
The Need for a Formal Towage Endorsement on a Master's Certificate of Competency to Operate a Tug

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SYNOPSIS

Currently there is a requirement for formal endorsements on a master's certificate to operate an oil or gas tanker, a passenger ship, a square rigger sailing ship, a high-speed ferry and a dynamically positioned vessel. It is also a given that it is impossible for a master to undertake harbour towage and/or escort towage operations on a new generation omni-directional tug without significant specialised training.

As a professional industry that prides itself on high standards, have we matured sufficiently to take the next step and promote formal endorsements on a master's certificate to operate an omni-directional tugboat? There are a number of like-minded colleagues in the towage industry who believe, as I do, that the time has come for the industry to take this important step. This paper expands the question in an attempt to find answers and understand whether we, as an industry, should progress the concept further.

OMNI-DIRECTIONAL TUGS

The term omni-directional tugs refers predominantly to Azimuth Stern Drives (ASD), Azimuth Tractor Drives (ATD) and Voith Schneider (VSP) tugs, though I believe it is fair to say that VSP tugs do not have quite the same challenges in driving them as ASD and ATD tugs. This paper, and the arguments for formal towage endorsements, are not restricted to omni-directional tugs and harbour towage operations.

ENDORSEMENT COVERAGE

While considerable reference will be made to omni-directional tugs, the intent is to consider coverage of the broader towage industry where specific competencies are required to operate safely, ie with regard to:

1. Twin screw conventional tugs operating in inshore waters;
2. Twin screw conventional tugs operating in offshore waters;
3. Articulated Tug & Barge Units (ATB);
4. Anchor-Handling, Towing & Supply vessels (AHTS);
5. FPSO Offtake Support Vessels (OSVs);
6. Omni-directional oil & gas terminal tugs;
7. Escort tugs.

SPECIFIC SKILLS

Those in our industry with operational knowledge know full well that to drive even a low-powered older generation omni-directional tug takes considerable skill which can only be honed and refined through structured training and extensive operational experience. These requirements are even more imperative with the new generation of compact, highly manoeuvrable and powerful tugs which are proving to be unforgiving of any

inadequacies in a tugmaster's operating competence. Indeed much of the required skill set is unique to omni-directional tugs.

For the uninitiated, insight can be gained using the aviation comparison between a pilot who flies a fixed wing plane and a helicopter pilot. It is a given that they have little in common except air. Even within the fixed-wing aircraft category a pilot has to be trained, assessed and endorsed (licensed) for each specific type of aircraft they fly.

The main commonality between conventional vessels or tugs and omni-directional tugs is water. Continuing in this vein, it should be pointed out that most pilots having qualified to fly a helicopter do not fly fixed-wing aircraft again, as the instinctive skills required to successfully and safely fly both airframes are virtually opposite to each other.

Once again, this directly compares to conventional vessels or tugs versus omni-directional tugs. In addition to the driving skills and operational towage experience previously mentioned, the modern trend towards reduced manning and more sophisticated equipment demand that the tugmaster has a much broader range of knowledge and expertise.

All this at a time when getting it wrong in a world of regulation, litigation and genuine concerns for Occupational Health, Safety & Environment (OHSE) issues carries serious consequences for the company and master alike.

HISTORY

Omni-directional tugs made their debut about 40 years ago. Little if any attention was given to the fact

that these tugs were operated totally differently to conventional tugs, hence no formal training was given. As a consequence tugmasters with their 'can do' attitude tended to make do with ad-hoc techniques and skills, via an expensive system of trial and error. The outcomes in a lot of cases has been passed on from generation to generation of tugmasters.

Omni-directional tugs have become more powerful, smaller, lighter and vastly more manoeuvrable (hence significantly less forgiving) and we now have up to 100 tonnes BP in 32m tugs. This means that these makeshift skills have become more and more inadequate and indeed unsafe.

Additionally, in a lot of cases, owners do not obtain the full return on their investment in this new equipment as the tug is not operated at anything like its full potential.

It was Captain Henk Hensen in particular who stressed the need for specific training of tugmasters in his well-known book, *Tug Use in Port - a Practical Guide*, the first edition of which was published in 1997. More than 10 years earlier he had already started focusing on this area of concern for the Port of Rotterdam by developing simulator training for tugmasters in combination with pilots. After a number of accidents with omni-directional tugs he underlines the need again in his monograph, *Bow Tug Operations with Azimuth Stern Drive Tugs*, published in 2006.

INDUSTRY WARNINGS AND CONCERNS

There are numerous bulletins and reports to quote from regarding the need for formal structured and assessable training standards for tugmasters. To give just a few examples:

MAIB Safety Bulletin 2/2005

Following investigations into a number of tug incidents, the UK Marine Accident Investigation Branch (MAIB) strongly urged:

1. All tug operators review their training schemes, to ensure that tugmasters receive comprehensive familiarisation training before taking control of a tug which is equipped with significantly different propulsion systems. Such training should incorporate instruction and validation on all manoeuvres with which the master is likely to be tasked in their port or operations;

2. All harbour authorities, pilots and tug operators regularly review the capabilities and limitations of their harbour tugs and their crews.

STCW95 (in part) states that companies must ensure their masters and crew, in addition to being qualified for a specific role on-board, are also competent to perform their assigned duties.

ISM Code requires the company to define the responsibility, authority and level of competence required for each crew member. And instructors,

supervisors and assessors are required to be appropriately qualified.

ISO 9001-2008: Clause 6 – Resource Management

6.2 Human resources

6.2.1 General

- Personnel performing work affecting conformity to product requirements shall be competent on the basis of appropriate education, training, skills and experience.

6.2.2 Competence, training and awareness

The organisation shall:

- Determine the necessary competence for personnel performing work affecting conformity to product requirements;
- Where applicable, provide training or take other actions to achieve the necessary competence;
- Evaluate the effectiveness of the actions taken;
- Ensure that its personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives;
- Maintain appropriate records of education, training, skills and experience.

Australian Transport & Safety Bureau (ATSB) Report

An Australian Transport Safety Bureau (ATSB) investigation found that the collision between the Australian registered tug **Tom Tough** and the Panamanian registered bulk carrier **Global Peace** resulted in a spill of approximately 25m³ of oil in Gladstone Harbour on 24th January 2006¹. Whilst most of the investigation and subsequent recommendations were focused on engineering issues, there was also comment within the report on issues pertaining to this paper. The ATSB report stated:

1. The towage company had no system of professional development in place to ensure the ongoing training and performance monitoring of tug masters;
2. All owners and operators of tugs should consider carrying out a risk analysis of their towage operations with a view to implementing a system of ongoing professional development and training in emergency procedures for their tug masters.

The Nautical Institute

The Nautical Institute issued an alert bulletin, in *Seaways Magazine*, May 2009, with regard to education, training and career development being 'crucial for safe operations'. The bulletin stated: "It is incumbent on the ship owner or ship manager to adopt best industry standards in respect of the recruitment and training of seafarers and to ensure that they receive the training necessary for them to carry out their duties, including the operational and/or maintenance of technically complex and multidiscipline systems. They must also be regularly updated, tested and drilled, through programmes of on-the-job and continuation training". This same edition of *Seaways Magazine* contained a very good feature article by John Douglas,

DNV SeaSkill, entitled *'Are your seafarers competent?'*. The article highlighted that DNV have adopted some basic principles regarding competence.

1. The management of competence is seen as a system that can be measured and audited;
2. Competence needs to be linked to corporate goals;
3. Standards are an essential yardstick for measurement whether for management systems, simulators, courses, training performance or competence standards for seafarers in special operations;
4. Measurement of competence through reliable assessment procedures and methods is a way to ensure competence standards are attained and retained;
5. The outcome of training actions should be evaluated against business goals.

Conclusion

Without labouring the point, one can clearly see from these examples that there is a need for proper structured training for tugmasters.

WHERE ARE WE AT?

I am sure the concerns raised by these eminent authorities and industry bodies are not falling on the deaf ears of industry's managers. I see more and more concerted effort being put into training by those towage companies which are managed by informed professionals.

But not all this effort delivers on the investment and good intent. For example, it has taken SeaWays 15 years to develop its training programmes to the standard they are at today. It has not been without its challenges, setbacks, huge effort and significant costs. A lot of very good people from all over the world have contributed to its development and refinement.

I have now personally trained more than 250 tugmasters for 15 different clients in six countries using the SeaWays training programme. It is important to note that, following the training, no one has ever failed to achieve the defined standard, which is non-subjectively assessed, although some take longer than others to achieve it.

SeaWays regularly takes a master who has never driven an omni-directional tug and has them operating solo at a high and safe standard in a major port after three to four weeks of intensive training. Some companies do, no doubt, have the specialised skills, knowledge, personnel, resources and commitment to do the same.

Speaking frankly and honestly, I regularly see training programmes that take months to deliver inferior results at a greater cost. Regardless of the good intent, there is significant risk that 'going it alone' will end up with an inferior programme that simply does not achieve the required results, heightens risk and offers little return on the investment.

Companies in this position would be well advised to seek the assistance of a third party that specialises in this critical area of operations and has a proven track record of delivering high quality results in a cost effective and assessable manner. There are also other worthy arguments as to why it is beneficial to have a third party deliver training and/or an independent competency assessment.

But what if, as a professional industry, we work together and develop an assessable standard that ensures all tugmasters have the skills and operational knowledge specific to their area of operation? The requirements of the standard should include other required towage-specific knowledge and expertise. Bearing in mind this is a small industry where the truth is easy to establish, the following examples serve to demonstrate what good training can achieve.

1. Better knowledge of operational parameters

How many managers (or tugmasters for that matter) know that the difference in steaming a compact 68 tonnes BP tug at 9.5 versus 12.5 knots means an increase in fuel consumption from 3,700lbs/day to 12,800lbs/day? A differential of approximately 350 per cent on fuel cost, while increasing wear and tear on the engines via heat-induced friction and creating a massive wake in a port environment for a 33 per cent speed gain. Realistically, the savings from this knowledge alone can pay for the training.

2. Broader operational knowledge

In the general cargo ports, PB Towage maximises on rope and product knowledge for safe operations. Relatively inexpensive towlines are safely and effectively utilised and, by thorough training in rope husbandry and management, a towline life of 4,000 jobs is achieved before retirement.

After eight years of covering towage operations 24 hours a day, seven days a week, in these ports, only two towlines have parted, both due to being cut on inadequate ships' bollards. In my experience this record is not achieved by many.

3. Safe operations

PB Towage has not experienced a major accident or incident, spill, prosecution, reportable environmental incident or lost-time injury during towage operations in the eight-year history of the company – a record to be very proud of. Quality training, ongoing competency assessments and professional development of the masters and crew which is focused on all aspects of tug driving and operational knowledge, is directly related to these quality outcomes, and proves that quality training to an appropriate standard is an investment that delivers.

This approach has been successfully achieved in other areas of maritime operations and has led to a direct decrease in accidents and incidents whilst significantly lifting safety standards, professionalism and

operational outcomes. All of this has led to substantial cost saving, enhanced safety of personnel and reduced damage to property and the environment.

One advantage of having type-rating for tugmasters is that it will soon become apparent what training improvements are necessary for specific operations. Not all companies will need to employ external expertise, but those that do will recognise the need and come to the realisation that reinventing the wheel is not the best way to progress forward.

WHERE IS THE INDUSTRY CURRENTLY?

The broader maritime industry has previously recognised and responded to specific areas of maritime operations whereby a master requires a unique skill set to perform their duties competently and safely to an industry-approved standard. The most obvious ones are:

1. Pilots: Licences are issued by a Flag State that has established a standard that must be met to ensure a master has the required competency to effectively and safely control ships in ports and restricted waterways.

2. Oil & Gas Carriers: Endorsement issued to an IMO defined standard that must be met to ensure masters and mates have the required competency to effectively and safely operate this class of ships.

3. Square Rigged Sailing Ships: Endorsement issued by a Flag State to a defined standard that must be met to ensure masters and mates have the required competency to effectively and safely operate this class of ships.

4. High Speed Ferries: Endorsement issued to an IMO-defined standard that must be met to ensure masters and mates have the required competency to effectively and safely operate this class of ships.

5. Dynamic Positioning Vessel: Endorsement issued by a recognised industry body (Nautical Institute) to a defined standard that must be met to ensure masters and mates have the required competency to effectively and safely operate this class of vessel.

In the towage industry some excellent initiatives have already been taken.

1. SAFETUG

Conducted in association with industry by the Maritime Research Institute Netherlands (MARIN). The objective of this JIP is to:

- i. Identify the relevant modes of tug-terminal operation in the various operational contexts;
- ii. Quantify the appropriate operability envelopes while assisting in waves;
- iii. Quantify the operational effectiveness in waves;
- iv. Identify the relevant criteria per type of the operation;
- v. Find the important factors in the design, equipment and operation of the vessels involved.

2. British Tugowners Association

These endorsements are voluntary, and there is no

statutory obligation to hold such an endorsement to work in the towage industry other than as part of the Boatmasters' Regulations.

Towage endorsements are intended to be used in conjunction with an appropriate Certificate of Competency (CoC) and are not in themselves a substitute for such a certificate. There are three towage endorsements:

- i. General Towage;
- ii. Ship Assist Towage;
- iii. Sea Towage.

Introduction and Background

The UK Maritime and Coastguard Association (MCA) recognises that certificates issued under the Standards of Training, Certification & Watchkeeping (STCW) Convention and those issued by the Royal Yachting Association (RYA) and others are general in nature and there is no requirement for a separate statutory towage endorsement. However, in order to assist owners and operators engaged in towage work, or harbour masters, contractors and others when conducting risk assessment of towage operations, the MCA, after consulting with industry, recognises that by introducing these towage endorsements an individual will demonstrate that they are suitably experienced and competent to carry out such work.

Description of the endorsements

There are three towage endorsements defined as follows:

- i. *General Towage endorsement:* towage within categorised waters or other defined area of operation.
- ii. *Ship Assist Towage endorsement:* those assisting with the berthing and unberthing of power-driven vessels.
- iii. *Sea Towage endorsement:* intended for the towage of vessels or floating objects from one location to another at sea ie outside categorised waters.

3. Port Marine Safety Code

The Port Safety Code was drawn up in 2000 with a wide variety of contributions from those associated with the ports industry following a review of the Pilotage Act 1987, published in July 1998. The main proposal resulting from this review was that this code should be developed.

The code includes a summary of the legal duties and powers of harbour authorities relating to marine safety. It does not create new legal duties for harbour authorities. Such duties and powers are only properly discharged if appropriate standards are fully met. This code has been agreed nationally with representatives of all parties, to apply to all harbour authorities. It is not optional – harbour authorities are expected to work to achieve the agreed standard by implementing its requirements.

The code also aims to promote best practice. It serves as a framework for the preparation of published

policies and plans by harbour authorities in consultation with local users and other interests. It is also utilised by many ports to ensure towage companies are compliant to a standard stipulated by the port authority.

COMPETENCY

What does it mean? The Macquarie dictionary definition is – ‘the state or quality of being adequately or well qualified; ability; a specific range of skill, knowledge, or ability’.

On the subject of competency, with regard to a master operating safely and effectively any category of tug, the following is both pertinent and sobering.

Q: Does a flag state Certificate of Competency cover the required competencies for a tug master?

A: No.

Q: Does an accredited QA system such as ISM or ISO cover tug master competency?

A: No.

Q: Does the Port Marine Safety Code cover tug master competency?

A: No.

Q: Then who/what currently does cover tug master competency and specific operational knowledge?

A: No one.

Interestingly, the only aspect of being a master that is not assessed during examination for the issuing of the Certificate of Competency (CoC) is if the master can actually drive a vessel. Perhaps the CoC should actually be more correctly referred to as a Certificate of Theoretical Knowledge?

FORMAL ENDORSEMENTS

Some will ask, why a formal endorsement on a master's certificate of competency for a tugmaster? Simply put, a formal endorsement approach ensures:

1. An agreed, defined and assessable standard is in place to ensure key competencies are met;
2. Safe, cost-effective and professional towage operations;
3. A level playing field for towage operators;
4. That towage companies, it could be argued, do not ultimately have to pay for the training of their tugmasters.

Let us investigate these four statements more closely.

What is a standard?

- i. A clearly defined written training standard that is able to be non-subjectively assessed, in a professional manner, so as to ensure that appropriate levels of competency and operational requirements are achieved;
- ii. Supported by a professionally-developed, comprehensive training programme so as to achieve the agreed standard of training, as described in point (i);
- iii. Formally accredited and trained training masters to

deliver the training programme and carry out ongoing compliance assessments;

- iv. The company's Safety Management System (SMS) must be functional, meaningful, minimised, easily understood and specific to the company's towage operations;
- v. A formal system to ensure the SMS is regularly read and a tugmaster's working knowledge of the SMS and the procedures contained within are tested on an annual basis to ensure working knowledge and compliance.

Safe and cost-effective

Having travelled widely throughout the industry and devoted 15 years as a tugmaster trainer to numerous clients, I believe myself qualified to make an assessment of the average tugmaster's skill set.

- i. On average it is not as high as it needs to be, or indeed many tugmasters themselves believe their skills to be;
- ii. It is not the fault of the tugmasters, rather the fault of the system and to a certain extent towage managers who do not have the practical experience themselves, and thus do not have the understanding or necessarily value the skill set required to operate tugs, particularly the new generation of omni-directional tugs;
- iii. A well-trained tugmaster can operate in what is a high risk industry with confidence and competence, ensuring safe and effective operations. This is of significant value to the towage company, clients and authorities alike;
- iv. The expectation should be that a tugmaster goes through their entire career without a major accident;
- v. It is a lot more cost effective to invest in proper training than to pay out for compensation, vessel repairs and defending the company's reputation.

Level playing field

Through experience gained from my travels as a consultant specialising in the towage industry, it has become apparent that there are different philosophies to training.

- i. Some companies are proactively committed to training and invest a considerable amount of time and funds to it;
- ii. Some companies see the benefits of good training and actively poach tugmasters that have been well trained by, and at the expense of, another company;
- iii. There are companies that have yet to reach the understanding that proper training is an investment that pays dividends;
- iv. An agreed defined training standard, overseen by an independent authority, ensures all towage companies must have compliant tugmasters who hold an endorsement for the specific type of towage operations they work within.

Hence the workforce will be more stabilised and poaching will be minimised.

Training has no cost

- i. If a formal towage endorsement on a master's certificate for all tugmasters was compulsory then it would become one of the prerequisites for a towage company to operate;
- ii. This is similar to a tug being a prerequisite to operate, the cost of which is fully incorporated in the charter rate. If a port or client stipulates a specific type and power of tug to be compliant with a license to operate or to win a tender then, within reason, all competing towage companies must meet this requirement, generally at a similar cost. Consequently, one company has little advantage over the other on this point.
- iii. The same applies when an authority or client stipulates a QA system such as ISM and/or ISO as a prerequisite to operate;
- iv. The same argument can be applied to training. If a common defined standard of tugmaster training is stipulated (via the formal endorsement set and governance by an independent authority) then all companies must equally comply;
- v. As with the cost of the tug and QA system, the cost of the training is reflected in the tug's charter rate and, by default, ultimately funded by the client;
- vi. As with the likes of DP certificates, the client is happy and willing to pay, as they can be confident of a high quality, professional and most importantly safe towage service;
- vii. Whether this argument is agreed or not, the logic for quality training and the fact it is an investment has, I believe, been made.

THE WAY FORWARD

One can see the maritime industry is continually reviewing, evolving and responding to the ever-changing operational requirements, technical advancements, political demands, legislative changes and public expectations, which is a natural and predictable process of evolution.

Given all of the compelling arguments and reasons presented within the context of this paper, I believe it is time a proper and thorough investigation is conducted into whether there is a genuine requirement for towage endorsements on a Masters Certificate and, if so, how

they are to be structured, governed, administered, when and by whom.

SUMMARY

The full and definitive response to the above statement is beyond the scope of this paper and its author. What I suggest is that a steering committee of approximately 12 members is formed from a broad cross-section of the international towage industry, including towage companies, authorities, British Tugowners Association, European Tugowners Association, International Tugmasters Association, USA Master of Towing Vessels Association, International Harbourmasters Association and any other relevant bodies, to investigate answers to the questions raised, develop a draft strategy, and a structure of what the standard should be. If, indeed, it is found that formal endorsements are warranted.

The steering committee should also recommend the best governing authority to define and govern the standard, along with the approved set of Key Performance Indicators (KPIs) to monitor and ensure the standard is met and maintained. That is – is it best to drive this through the International Maritime Organisation (IMO), Flag States or a recognised industry body?

The proposed steering committee would report back to the industry, initially after six months, via an article in *International Tug & Salvage* and more fully at the next Tugology conference in 2011. Subject to the committee's report at *Tugology 2011*, the industry can then decide whether or not to endorse the committee's findings and recommendations, and if so, how best to progress an acceptable outcome.

I ask any interested parties to contact me at the *ITS Conference* in Vancouver with a view to becoming a member of the steering committee. In closing may I say – logic states there can be only one best practice. In time, most towage companies will end up with similar outcomes. If this is indeed the case, we may as well work together via mutual co-operation and effort for the common good.

REFERENCES

- ¹ *Oil spill in Gladstone harbour the result of a tug/ship collision*, Marine Occurrence Investigation 224 – 24th January 2006.