my current colleagues, by being an active member of our Safety Committee...

St. Roch Sponsorship at the Vancouver Maritime Museum

The centrepiece of the Vancouver Maritime Museum's (VMM) significant collection of Canadian and world maritime artefacts is the RCMP schooner ***St. Roch***, the first vessel to transit the Northwest Passage in both directions and the first vessel to circumnavigate North America. ***St. Roch*** is Canada's most significant Arctic vessel.

Students in the Centre for Digital Media (CDM) (a tri-University program) Master's Program seek industry sponsors for a major project through which they can showcase their newly acquired talents. Robert Allan Ltd. introduced VMM to this program and is very pleased to have been the industry sponsor of a new project which will greatly enhance the experience of visiting the ***St. Roch***. The CDM project is part of a two-year display re-development which will integrate digital technology into display of this historic ship. The two main components of this work are:

- A large touch-screen display which will open up the entire vessel to the view of a visitor who may not be able to access the actual ship, and
- A full-size replica of the wheelhouse of the St. Roch in which visitors will be tasked to navigate the ship safely through ice-infested waters and other hazards of the Arctic

Robert Allan Ltd. is proud to be an active supporter of all of the VMM's programs and activities.

RAindrops

Issue 11 May, 2015

The cover image is Svitzer's ***RAstar 3900*** offshore terminal/escort tug ***Svitzer Kilroom***. Photo by our own Bart Stockdill.
This issue uses QR Codes to allow quick access to our links. It does require a QR Code app on your mobile device.

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